ISTM

ISTM 7th National Conference

TRANSMEDCON

2018 - KOCHI

7th National Conference

Indian Society of Transfusion Medicine

23rd to **25th** November, 2018

Lulu Bolgatty International Convention Centre

Grand Hyatt Kochi Bolgatty

S O U V E N I R

INSIGNIA

PR-22
Platelet Incubator
with Reciprocator

- Storage of agitator for 36/48/96 Plasma bags (all sizes)
- Roll-up and Roll-down glass door for incubator chamber
- Microprocessor controlled LCD display and printer for temp. records
- No need of consumables (graph sheet). Inbuilt paper roll sufficient for 1 year
- Alarm for Door Open, Power fail, Temp. Variation, low battery
- Port for Remote alarm. High & Low alarm testing facility.
- 15/30/45/60 mins interval temp. date can be printed with inbuilt printer
- Temperature controller independent displaying inside temp.
- Temp. range: 22°C ~ 1°C (can be set from 0-40°C)
- RS-232 port for Remote date recording (optional feature)
- Noiseless, heavy duty geared motor working 24 hrs.
- Solid & perforated st. steel trays for holding plasma units.
- Agitation stops, when door opened.

INSIGNIA international™

BRC Series
Blood Storage Cabinets

- Adjustable & Extendable Drawers with Plastic Trays (optional) for Blood Storage only.
- Uniform Temperature Recovery. Storage capacity from 100 Litres - 1400 Litres.
- Forced Air Circulation system.
- Microprocessor Monitor: Audio/Visual Alarms, Temp. Display, Data Storage & Printing system.
- Multipane vaccumed glass door and Frame eliminates condensation & fogging.
- CFC Free Refrigerants and noise Free compressor. (Hermetically Sealed)
- Exterior G.I. Powder Coated/Interior St. Steel 304. (Exterior Stainless Steel Optional)
- Internal fan switched off, when door opened.
- Battery back up of upto 24 hrs. T.R.C.U.

Electrical Safety Compliant (IEC 61010-1-2010)

INSIGNIA international™

LRC Series
Medical Storage Cabinets
Vaccines • Pharmaceuticals • Laboratory

- Adjustable & Extendable Drawers with Plastic Trays (optional) for.
- Uniform Temperature Recovery. Storage capacity from 100 Litres - 1400 Litres.
- Forced Air Circulation system.
- Microprocessor Monitor: Audio/Visual Alarms, Temp. Display, Data Storage & Printing system.
- Multipane vaccumed glass door and Frame eliminates condensation & fogging.
- CFC Free Refrigerants and noise Free compressor. (Hermetically Sealed)
- Exterior G.I. Powder Coated/Interior St. Steel 304. (Exterior Stainless Steel Optional)
- Internal fan switched off, when door opened.
- Battery back up of upto 24 hrs. T.R.C.U.

Electrical Safety Compliant (IEC 61010-1-2010)

INSIGNIA international™

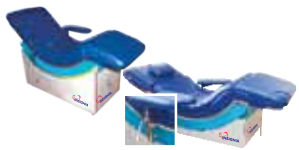
UDF & ULF SERIES
Ultra Low Temperature Freezer
(-30° C to -40° C / -86° C)
Fast Freezing (Optional)

- Inner chamber of high grade 304 st. steel outer powder coated.
- Capacity 100 Litres to 600 Litres nett. (Vertical/Horizontal).
- Temperature range -30°C to -40°C (±2°C).
- Ambient temp. alert built in (Settable).
- Double door having 5 nos. compartments & individual door of each for 300 Litres & above.
- Low noise level < 45 - 50 db.
- Password protected temperature display & control system.
- Battery back up of 10 hours in case of power fail.

Electrical Safety Compliant (IEC 61010-1-2010)

INSIGNIA international™

DC-100X
Blood Donor Couch



- Seat, head rest & arm rest can be adjusted to the phlebotomy postures.
- Electro-mechanical control of movements enable head high/low position.
- Suitable height for convenience of phlebotomist.
- Remote Switch (can be connected at Head & Foot end) for easy repositioning.
- Lockable castors for easy mobility.
- Swing in/out cushioned & broad arm rests.
- 100% St. Steel framing & hardware.
- Dust Resistant Upholstery & Punishment proof laminates.

INSIGNIA international™

Graphical & Numeric Temp Display / Control & Printing System

BM-35X
Blood Bag Weighing Balance with Agitator
Blood Collection Monitor

- Programme initial volume or weight of blood to draw. (Preselected volumes 350ml/450ml or any volume upto 1000ml in ml increment).
- Continually agitates the blood bag while it is being filled at 15 R.P.M. with Motor Activated Clamp.
- Displays the volume of blood drawn in real time.
- Audio/Visual alarm in case of flow problems and at end of venipuncture.
- Weight of Bag Taring before collection from 0 -600 gms. with overload indication.
- Idle mode displays real time.
- Weight in grammes or volume in millilitres displayed continually.
- Alteration of blood volume to be collected, during PAUSE.
- Automatic release of bag, when filled.
- Extra Large Tray contains bigger bag sizes with a provision of filter fitted bags placement.
- Micro controller based programme.
- Auto taring built in

Electrical Safety Compliant (IEC 61010-1-2010)

INSIGNIA international™

RVB-8L
Rh View Box
(For Blood Typing)

- Blood typing
- Rh determinations
- Warming slides for gram-strain
- Tissue typing
- Reading enzyme antibody screens in microplate
- Compact Slide-Warmer
- Soft, fluorescent, glare-free light
- Built-in temperature indicator & control

Electrical Safety Compliant (IEC 61010-1-2010)

INSIGNIA international™

CB-30X
Centrifuge Bucket Corrector
(Electronic Counter Balance)

- Two Buckets measures separately
- Weight measure upto 3000 gms. & volume measure upto 3000 ml. (accuracy ±2gms.)
- One LCD display
- Balanced weight Audio & Visual alarm
- Taring Switch Built in
- Calibration Port Built in
- Protective cover to safe gaurd accidental extra weight

Electrical Safety Compliant (IEC 61010-1-2010)

INSIGNIA international™

PT-100X
Plasma Thawing Bath
(Up & Down Movement Control)

- Maintains water temperature at 37°C ± 1°C.
- St. Steel shelves hold plasma bags in 4/8/12 Frozen Plasma Units.
- Fully automatic control system, Microprocessor displays Time & Temperature.
- Water Inlet & Speedy Outlet system, with low water level display.
- Alarm: Temperature deviation, Completion of Thawing.
- Vertical Up/Down movement of Basket Assembly.
- Top closing cover st. steel & plexiglass as standard.
- Graphical screen display set Temp./Actual Bath Temp. & Status.

INSIGNIA international™

DC-60X

Features: (DC-60X)

- Lightweight and foldable blood donor lounge.
- High Grade Stainless Steel frame with screwless rivetless.
- Easy to move and operate.
- Lays like a chair for comfortable donor posture.
- Blood donation position with zero gravity.
- Washable Comfortable Poly vinyl cover with PU Foam.
- Set of four chairs with two wheeler trolleys for easy mobility.
- Color choices available for bulk orders.

INSIGNIA international™

INSIGNIA

ISO 9001:2008 Certified
CE
WHO-GMP Certified

VALENS® TECHNICIA
blood transfusion supports

Website : www.insigniainternational.net

Email : valens.technicia@gmail.com

ISTM 7th National Conference

TRANSMEDCON

2018 - KOCHI

Evoking an integrated approach

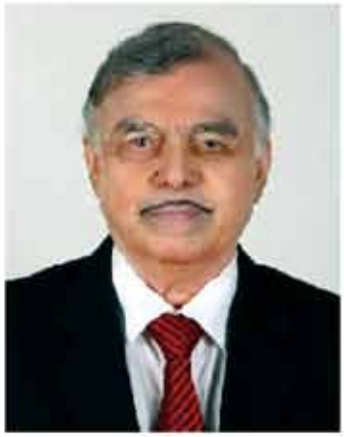
Souvenir Committee

Dr Antonio Paul
Dr Nithya M Baiju
Dr Chitra James
Dr Sajith Menon
Dr Ramesh Bhaskaran
Dr Jyothis P
Dr Poornima A P

JUSTICE (Retd.) P. SATHASIVAM
GOVERNOR OF KERALA

RAJ BHAVAN
KERALA

12 September 2018



MESSAGE

I am happy to know that the Indian Society of Transfusion Medicine is organizing its 7th National Conference on the theme **Transfusion Medicine: Evoking an Integrated Approach** from 23rd to 25th of November 2018 at Kochi.

It is commendable that the organizers plan to publish a Souvenir on this Conference, which aims to provide practical ideas which would strengthen the health care sector and help to promote research in Transfusion Medicine.

I compliment the people behind this venture and wish the Conference as well as the publication all success.

[Justice (Retd.) P. Sathasivam]

Tel.: 0471-2721100 | Fax: 0471-2720266

PINARAYI VIJAYAN
CHIEF MINISTER

GOVERNMENT OF KERALA

Secretariat
Thiruvananthapuram-695 001

No.869/Press/CMO/18. 14th September, 2018.

MESSAGE

I am happy to note that the Indian Society of Transfusion Medicine, Nettoor, Ernakulam, is bringing out a Souvenir in connection with the Conference on Transfusion medicine: Evoking an Integrated Approach titled "Transmedcon-Kochi, 2018".

I extend my good wishes to the conference and to the souvenir, which is being brought out to mark this occasion.

Pinarayi Vijayan

Tel: (0471) 2333812 & 2333682 Fax: (0471) 2333489 e-mail : chiefminister@kerala.gov.in
website : www.keralacm.gov.in

K. K. SHAILAJA TEACHER
MINSTER FOR HEALTH AND SOCIAL JUSTICE
Government of Kerala

Thiruvananthapuram
Date: 09.10.2018

No: 0124/Press/H&SJ/2018

Message

I am happy to know that Indian Society of Transfusion Medicine is bringing out a Souvenir in connection with 7th National Conference "TRANSMEDCON-Kochi 2018. I appreciate your initiative and wish you all success in this endeavour.

K K Shailaja Teacher

Phone Office : 0471- 2327876, 2327976

RAJEEV SADANANDAN
ADDITIONAL CHIEF SECRETARY

Health & Family Welfare Department
Government of Kerala
Secretariat
Thiruvananthapuram-695 001
Phone : 0471-2518255
Telefax : 0471-2327865
E-mail : rsadanandan@nic.in

01/10/2018

MESSAGE

I am happy to know that the 7th National Conference of Indian Society of Transfusion Medicine will be held from November 23rd to 25th at Grand Hyatt, Kochi. While many advances have been made in the area of Transfusion Medicine changing its role considerably many of these have not percolated down the health system depriving patients of the benefits of this transformation.

I hope the Conference will evolve strategies so that the recent advances in Transfusion Medicine are integrated into the health care system from the primary care to Tertiary hospitals. I also hope that such integration will become part of the regular Planning and Administration of health system. I wish Conference lead to rolling out innovative approaches which can inform the integration of advances to general practice.

I wish the Conference all success.

Rajeev Sadanandan

KERALA UNIVERSITY OF HEALTH SCIENCES

Medical College P.O, Thrissur, India, Pin - 680 596

Prof. (Dr.) M. K. C Nair
(Ph.D, M.D, M.Med.Sc., M.B.A)
Vice-Chancellor

Message

I am happy to learn that The 7th National Conference of the Indian Society of Transfusion Medicine will be held from 23rd to 25th November, 2018 at Kochi, Kerala.

On behalf of the Kerala University of Health Sciences, it gives me immense pleasure to welcome you all to TRANSMEDCON 2018.

The proposed theme of the conference "Transfusion medicine: Evoking an Integrated Approach" was aptly chosen considering the rapid progress of medical technology, especially in Blood Transfusion services which has a pivotal role in integrating clinical specialties around it for positive patient outcomes. With the growing complexity in healthcare practices and with the rapid strides being made in medical technology, an updated, efficient and dedicated multi-disciplinary patient management team is imperative at all levels of healthcare delivery.

An integrated approach should aim to strengthen people-centered health systems by a coordinated multidisciplinary team of providers working across settings and levels of care.

I hope that the deliberations in the Conference will help foster evidence-based practices to implement integrated treatment strategies that improve quality of diagnoses, treatment decisions, and treatment monitoring, hence significantly improving patient outcomes.

I wish to convey my felicitations to the organizers, sponsors and to all the participating delegates and wish TRANSMEDCON 2018 all success.

Prof. (Dr.) MKC Nair
Vice Chancellor
Kerala University of Health Sciences

www.kuhs.ac.in : Phone: +91 487-2207664 Fax: +91 487 2206770 : e-mail: vc@kuhs.ac.in

NBTC
राष्ट्रीय रक्त संचरण परिषद
National Blood Transfusion Council

Director

Tel. : 91-11-23736851
Fax : 91-11-23731746
E-mail : nbtcmohfw@gmail.com

सत्यमेव जयते

राष्ट्रीय रक्त संचरण परिषद
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार

National Blood Transfusion Council
Ministry of Health and Family Welfare
Government of India

It is my pleasure to send greetings to Indian Society of Transfusion Medicine (ISTM) for organizing "TRANSMEDCON 2018" in the month of November, 2018 at Kochi.

The theme of this year's Conference "Transfusion Medicine : Evoking an Integrated Approach" aims to improve outcomes for patients and communities.

It's a pleasure know that participants and learned speakers belonging to Blood Transfusion Services from all over India are invited to share their experience. On behalf of National Blood Transfusion Council (NBTC), Ministry of Health & Family Welfare, I extend my best wishes for the grand success of this conference and am sure that the delegates would gain much here and employ it to improve their knowledge and skills.

Dr. Shobini Rajan, MD
ADG& Director (NBTC)

राष्ट्रीय जैविक संस्थान
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
NATIONAL INSTITUTE OF BIOLOGICALS
Ministry of Health & Family Welfare, Government of India

A-32, Sector - 62 (Institutional Area)
NOIDA - 201309 (U.P.) - INDIA
Phones : 0120 - 2400022, 2400072
Fax : 0120 - 2403014, 2400074
e-mail : info@nib.gov.in Website : www.nib.gov.in

Message

It is a matter of great pleasure that the Department of Transfusion Medicine, Amrita Institute of Medical Sciences & Research Centre, Kochi is organizing TRANSMEDCON 2018, the 7th National Conference of Indian Society of Transfusion Medicine (ISTM) scheduled from November 23rd to 25th, 2018 at Kochi, Kerala.

Conference like this is a noble endeavour to streamline and enrich the thought process of all the delegates. The Conference motto "Transfusion Medicine: Evoking an Integrated Approach", aims to improve outcomes for patients and communities; provide practical ideas that can be implemented in healthcare, promote research into high quality leadership and foster effective innovation amongst the medical fraternity.

I congratulate the organisers for arranging such an enriching event and I am sure that at the end of the conference the participants will be charged with newer thoughts and ideas to serve the community in a much better way.

I wish the conference a grand success

Dr. Surinder Singh
Director, NIB

E-mail:dmekerala@gmail.com
Fax : 0471-2443080

Phone: Office:2528508
Director (Personal):2444011

GOVERNMENT OF KERALA
DIRECTORATE OF MEDICAL EDUCATION

MEDICAL COLLEGE P.O
Thiruvananthapuram- 695 011

MESSAGE

I am extremely happy to know that TRANSMEDCON, the 7th National Conference of the Indian Society of Transfusion Medicine is being held from November 23rd to 25th, 2018 at Grand Hyatt, Kochi and that a souvenir is being released in connection with the Conference.

I extend my warm greetings and felicitations to the organizers and participants and wish the Conference all success.

DR.REMLA BEEVI.A
Director of Medical Education

Thiruvananthapuram
22.9.2018

Dr.Sarita.R.L
Director of Health Services

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Thiruvananthapuram -695 035

Dated :15/09/2018

Message

The Indian Society of Transfusion Medicine has been playing a vital role in promoting innovative ideas in Transfusion Medicine since its formation. It is commendable that ISTM provides a platform for vibrant scientific deliberations through its Annual conference "TRANSMEDCON 2018" I am extremely delighted to see that TRANSMEDCON 2018 focuses on evoking an Integrated Approach in Transfusion Medicine. It is hopeful that the deliberations open new vistas of knowledge that fosters a scientific spirit in imparting quality Health care. I extend by best wishes in all future endeavors of the organization

Dr.Sarita R.L.

Dr. (Prof.) R.N. Makroo
President
Indian Society of Transfusion Medicine

It is my proud privilege to welcome all the delegates of the 7th National Conference of Indian Society of Transfusion Medicine TRANSMEDCON 2018 being held on 23-25th November,2018 at Cochin Kerla the Gods own country known with different names like: the Malabar Coast of India, the land of coconuts, the land of Mahabali , the spice garden of India.

The theme of the conference is Transfusion Medicine: Evoking an Integrated Approach and accordingly the scientific program of the conference has been framed to broaden the horizons of Transfusion Medicine by integrating multidisciplinary approach in patient care. The scientific program include the State of Art Plenary sessions, panel discussions, debates, free oral paper presentations and poster presentations. A joint session with International Society of Blood Transfusion (ISBT) is also organized through the ISBT Academy. There will be an ample scope and opportunities to widen our knowledge through interaction with learned speakers. The ISTM Quiz for post graduate students is also organized during the deliberation of the conference

One preconference CME on haemorrhage & appropriate use of blood besides seven workshops on various topics are being held on 22nd November, 2018 which will offer good educational opportunities for post graduate students and aspirers.

I am sure the scientific deliberations of the conference are going to be beneficial & fruitful to all to improve safe blood transfusion practice. I am thankful to the International & National Guest Speakers for sharing their expert experiences during their deliberations.

I am thankful to all the members of the organizing committee especially Dr. Veena Shenoy and also the executive members of ISTM for their best efforts to make the conference a grand success. I am

thankful to all the exhibitors for their participation & support.

Once again I extend a cordial welcome to one & all.

Dr. (Prof.) R.N. Makroo

Dr. Manisha Shrivastava
Secretary
Indian Society of Transfusion Medicine

Dear Friends and Colleagues,

Its indeed a great occasion for the Indian Society of Transfusion Medicine (ISTM) when the seventh Annual Conference is being held at Kochi, Kerala , "God's own country". The theme for this year "Transfusion Medicine: Evoking an Integrated Approach" speaks for itself that without the clinical interface and collaboration to ultimately benefit the endpoint of health care, the patient, science cannot grow. The scientific feast will be a reason for all in the specialty to not only interact for the growth of Transfusion Medicine but also make congenial bonds for breaking the regional barriers and making the flow of friendship within the fraternity for the progress of the ISTM as well as society by enlarge. This year the response for applications for nomination of awards and scientific research abstracts has increased with better quality of research indicating that the scientific insights and the knowledge of the Transfusion Science with clinical applications and patient care is increasing day by day . The tradition of the Quiz for postgraduates and the pre conference workshops covering the broad spectrum from recent advances like the HLA and molecular blood grouping, stem cell processing and RBC glycerolisation, Flow cytometry , Hemostasis and coagulation , therapeutic plasma exchange and continuing with research methodology and scientific writing skills are going to be a great learning bonanza for the budding transfusion medicine specialists. This year the scientific sessions have been designed to provide a scientific window involving the transfusion specialist with a horizon for knowledge enhancement from bench to bedside . Kochi is a major port city on the south-west coast of India bordering the Laccadive Sea and the serene natural beauty in combination of academic feast is going to bring health to hearts and peace to minds for the scientific progress of the fraternity and I look forward to share everyone's ideas for better ment of ISTM. Organizing a conference of this stature is a extremely time taking task which has been done meticulously by the team "Transmedcon 2018 , Kochi" and I hope that in future also the tree of Transfusion Medicine will grow with its branches all around and the fragrance of its flowers will spread to bring laurels to ISTM.

With best wishes,

Manisha Shrivastava

Dr. Manisha Shrivastava

Dear Friends and Colleagues,

On behalf of the Organizing Committee, it is an honor and great pleasure to extend to you a warm invitation to the 7th TRANSMEDCON National Conference, held at Kochi, Kerala from 23rd – 25th November 2018.

Over the years TRANSMEDCON has evolved to become the most important National conference dedicated to Transfusion Medicine techniques, technology and applications, and to establish an exceptional community of Transfusion medicine specialists and researchers. The great success of previous TRANSMEDCON conferences with the overwhelming attendance and participations, confirms this.

The central theme of the 2018 Conference 'Transfusion Medicine: Evoking an Integrated Approach" will underpin the need for interdisciplinary collaboration and cooperation to build a series of improvement partnerships that all focus on optimizing the quality of transfusion services and the outcomes for patients receiving transfusion during their clinical care. The conference has been designed to provide an innovative and comprehensive overview to include the latest innovations and research developments in Transfusion Medicine

Kochi ,spread over a series of islands and crisscrossed by the Arabian Sea and backwaters, is an exceptional location for the 2018 TRANSMEDCON. The culturally and historically rich port city located between the Arabian Sea and the Western Ghats, has always been one of the most sought-after destinations in India

The 2018 TRANSMEDCON Conference will provide a wonderful forum for you to contribute to the current scientific expertise and to enrich and refresh your own knowledge base, while exploring the innovations and advances in Transfusion medicine. The Conference will also offer plenty of opportunities to network with the leading scientific community, friends, colleagues and the scientific exhibitors.

Let us all join together at TRANSMEDCON 2018 to share a common vision, and combine our knowledge, wherewithal and experience to enhance patient care through collaboration and integration and to pave our way into the future of Transfusion Medicine.

Best Regards,

Dr. Susheela J. Innah
Organising Chairperson

Respected Colleagues, Guests and Friends,

Greetings from TRANSMEDCON Kochi!

I, on behalf of organizing and scientific committees, welcome you all to the 7th National Conference of the Indian Society of Transfusion Medicine held from November 23-25th, 2018 at the Lulu Bolgatty International Convention Centre, Kochi, Kerala.

Profound notable transformations have taken place in the last couple of decades in Transfusion Medicine and its allied disciplines. Technology development and changing medical needs also necessitate a multi disciplinary approach to enhance patient care.

Hence the central theme of the conference "Transfusion Medicine: Evoking An Integrated Approach" and the conference program, will aim to be an effective reflection of its scientific, academic, and social contributions wherein a collaborative approach will be climactic for a positive patient experience.

TRANSMEDCON Kochi will provide a unique forum to share our combined expertise, ideas and opportunities that will go a very long way in helping enhance quality of care and quality of life. We must ensure that integrated multidisciplinary teams, especially Transfusion and Laboratory services, work together with clinical specialties for creating effective and patient-centered health care delivery systems.

Special thanks go to the office bearers of ISTM and the local organizing committee under the valuable guidance of our Patron, Chairperson and Advisors, in making TRANSMEDCON 2018 a resounding success.

Kerala with its never-ending array of coconut palms, pristine beaches, enchanting backwaters and its rich diversity of flora and fauna coupled with the fragrance of spices and a plethora of art forms & cuisines, fairs and festivals is truly a tropical paradise.

Welcome to TRANSMEDCON 2018... Welcome to God's Own Country!

Dr. Veena Shenoy
Organising Secretary

The **TEAM** Behind

ORGANISING Committee

Patron - Dr. M.K.C. Nair
Vice Chancellor, KUHS

Dr. Debashish Gupta
Joint Org. Chairman

Dr. Susheela J. Innah
Organising Chairperson

Dr. Meena D.
Joint Org. Chairperson

Dr. Veena Shenoy
Organising Secretary

Dr. Mohandoss M.
Joint Secretary

Dr. Marina Mathew
Treasurer

Dr. A.M. Rafi
Joint Treasurer

Dr. T. Ramanathan
Joint Treasurer

Dr. Antonio Paul
Joint Treasurer

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Dr Neelam Marwaha
Dr K C Usha
Dr R R Sharma
Dr Dolly Daniel
Dr Sashidharan VP
Dr Sitalakshmi S
Dr Vijayakumar N
Dr M D Gajjar

SCIENTIFIC Committee

Dr Susheela J Innah - Chairman Scientific committee
Dr R N Makroo - President ISTM
Dr Manisha Shrivastava - Secretary ISTM
Dr Veena Shenoy - Org Secretary
Dr Rajendra Choudhary
Dr Debashish Gupta
Dr Shivaram C
Dr Joy Mammen
Dr Meena D
Dr Shamee Shastry
Dr Shaiji P.S
Dr Abhishek G

ISTM Executive Committee

Dr. R.N. Makroo
President

Dr. Tulika Chandra
Vice President

Dr. Manisha Shrivastava
Secretary

Dr. Prashant Agrawal
Treasurer

Dr. Aseem Tiwari
Joint Secretary

Dr. Sudipta Sekhar Das
Joint Secretary

ISTM Zonal Representatives

Dr. Prasun Bhattacharya
East Zone

Dr. Anand Deshpanda
West Zone

Dr. Ashish Tiwari
North Zone

Dr. Susheela J. Innah
South Zone

Dr. Dharmesh Chandra
Central Zone

Dr. Ahongshangbam Meina Singh
North East Zone

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Dr Suma M S
Dr Kala V L
Dr R Amitha
Dr Anjaly P S
Dr Archana Rajan
Dr Drisya D T
Dr Dhinesh
Dr Ganesh Mohan
Dr Sanooja Pinky
Dr Sushama D
Dr Shiffi Fazal

Dr Sathyabhama.S
Dr Sasikala N
Dr Vijayalakshmi K
Dr Mini C V
Dr Anitha Balakrishnan
Dr Anumole Jose
Dr Julie Jose
Dr Manish Nair
Dr Mary Sanshya
Dr Nittin Henry
Dr Rajesh R Chandran
Dr Nithya Mohanan

INTERNATIONAL FACULTY

Dr Simon Stanworth
Consultant Haematologist for NHSBT
at the John Radcliffe Hospital
Oxford, Londan
UK

Judith Chapman
Executive Director at ISBT
UK

Jenny White FIBMS, CSci
Scheme Manager and Deputy Director
NEQAS BTLP
UK

Ellen Vanderschoot
Head of Dept. of Experimental
Immunohematology, Sanquin,
Amsterdam, Medical Director
Laboratory Cellular Therapies, Sanquin,
Netherlands

Dr. Nico Lelie
Head of the Viral Diagnostic and Blood
Screening Department of Sanquin
Blood Supply Foundation
Netherlands

Dr. Klaus Görlinger
Medical Director PBM Instrumentation
Laboratory Munich
Germany

NATIONAL FACULTY

Abhishekh B Gowda JIPMER. Puducherry
Aboobacker Mohamed Rafi JMMCH, Thrissur
Aikaj Jindal CMC, Ludhiana
Anand Desphpande Hinduja Hospital and M R C, Mumbai
Anil Handoo BLK Super Specialty Hosp, New Delhi
Anil Khetarpal Artemis Hospitals, Gurgaon
Anju Dubey TS Misra Med. College, Lucknow
Ankit Mathur Rotary TTK Blood Bank, Bengaluru
Anupam Chhabra Terumo BCT (India)
Anupam Verma SGPGIMS, Lucknow
Archana Solanki KGMU, Lucknow
Arun R SVIMS, Tirupathy
Aseem Tiwari Medanta, Delhi
Atul Sonkar SGPGI, Lucknow
Bharat Singh GTB Hospital, New Delhi
Bindu Madhav Yenigalla NABH
C Shivaram Manipal Hospital, Bangalore
Chandran K Nair MCC, Thalassery
Chitra James GMC, Kollam
Debashish Gupta SCTIMST, Trivandrum
Deepti Sachan Dr Rela Institute, Chennai
Dolly Daniel CMC, Vellore
Gagandeep Kaur GMCH, Chandigarh
Gajendra Gupta SDM Hospital Jaipur.
Ganesh Mohan KMC, Manipal
Gita Negi AIIMS, Rishikesh
Hemchandra Pandey AIIMS, New Delhi
Joseph Philip AFMC, Pune
Joshua Daniel MIOT, Chennai
Joy John Mammen CMC, Vellore
K C Usha SMIMS, Kanyakumari
Karishma Doshi AS Raja Blood Bank, Vizag
Maitrey Gajjar BJ Medical College, Ahmedabad
Manisha Shrivastava AIIMS, Bhopal
Meena D GMC, Trivandrum
Meenu Bajpai ILBS, Delhi
Mohandoss Murugesan MCC, Thalassery
Mohit Chowdhry Apollo Hospitals, New Delhi
N Rajakumar Stanley Medical College, Chennai
Narinder Naidu Red Cross, Mumbai
Naveen Agnihotri Nayati Medicity, Delhi
Neelam Marwaha PGI, Chandigarh
Neeraj Sidharthan (Hematology) AIMS, Kochi
Nidhi Bhatnagar BJ Medical College, Ahmedabad
Nishanth Menon (Emerg. Med) Amala Medical College, Thrissur
Nitin Agarwal JAYPEE Hospital, Noida
Prasanth Agarwal SGPGI, Lucknow
Prashant Pandey Jaypee Hospital, Noida
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Priti Elhence RML, Lucknow
PS Dhot Santosh Medical College, Ghaziabad
Puneet Jain Apollo Hospital, Mumbai
R K Chaudhary SGPGI Lucknow
R Krishnamoorthy SRMC, Chennai
RR Sharma PGI Chandigarh
Rahul Kataria SGPGI Lucknow
Rahul Purwar IIT, Bombay
Rajesh Sawant KDAH, Mumbai
Rakhi Balachandran AIMS, Kochi
Rasika Setia BLKSS, New Delhi
Ravneet Kaur GMC, Chandigarh
Rekha Hans PGI, Chandigarh
Rima Kusumgar GCRI, Ahmedabad
RN Makroo Rockland Hospital, Delhi
Sabita Basu TMC, Kolkatta
Sajith Menon GMC, Thrissur
Sangeeta Pahuja Lady Hardinge , New Delhi
Sanmukh Joshi Lok Samp. Reg. Blood Center, Surat
Sasidharan P (Neonatology) AIMS, Kochi
Satyam Arora SSPH& PGTI, Noida, UP
Shaiji PS GMC, Trivandrum
Shamee Shastry KMC, Manipal
Shashank Ojha ACTREC, Navi Mumbai
Sitalakshmi S St. John's, Bangalore
Sudipta Sekhar Das Apollo, Kolkatta
Sukesh C Nair CMC, Vellore
Sumathi S H Ramaiah Medical College, Bangalore
Sunil Rajadhyaksha TMH, Mumbai
Surekha Devi Global Hospitals, Hyderabad
Susheela Innah JMMCH, Thrissur
Swati Kulkarni ICMR-NIIH, Mumbai
Tulika Chandra KGMU, Lucknow
Veena Shenoy AIMS, Kochi
Vijay Kumar District Hospital, Aluva
Vijay Kumavath NIMHANS, Bengaluru
Vineeth MB (Orthopedics) Little Flower Hospital, Angamali
Vivek Krishnan (Perinatology) AIMS, Kochi

PRECONFERENCE
CME

HEMORRHAGE & RATIONAL USE OF BLOOD

22nd November 2018 | **Amrita Institute of Medical Sciences,** Cochin
Convenor: **Dr Sukesh C Nair,** Professor, Transfusion Medicine & Immunohematology, CMC Vellore

08.30-09.00	Registration	
09.00-09.30	Inauguration	
	TOPIC	**SPEAKER**
09.30-09.50	Bleeding in Snake Bites: Ideal transfusion choices and algorithm based on tests and availability	Dr Siju V Abraham Assistant Professor, Emergency Medicine, JMMCH Thrissur
09.50-10.00	Discussions	
10.00-10.20	Unmanageable bleeding in trauma: are shock packs blind and wasteful? Would standardized blood loss assessment get to an ideal transfusion?	Dr Vimal Koshy, JMMCH Thrissur
10.20-10.30	Discussions	
10.30-10.50	Massive transfusion in Post Partum Hemorrhage: Where and when do we go wrong – poor blood loss assessment or poor blood product replacement?	Dr Aswath Kumar, Professor, Dept of Obstetrics, JMMCH, Thrissur
10.50-11.00	Discussions	
11.00-11.30	TEA BREAK	
11:30-11:50	Managing microvascular bleeding in ICU.	Dr Lakshmi Kumar, Professor & Head, Anaesthesia, AIMS,Kochi
	Can any process define an algorithm to stop it?	
11.50-12:00	Discussions	
12.00-12.20	Coagulopathy in acute and Chronic Liver Diseases.	
	Transfusion choices based on Coagulation screen for procedures	Dr. Ashish Goel, Professor, Hepatology, CMC Vellore
12:20-12:30	Discussions	
12.30-12.50	Management of patients on Antiplatelet & anticoagulant therapy	Dr Sreehari, Assistant Professor Neurosugery, AIMS, Kochi
	When do you transfuse platelets in Neurosurgery	
12:50-13:05	Dental procedures	Dr. Sita, Nellore,
13:05-13:15	Discussions	
13:15-14:00	LUNCH	
14.00-14.20	Hemorrhage in Cardiac surgery: are there any algorithms which help or only coagulation screen?	Dr Raj Sahajanandan, Professor,Dept of Anaesthesia, CMC Vellore
14:20-14:30	Discussions	
14.30-15.30	Panel discussion: Massive Transfusion Protocols: when is the right time?	Klaus Gorlinger, Convener
15.00-15.30	Discussions	

PRECONFERENCE
WORKSHOP

ADVANCED IMMUNOHEMATOLOGY

22nd November 2018 | **Amrita Institute of Medical Sciences,** Cochin

TIME	ACTIVITY	FACULTY
08.30-09.00	Registration	
09.00-09.15	Introduction	Dr Rajendra Chaudhary, Professor, Transfusion Medicine, Sanjay Gandhi Postgraduate Institute, Lucknow
09.15-10.00	Theory - Lab diagnosis and serological characterization of AIHA	Dr Sudipta S Das, Consultant, Transfusion Medicine Apollo Hospital, Kolkata
10.00-11.00	Practical • Polyspecific DAT • Monospecific DAT • Use of controls and Check cells • DAT strength • Documentation of DAT result	All faculties and resource persons
11.00-11.15	Tea Break	
11.15-12.00	Theory - Absorption & Elution	Dr Rajendra Chaudhary, Professor, Transfusion Medicine, Sanjay Gandhi Postgraduate Institute, Lucknow
12.00-13.30	Practical • Elution • Antibody screen on eluate • Thermal amplitude on eluate • Interpretation of results of eluate testing	All faculties and resource persons
13.30-14.30	Lunch Break	
14.30-15.15	Theory - How to provide transfusion support to AIHA patient?	Dr Abhishekh Gowda, Associate Professor, Transfusion Medicine, JIPMER, Puducherry
15.15-16.30	Practical • Selection of least incompatible unit • Detection of underlying alloantibody	All faculties and resource persons
16.30-16.45	Tea Break	
16.45-17.15	Interactive session	All faculties
17.15-17.30	Distribution of certificates	

PRECONFERENCE
WORKSHOP

ESSENTIALS AND ADVANCES IN PLASMA EXCHANGE

22nd November 2018 | **Amrita Institute of Medical Sciences,** Cochin

08.30-09.00	Registration	
Session 1 - Apheresis Essentials		
09.00-09.10	Introduction & Welcome	
	Topic	**Speaker**
09.10-09.50	Therapeutic Plasma Exchange as Treatment Modality	Dr Anupam Chhabra, Terumo Penpol
09.50-10.30	Apheresis- Overview & Basic principles of Therapeutic Plasma Exchange	Dr Meenu Bajpai, Additional Professor, Transfusion Medicine, Institute of Liver & Biliary Diseases, Delhi
10.30-11.00	Tea Break	
Session 2 - Physiology of Apheresis & Procedural Aspects		
11.00-11.40	Anticoagulation	Dr Sweta, Consultant, Transfusion Medicine, Institute of Liver & Biliary Diseases
11.40-12.10	Fluid Balance Management -Nephrologists' Prospective	Dr Zachariah Paul, Assistant Professor, Nephrology, Amrita Institute of Medical sciences, Kochi
12.10-12.50	Pre Procedural Considerations	Dr Satyam Arora, Consultant, Super Speciality Paediatric Hospital & Post Graduate Teaching Institute, Delhi
12.50-02.00	Lunch	
Session 3 - Advances		
02.00-02.40	Secondary Plasma Processing	Dr Deepti Sachan, Consultant, Transfusion Medicine, Dr. Rela Institute & Medical Centre, Chennai
02.40-03.10	Hands on (Including secondary Plasma Processing	Anil Kumar, Terumo Penpol
03.10-03.25	Tea Break	
03.25-04.00	Feedback & Vote of Thanks	

PRECONFERENCE
WORKSHOP

HLA TYPING AND MOLECULAR BLOOD GROUPING

22nd November 2018 | **Amrita Institute of Medical Sciences,** Cochin

TIME	TOPIC	SPEAKER
09:15-09:30	Pre-test	
09:30-10:00	Introduction to HLA antigens and antibodies.	Dr. Lalita Biswas, Assistant Professor, Molecular Biology, AIMS, Kochi
10:00-10:30	Methods to detect HLA antigens and antibodies.	Dr. Parvathy, Research Scientist, Molecular Biology, AIMS, Kochi
10:30-11:00	Molecular nature of blood group genes	Dr. Swati Kulkarni, Scientist D, National Institute of Immunohematology, Mumbai
11:00-11:15	Tea Break	
11:15-11:45	Molecular technique for blood group genotyping – traditional and future trends.	Dr. Swati Kulkarni, Scientist D, National Institute of Immunohematology, Mumbai
11:45-01:15	Demonstration: DNA isolation: SSP PCR for HLA typing SSP PCR for grouping	
01:30-02:30	Lunch	
02:45-03:15	HLA and transplants: Clinician's perspective	Dr. Zachariah Paul , Assistant Professor, Department of Nephrology, AIMS, Kochi
03:30-04:30	Demonstration: Agarose gel electrophoresis	
04:30-04:50	Data interpretation (Blood grouping exercise)	Dr. Swati Kulkarni, National Institute of Immunohematology, Mumbai
04:50-05:10	Data interpretation (HLA typing exercise)	Dr. Lalita Biswas, Assistant Professor, Molecular Biology, AIMS, Kochi
05:10-05:30	Post test	

PRECONFERENCE
WORKSHOP

STEM CELL PROCESSING AND RBC GLYCEROLISATION

22nd November 2018 | **Amrita Institute of Medical Sciences,** Cochin

TIME	SCHEDULE	SPEAKER
09.00-09.30	Pretest	
09.30-10.00	Overview and Basic Principles of Cryopreservation of Stem Cells	Dr Satyam Arora, Consultant, Super Speciality Paediatric Hospital & Post Graduate Teaching Institute, Noida
10.00-10.30	Protocols for Cryopreservation	Dr Ramnathan T, Assistant Professor, Amrita Institute of Medical Sciences, Kochi
10.30-11.00	Overview and Principles of RBC Glycerolization and Deglycerolization	Dr (Brig.) Anil Khetarpal Head Transfusion Medicine & Blood Bank, Artemis Hospitals, Delhi
11.00-11.30	Advances in PBSC and Cord Blood Processing	Mr Rajesh Bijalwan, Application manager, Span Health Care
11.30-13.00	Advances in PBSC and Cord Blood Processing & Wet Demo on PBSC processing and Cryopreservation	Mr Rajesh Bijalwan
13.00-14.00	Lunch	
14.00-14.45	RBC Units Glycerolization and Deglycerolization	Dr K.G. Pillai, Span Health Care
14.45-15.30	RBC Aliquots Glycerolization and Deglycerolization for Immunohematology Workup	Dr Soumya Das, JIPMER, Puducherry Dr Deepika Chenna, KMC, Manipal
15.30-16.00	Tea Break	
16.00-16.30	RBC glycerolisation in military setting: Experience	Dr (Brig.) Anil Khetarpal Head Transfusion Medicine & Blood Bank, Artemis Hospitals, Delhi
16.30-17.00	Post-test	

PRECONFERENCE
WORKSHOP

HAEMOSTASIS AND COAGULATION

22nd November 2018 | **Regional Blood Transfusion Centre,** Aluva

TIME	TOPIC	SPEAKER
08.30-09.00	Registration & Pre Test	
09.00-09.30	Physiology of Coagulation	Prof Dr Biju Bahuleyan, Professor, Dept of Physiology, Jubilee Mission Medical College, Thrissur
09.30-10.00	Evaluation of bleeding disorders	Dr Geeta Vidhyadharan, Associate Professor, Dept of Pathology, AIMS, Kochi
10.00-11.00	Platelet counting	Dr Nitty S Mathews, Assistant Professor, Transfusion Medicine, CMC Vellore
11.00-11.30	Pre analytic Variables	Dr Susheela Innah, Professor, Transfusion Medicine, Jubilee Mission Medical College, Thrissur
11.30-12.30	PT, aPTT, TT Testing with respect to transfusion management Selection of reagents and Mixing studies	Dr Aboobacker Mohamed Rafi, Assistant Professor, Transfusion Medicine, Jubilee Mission Medical College, Thrissur
12.30-01.30	Lunch	
01.30-03.00	PT, aPTT, TT and Mixing studies (Practical)	Mr Surendar Singh, Senior Lab Technician, Transfusion Medicine, CMC Vellore
03.00-03.30	Inhibitor screening Fibrinogen and Factor Assays	Dr Meena Beebi, Pathologist, District Hospital, Ernakulam
03.30-04.00	Tea	
04.00-05.30	Inhibitor screening Factor VIII Assay and Fibrinogen Assay	Mr Surendar Singh, Senior Lab Technician, Transfusion Medicine, CMC Vellore
05.30-06.00	QC in Coagulation	Dr Susheela Innah, Professor, Transfusion Medicine, Jubilee Mission Medical College, Thrissur
Post Test - Feedback & Vote of Thanks		

PRECONFERENCE
WORKSHOP

FLOW CYTOMETRY IN TRANSFUSION MEDICINE

22nd November 2018 | **Dr Shenoy's CARE** (Centre for Arthritis and Rheumatism Excellence) Nettoor, Cochin

TIME	TOPIC OF DISCUSSION	SPEAKER
08:00-08:30	REGISTRATION	
08:30-09:00	PRE TEST	
09:00-09:30	Basic Consepts of HLA and Donor Specefic Antibody Screening in Organ Transplantation	Dr Dolly Daniel, Professor, Transfusion medicine, CMC Vellore
09:30-10:00	Introduction to flow cytometry & Applications of flow cytometry in Transfusion Medicine	Dr Anil Handoo, Senior Consultant, Pathology BLK Hospital, Delhi
10:00-10.30	Transplant Immuno - Diagnostics: Basics of Flow cytometric HLA Cross - Match - Cell based and Bead based assays	Dr Anil Handoo, Senior Consultant, Pathology BLK Hospital, Delhi
10:30-11.00	Tea Break	
11:00-13:00	LUMINEX FLOW CYTOMETRY - Lysate DSA, PRA, SAB	Dr Dolly Daniel
	FCXM Cross Match - Wet LAb 1. Experiment design 2. Antibody staining (FCXM) Wet workshop demo 3. Sample acquisition (FCXM) Wet workshop demo	Dr Ansu & Dr Amitav Mohanty
13:00-13:30	Residual leukocyte counts by flow cytometry: Concepts and protocols	Dr Anil Handoo
13:30-14:00	Lunch	
14:30-15:00	Stem cell enumeration protocols - Historical aspects and basic fundamentals, including ISHAGE	Dr Anil Handoo, Senior Consultant, Pathology, BLK Hospital, Delhi
15:00-16:00	ISHAGE based sample processing and staining protocols - Wet workshop demo & Quality assurance and Proficiency Testing discussion	Dr Amitav Mohanty / Dr Anil Handoo
16:00-16:15	Tea Break	
16:15-17:00	Platelet flowcytometry: Regular assays and unchanted vistas!	Dr Anil Handoo, Senior Consultant, Pathology, BLK Hospital, Delhi
17:00-18:00	POST TEST, WRAP UP, VALEDICTORY, FELICITATIONS	

TRANSMEDCON 2018 KOCHI

SCIENTIFIC PROGRAMME

Day 1 23rd November 2018

Plenary Session		
09:00-09:15	Evoking an Integrated Approach: Conference Theme	Susheela Innah
09:15-09:40	Research in Transfusion Medicine	Rajendra Chaudhary
09:40-10:05	Innovations in Transfusion Medicine	R N Makroo
10:05-10:20	Administrative Role of Transfusion Medicine Specialists	Manisha Shrivastava
ISTM - BC Sangal Oration - Prof Neelam Marwaha		
10:20-10:50	Haemovigilance in India-From Policy to Practice	
10:45-11:00	TEA BREAK	
ISBT Session - Best of ISBT Toronto		
11:00-11:30	RHD Hemolytic Disease of Fetus and Newborn	Ellen van der Schoot
11:30-12:00	Audit and Guidelines in Transfusion: What works and what doesnot works	Simon Stanworth
12:00-12:30	The Renewed ISBT Code of Ethics	Judith Chapman
12:30-13:00	EQAS in Immunohematology	Jenny White
13:00-14:00	LUNCH	
14:00-15:30	Post Graduate Quiz - Preliminary (Venue: Grand Salon)	

VEMBANAD I			VEMBANAD II		
Platelets Session1A			**Transplant Immunology Session 1B**		
TIME	**TOPIC**	**SPEAKER**	**TIME**	**TOPIC**	**SPEAKER**
14:00-14:20	Platelet Serology in Neonatal Thrombocytopenia	C Shivaram	14:00-14:20	Quality Control & Accreditation in HLA Lab	Dolly Daniel
14:20-14:40	Platelet Transfusion in Refractory Patients	R R Sharma	14:20-14:40	Pre-Transplant compatibility testing in Kidney Transplants	Aseem Tiwari
14:40-15:00	Flowcytometry in Platelet Disorders	Anil Handoo	14:40-15:00	HLA Typing: BMT Physician's Perspective	Chandran K Nair
Donor Management Session 2A			**Stem Cell Program Session 2B**		
15:10-15:30	Error Management in Blood Collection	Ravneet Kaur	15:10-15:30	Stem Cell Apheresis and Mobilisation Protocols	Anil Khetarpal
15:30-15:50	Challenges in Sero-Reactive Donor Counselling	Tulika Chandra	15:30-15:50	Cryopreservation Protocols for Stem Cells and Factors Affecting Engraftment	Satyam Arora
15:50-16:10	Medication and Donor Deferral: Science Behind It	Abhishekh B Gowda	15:50-16:10	Granulocyte Transfusions in Neutropenia-A Game Changer ?	Sabita Basu
16:10-16:30	Managing Emergencies in Blood Donation Room	Nishanth Menon	16:10-16:30	Protocols of Donor Lymphocyte Infusion	Rasika Setia
16:30-17:30	Free Paper		16:30-16:40	Free Paper	
17:30-18:30	**Poster Walk**				
18:30 Onwards	**Inauguration, Award distribution and Dinner**				

Day 2 24th November 2018

VEMBANAD I			VEMBANAD II		
07:00-08:00	Meet the Professor - Simon Stanworth				
08:00-09:00	Free paper		8:00-9:00	Free paper	
9:00-10:00 Vembanad II PLENARY SESSION					
			9:00-9:30	Mortality Reduction in Massive Hemorrhage! How can a Transfusion Consultant Help?	Klaus Gorlinger
			9:30-9:55	Whole Blood Automation	Anupam Chhabra
			9:55-10:00	Video Presentation	
VEMBANAD I			VEMBANAD II		
Cytapheresis Session 3A			**Hemostasis, Bleeding and Transfusion Session 3B**		
TIME	**TOPIC**	**SPEAKER**	**TIME**	**TOPIC**	**SPEAKER**
10:00-10:20	Therapeutic Leucapheresis	Rekha Hans	10:00-10:20	ROTEM for Transfusion Decisions	Sukesh C Nair
10:20-10:40	Optimising Pediatric Apheresis Collection	Rima Kusumgar	10:20-10:40	Quality Control in Coagulation Lab	Sitalakshmi S
10:40-11:00	Collection Performance Matrix in MNC Collection	Rasika Setia	10:40-11:00	Managing Hemostasis in Hemophilia Patients	Neeraj Sidharthan
11:00-11:20	TEA BREAK				
Immunohematology Session 4A			**NAT Session 4B**		
11:20-11:40	Applications of Select Cells in Immunohematology: Experience from Developing Country	Aseem Tiwari	11:20-11:40	Performance Evaluation of NAT Assays and Role of QC in NAT testing	Nico Lelie
11:40-12:00	A new approach in classification of the ABO blood group discrepancies	Sanmukh Joshi	11:40-12:00	Occult Hepatitis B: Tip of the Iceberg	Anand Deshpande
12:00-12:20	DAT Negative AIHA	Sudipta Sekhar Das	12:00-12:20	NAT Testing Cost Utility Analysis	Gita Negi
12:20-12:40	Non-Blood Group Antibodies: A Nuisance in Immunohematology	Shamee Shastry	12:20-12:30	ISTM Award JG Jolly	
12:40-13:00	Molecular Basis of Weak D in India	Swati Kulkarni	12:30-13:00	DEBATE :Centralization of Transfusion Services Aikaj Jindal, Naveen Agnihotri, Karishma Doshi, Prasun Bhattacharya	
13:00-14:00	LUNCH BREAK				
Quality Assurance Session 5A			**Administrative Issues Session 5B**		
14:00-14:20	Role of hospital transfusion committee in Blood Safety	Debasish Gupta	14:00-14:20	Designing a Blood Center	Joy Mammen
14:20-14:40	Nonconformities in Audits: Experience of An Assessor	Gajendra Gupta	14:20-14:40	Innovations in Blood Bank Information System: Experience Sharing	Maitrey Gajjar
14:40-15:00	Process Control in Component Lab	Sunil Rajadhyaksha	14:40-15:00	Audit of Blood Transfusion Services- A WHO Initiative	Meena D
Panel Discussion: Platelet Based Clinical Therapy Session 6A			**Panel discussion on Neonatal Transfusion Practice Session 6B**		
15:00-15:30	Moderator: Rajeshwari Basavanna	P S Dhot, Naveen Agnihotri Aboobacker Mohamed Rafi, Vineeth MB	15:00-15:30	Moderator: Ganesh Mohan	Anupam Verma, R Krishnamoorthy Sashidharan P Rakhi Balachandran Hemchandra Pandey
15:30-15:40	TEA BREAK				
Post Graduate Quiz			**Solid Organ transplantation Session 7A**		
15:40-16:45	Quiz Master - Aikaj Jindal Semi Final Round 1 Semi Final Round 2		15:40-16:00	Desensitisation in HLA and ABOi Renal Transplant	Prashant Pandey
			16:00-16:20	Therapeutic plasma exchange in Acute liver failure	Deepti Sachan
			16:20-16:40	Transfusion Support in Cadaveric and Live Donor Liver Transplantation	Surekha Devi

			Leucoreduction Session 8A		
			16:40-17:00	Quality Assurance in Leucoreduction Process	Rajesh Sawant
			17:00-17:20	Leucoreduction - Past, Present, and Future	Prashant Agarwal
			17:30-18:30	AGM of ISTM	
19:00 onwards			**Gala Dinner**		

Day 3 25th November 2018

VEMBANAD I			VEMBANAD II		
8:00-9:00	Free paper		8:00-9:00	Free paper	
How Do I - Session 9A			**Recent Advances - Session 9B**		
TIME	**TOPIC**	**SPEAKER**	**TIME**	**TOPIC**	**SPEAKER**
09:00-09:20	How Do I Implement Good Bedside Transfusion Practices	Priti Elhence	9:00-9:20	Cryopreservation of RBC and Platelets in a Military Setting	Joseph Philip
09:20-09:40	Transfusion Support in Critically Ill: Issues and Challenges	Meenu Bajpai	9:20-9:40	CAR T Cell Technology: Indian Scenario	Rahul Purwar
09:40-10:00	Platelet crossmatch : Feasibility and Role in Oncology set up	Priti Desai	9:40-10:00	How Transfusion Medicine can Evolve to Achieve Horizons in Regenerative Medicine	Puneet Jain
10:00-10:20	How Do I Set Up a Thalassemia Day Care Centre	Atul Sonkar	10:00-10:20	Next Generation Sequencing in HLA lab	Ankit Mathur
10:20-10:30	TEA BREAK				
Legislation and Accreditation - Session 10A			**Transfusion Transmitted Infections Session- Session 10B**		
10:30-10:50	Grey Areas in Licencing and Accreditation	Nidhi Bhatnagar	10:30-10:50	Screening for Syphilis and Donor Notification	Narinder Naidu
10:50-11:10	Role of quality indicators in blood bank	Bharat Singh	10:50-11:10	Bacterial Detection in Platelets	Shashank Ojha
11:10-11:30	Current Status of NABH accreditation for Blood Banks in India	Bindu Madhav Yenigalla	11:10-11:30	Transfusion transmitted Infections in stem cell donors	Sumathi S H
			11.30-11.50	Residual infection detection using NAT testing	N Rajakumar
Hematological Disorders - Session 11A			**Panel Discussion on Antenatal Alloimmunisation 11B**		
11:30-11:50	Updates in Management of ITP	K C Usha	11.50-12.40	Moderator: Arun R	Sangeeta Pahuja, Gagandeep Kaur Veena Shenoy, Vivek Krishnan, Rahul Kataria
11.50-12.10	Red Cell Exchange in Sickle Cell Disease	Joshua Daniel			
12:10-12:30	Establishing Comprehensive Hemophilia Care Center	Vijay Kumar			
Year in Review - Session 12A			**Panel Discussion on Bleed or Not to Bleed Donor 12B**		
12:30-12:50	Pathogen reduction : available techniques and current status.	Anju Dubey	12.40-13.30	Moderator: Vijay Kumavath	Nitin Agarwal, Archana Solanki Sajith Menon, Mohandoss Murugesan
12:50-13:10	Use of Tranexemic Acid to Reduce Blood Loss and Transfusion Requirements	Shaiji PS			
13:10-13:30	Evidence on effective hemoglobin thresholds for red cell transfusions	Chitra James			
13.30 Onwards	Valedictory Function followed by Lunch				

Symposia

HAEMOVIGILANCE IN INDIA- FROM POLICY TO PRACTICE

Dr. Neelam Marwaha, M.D; FAMS
Professor and Head, Department of Transfusion Medicine
Postgraduate Institute of Medical Education & Research,Chandigarh

Introduction

Transfusion of blood and its products is a life-saving intervention, but has its risks and accidents. Haemovigilance is as an important tool for blood safety. It is defined as "a set of surveillance procedures covering the whole transfusion chain from the collection of blood and its components to the follow-up of its recipients, intended to collect and assess information on unexpected or undesirable effects resulting from the therapeutic use of labile blood products, and to prevent their occurrence and recurrence" (http://www.ihn-org.net) [1]. Haemovigilance data from countries with well established haemovigilance systems has led to identification of frequency and causes of adverse reactions in recipients and complications during blood donation. Errors and deviations in processes in blood centres have been identified. Attention has also been drawn towards near-miss events and rapid alerts.

Haemovigilance systems in various countries

The risk of viral transfusion transmissible infections served as a trigger for haemovigilance in France where notification of adverse events through transfusion was made mandatory through legislation within the ambit of the Blood Transfusion Safety Act in 1993[2].In Japan, the Japanese Red Cross was entrusted with the responsibility of collecting information on adverse effects related to blood transfusion since 1992[3]. In the United Kingdom the Serious Hazards of Transfusion (SHOT) was established as a system of voluntary reporting of transfusion associated adverse events [4]. A similar voluntary system exists in the Netherlands [5]. Several countries in Europe established haemovigilance systems and the European Haemovigilance Network –EHN, was formed in 1997.The network commenced with five countries and increased to a membership of 28 countries, some from outside Europe. This network then transformed to the International Haemovigilance Network-IHN, and provides a platform for information sharing between member countries [1]. The National Healthcare Safety Network (NHSN) of the Centers for Disease Control, U.S.A. developed haemovigilance as a component within biovigilance [6].

Haemovigilance in India

The National Blood Policy was formulated in 2002 with an Action Plan on Blood Safety in 2003. Objective 5.7 of the Action Plan stated the development of a national programme of haemovigilance [7]. However, Blood Safety division of National AIDS Control Organisation (NACO) had to focus first on improving and strengthening the blood transfusion services. Data on blood collection, component preparation and issue, and seroprevalence of transfusion transmitted infections in blood donors is submitted by all licensed blood banks to NACO. Records of transfusion reactions are maintained in blood banks as part of licensing requirements. However the development of a national reporting mechanism for transfusion related adverse events could not be initiated until 2012.

The haemovigilance programme was initiated under the overall ambit of Pharmacovigilance Programme of India (PvPI).The PvPI was set up under the aegis of Indian Pharmacopoeia Commission (IPC) and Central Drugs Standards Control Organization (CDSCO) in July 2010 with IPC as the coordinating centre and resources were allocated for this programme by the government. Successful establishment of PvPI paved the way for Haemovigilance Programme as a joint venture between IPC and National Institute of Biologicals (NIB) which is the co-coordinating centre for HvPI. Now HvPI is a mandate of NIB. The programme commenced for recipient haemovigilance but in 2016 donor vigilance was also added [8].

The objectives of the recipient haemovigilance programme are to;

1. Monitor transfusion reactions
2. Create awareness amongst health care professionals
3. Generate evidence based recommendations,
4. Advise CDSCO for safety related regulatory decisions
5. Communicate findings to all key stakeholders
6. Create national and international linkages

The objectives of the donor vigilance programme are to;

1. Improve donor safety and satisfaction through monitoring, analysing and researching adverse events
2. Analyse risk factors , implement and evaluate preventive measures
3. Provide evidence based support for Blood Donation Process improvement
4. Reduce the frequency of adverse events
5. Increase donation frequency

The HvPI is based on WHO guidelines for Adverse Event Reporting and Learning Systems [9].The key principle is to focus on systems improvements and not blame individuals. It should be non-punitive, confidentiality of the reporting blood bank/nodal officer should be maintained, and the programme should be independent of punishing authority.

A five year roadmap, year 2012-17 with specific targets for HvPI was prepared [10] consisting of the following phases;

- Initiation Phase (year 2012-13)
- Expansion and Consolidation Phase (year 2013-15)
- Expansion and Maintenance Phase (year 2015-16) and
- Optimization Phase (year 2016-17.

The coordination and implementation was planned through expert sub-groups ;

- Core Committee
- National Advisory Committee
- National Executive Committee
- Signal Review Panel
- Quality Review Panel and
- Training Panel

The assigned roles and responsibilities of the functional units of haemovigilance are as follows;

Reporting units (Blood banks/Departments of Transfusion Medicine)

- Generate transfusion reaction reports
- Perform Causality assessment
- Submit reports online through HV software

National Coordinating Centre – HvPI

- Review quality and completeness of data
- Collation and Analysis of data
- Preparation of guidance documents
- Training and Awareness programmes
- Feedback to reporting units
- Recommendations for blood safety to
- Forward recommendations of HV – National Advisory Committee to CDSCO

CDSCO–DCGI (Drug Controller General India)

- Formulate safety related regulatory decisions
- Communication of blood and blood products transfusion safety related decisions to stakeholders
- To monitor compliance

Development of HaemoVigil software

Indigenous software was developed to facilitate collection and collation of haemovigilance data from various centres across the country. The IT cell of NIB and IPC developed this software. Security Audit and Compliance Audit were obtained through National Informatics Centre (NIC) , Government of India. The software – Haemo-Vigil was hosted on NIB website on 24th January 2013.

Elements of the Reporting system

At present, the programme is voluntary though an office memorandum has been issued from the office of DCGI dated 4th December 2015 to all licensed blood banks to enroll with HvPI and obtain user id and password. The Transfusion Reaction Reporting Form (TRRF) version 1 was finalized by the National Advisory Committee. Reporting was initiated for severe transfusion reactions as per the definitions of International Society of Blood

Transfusion (ISBT) Working Party for Haemovigilance. Milder reactions were classified as 'others'. When the reports were reviewed the data was incomplete for validation. The TRRF was revised to obtain investigation data of a transfusion reaction in addition to diagnosis of the reaction and its casualty/imputability to the transfusion. From May 2016 all transfusion reactions are being reported through TRRF version 2.

Membership of International Haemovigilance Network (IHN) has been granted to India. This would strengthen further to get access to standard tools for quality data collection and collation.

User awareness and training

To disseminate information about the programme a series of continuing medical education (CMEs) programmes were held across the country .Information to launch this national programme as part of PvPI was first made during the 1st national conference of Indian Society of Transfusion Medicine on 24th November, 2012 at Jaipur during the ISBT supported session on "Haemovigilance". Since then a series of CMEs are being regularly organized state-wise in the country . The CME contents are kept uniform and focus mainly on i) creating awareness about the programme ii) giving information on what is reportable, how it is defined and documented, and iii) online demonstration of uploading reports using Haemo-vigil software. The Haemovigilance Newsletter is published and distributed on a biannual basis from NIB.

Summary of Transfusion Reaction Reports

From February 2013 to 30th April, 2016 a total of 3903 reactions were reported to HvPI through TRRF version 1. FNHTRs constituted the most frequently reported transfusion reaction (40.84%). Mild allergic reactions which were reported in 'other reaction' category comprised 27.26% of the reactions. Anaphylactic / hypersensitivity reactions were 12.68% and hemolytic transfusion reactions 4.31% (164 out of 3903). Out of these 164 hemolytic transfusion reactions, 22 (0.56%) were due to ABO mismatch, 58 (1.49%) due to non-ABO alloantibody and 84 (2.15%) due to non-immune causes. There was incomplete information on cause/error which led to the ABO mismatch. In the 9 out of 22 cases where information was available, 6 cases had a bedside sampling / administration error. Alloantibodies were identified and reported in 3 patients only. In the rest, immune-hematology work-up was not available for review in the TRRF. The non-immune hemolytic transfusions reactions were mainly due to ward/bedside storage and handling errors as per available information. The remaining categories of transfusion reactions reported were TAD (2.38%), TACO (0.67%), PTP (0.64%), TTBI (0.46%), TRALI (0.26%) TT Malaria (0.03%) and TAGvHD (0.03%). In the category of 'other reactions' majority were mild allergic reactions (27.26%) and mild FNHTRs (5.02%), rest were either not specific or symptoms not possible to classify into a specific reaction.

Key recommendations

1. The programme needs to cover all licensed blood banks in the country.
2. There is a need to improve and implement standard technology for blood grouping, have quality tested blood grouping reagents and trained staff.
3. The technologies for alloantibody screening and identification need to be strengthened/introduced in blood banks for proper investigation and diagnosis of immune HTRs
4. Blood banks should be encouraged to prepare leucofiltered products and set up plateletpheresis technology for good quality platelets to reduce FNHTRs and alloimmunisation.
5. There is a need to create awareness for the clinicians about the different types of blood components, their appropriate clinical use and detection and reporting of adverse events.
6. All hospitals should have hospital transfusion committees which formulate good transfusion practices and ensure that all bedside staff-house physicians, interns, residents, nursing staff is trained periodically.

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RESEARCH IN TRANSFUSION MEDICINE

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The field of transfusion medicine began 100 years ago, in 1900, with the discovery by Landsteiner of the ABO blood group system. This discovery demonstrated that plasma proteins have defined specificities. These plasma proteins, later termed antibodies, recognize epitopes on red blood cells. These discoveries constituted a starting point for blood banking. During the past 3 to 4 decades, significant advances have been achieved in improving the blood supply with respect to availability, safety, and fractionation into components, such as red blood cells, platelet concentrates, and plasma proteins.

Research Opportunities	Major forecasts
Improved blood transfusion practices	**Optimal blood utilization**
• Develop measures to assess parameters for transfusion and the quality of blood prior to transfusion and to improve blood administration practices	• Prevention of over transfusion & under transfusion. • Improvement of efficacy • Prevention of adverse effects
Pathogen inaction	**Safety of blood supply**
• Develop in vitro approaches to PI and Leukocyte inactivation • In vitro manipulation of blood products	• Prevention of TTI and leukocyte related adverse effects • Artificial blood substitutes
Plasticity and commitment of multi potential stem cells	**Development of tissue engineering / regenerative medicine**
Advancement in cytokines / chemokines in hematopoietic development	Advances in collection, storage and ex vivo expansion of stem cells for transplantation or gene therapy
Mechanism of alloimmunization to blood cells & plasma proteins	Treatment / Prevention of alloimmunization
• Approaches to tolerance induction to allogeneci cells • Prediction of alloimmunization	• Prevention of platelet refractoriness • Prevention of HDN / TA-GvHD • Prevention of hemolytic reaction
Immunobiology of bone marrow & circulating lymphocytes	Development of novel cellular therapies, Immunotherapies

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INNOVATION IN TRANSFUSION MEDICINE

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Various innovations have taken place in the field of transfusion medicine to enhance the blood safety but their implementation varies from developed countries to developing and under developing countries. Only selective innovations are being followed in developing countries including India because of cost constrains & lack of policy decisions. The innovations which have taken place in last couple of decades are:

Blood donor policies, collection of blood, processing & storage

Laboratory testing technologies including Infectious marker screening & Immuno-haematology (Blood group serology)

3. Better Patient Blood Management

Blood donor policies & collection of blood, processing & storage

It was in 1971, Professor Richard M.Titmus at London school of Economics published the concept of Gift Relationship: from human blood to social policy. The impact of this was far reaching to change the policy of collecting blood from paid blood donors to voluntary blood donors as this was proved after testing that infection rate in voluntary blood donors is less compared to voluntary blood donors

Advancements at the donor selection, blood collection, processing and storage

After general physical examination of blood donor, haemoglobin estimation is the first test in blood donor selection. This test has undergone innovation from Hemoglobincyanide (HiCN) Method/ Sahli´s Method which are time consuming to point of care (POC) testing with new technology like hemocue that measures haemoglobin on broad spectrum photometry. The development of sterile disposable plastic blood collection bags (double, triple, ,quadruple, quintuple bags with sample collection pouch)along with the innovations in the anticoagulant preservative solution, additives made the preparation of blood components easier & practical. Automation in component separation has decreased the man-hours and improved the efficiency and quality of blood components. With the introduction of blood collection bags with integral leucocyte filters the process of providing leucoreduced blood components became easer & practical thereby improving the blood safety.

The innovation of apheresis technology using cell separator machines (both continuous & discontinuous) for the collection of single donor platelets, single donor plasma, granulocytes, double unit red cells and peripheral blood progenitor cells has great impact in the modern transfusion therapy.

Testing technologies

The innovation in testing technologies both in immunohaematology (blood group serology) & infectious marker screening has greatest impact on blood safety.

The innovation in Immuno-haematology laboratory (blood group serology)-the backbone of blood banking has moved slowly from from tile/slide/tube/semiautomated to fully automated technologies. Most recent innovation in immunohaematology laboratory are the functional or cellular immunoassays such as monocyte monolayer assay, antibody dependent cellular cytotoxicity assay and chemiluminescence test. The development of monoclonal antibody reagent was the greatest innovation in blood group serology laboratory. The innovation of molecular typing in going to have an important impact in in blood group serological laboratory.

Infectious marker testing laboratory

The development of Enzyme Immuno- Assay (EIA) for infectious marker screening has greatest impact on blood safety.The transfusion transmitted infection testing has taken a paradigm shift from rapid assays to ELISA, CMIA to Nucleic Acid Amplification tests thereby improving the blood safety drastically. HbsAg testing was introduced in the year 1968, followed by HIV in 1985 and HCV in 1990 in developed countries. India made HCV testing mandatory in 2000.In-spite of all these tests, there remains no zero risk blood. To further minimise the gap of known pathogens and eliminate the unknown, pathogen reduction techniques came into play which by use of different methods like solvent-detergent, amotosalen, riboflavin for inactivation by different principles. Verax PGD has evolved as a good POC testing for bacterial detection.

Better Patient Blood Management (PBM)

Introduction of PBM has revolutionised the clinical transfusion medicine specialty and has gained momentum over the last decade. Proper patient assessment, judicious use of blood and blood components with adherence to maximal surgical blood order schedule, implementation of massive blood transfusion protocols though prevalent in the western world since a long time are becoming more popular in the country.

Increase in demand for apheresis products due to better responses has lead double unit collection for platelets and multi-component apheresis more common.

Introduction of recombinant products like Recombinant factor VIII (Recombinate), Recombinant factor IX (Benefix), Recombinant factor VII (Novoseven), vWF, AT III, Alpha1 protease inhibitor, haemopoietic growth factors like EPO, G-CSF, GM-CSF, TPO, ILS, TNF have increased the efficacious management of various conditions with minimising the side effects. The ease of mobilisation, collection and success of peripheral blood stem cells has mostly taken over the invasive harvest of bone marrow and its transplantation.

The science of transfusion is ever evolving and newer concepts keep cropping up like dendritic cell therapy, CAR-T cell therapy, vigilance programs and artificial blood. It is the time frame when introduced into practice to call it a newer addition to the existing knowledge.

RHD HEMOLYTIC DISEASE OF FETUS AND NEWBORN (HDFN)

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HDFN is a disease caused by maternal IgG alloantibodies against paternally inherited RBC alloantigen, for which the maternal cells are negative. HDFN has been a major cause of fetal and neonatal death throughout history. The clinical picture of untreated HDFN is very variable and starts to develop in fetal life. If alloimmunization is detected in time, the disease can be prevented in most cases. Today, advances in Doppler ultrasonography have made non-invasive detection of fetal anemia possible. In case of severe fetal anemia, the anemia can be corrected by intra uterine blood transfusions (IUT). The perinatal survival rate of cases treated with IUT is around 95%. The development of kernicterus after birth can be prevented by HDFN phototherapy or in very severe cases by exchange transfusion after birth. For timely treatment, all developed countries have screening programs in place to identify alloimmunized pregnancies at risk. Without a screening program, HDFN during pregnancy can only be suspected by decreased fetal movements or sudden fetal death or by (early) neonatal jaundice after birth. Before the introduction of postnatal anti-D immunoprophylaxis HDFN was one of the major causes of perinatal death. In the Netherlands postnatal immunoprophylaxis was introduced in 1969 and resulted in a drastic decrease of the prevalence of anti-D immunization from 3.5% to 0.5% in the 90s. In several countries, antenatal prophylaxis is currently combined with postnatal prophylaxis, which further diminishes the immunization risk. We recently obtained strong evidence that anti-D immunoprophylaxis is also preventing immunization towards other RBC antigens. Guiding antenatal prophylaxis to only those women who carry a D-positive child can be done by non-invasive fetal RHD typing using cell-free fetal DNA present in maternal plasma. Despite adequate antenatal and postnatal anti-D immunoprophylaxis still 1 to 3 in 1000 D-negative women develop anti-Rh D antibodies, and in about 30% of these cases severe HDFN develops. The specificities of non-D alloantibodies detected in a predominantly European population of pregnant women are, in order of frequency, anti-E, anti-K, anti-c, anti-Cw, anti-Fya, anti-S, anti-Jka and anti-e. Any antibody that can pass the placenta and react with an antigen expressed by fetal RBCs can theoretically result in HDFN. However, only in a minority of immunized pregnancies, the presence of the antibody results in clinical disease. Severe HDFN, defined as need for intrauterine treatment and/or blood transfusion after birth, was almost exclusively seen in pregnancies with anti-c and anti-K antibodies, and rarely in pregnancies with other (non-D/c) Rh-antibodies. There is a striking, and unexplained, difference in the incidence of ABO-mediated HDFN between populations. The incidence is around 0.3–0.8% in the Caucasian population, versus 3– 5% in Black or Asian populations, also with a more severe clinical course. Other alloantibodies detected in East Asian populations from China and Taiwan are antibodies specific for hybrid glycophorins of the MNS system, especially antibodies reactive with RBC expressing GP.Mur.

During the conference I will give an overview on current knowledge regarding HDFN, with an emphasis on

fetal RHD typing , laboratory tests to predict the pathogenicity of anti-D antibodies and the working mechanisms of Rh D immunoprophylaxis.

AUDITS IN CLINICAL TRANSFUSION

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Given the increasing numbers of completed randomised trials evaluating use of red cells and platelets in transfusion, an important question now is how to ensure this evidence changes practice. Many different strategies that have been applied to change and optimise clinical practice. The intention is to ensure practice becomes more closely aligned to recognised or evidence-based standards of care, and the evidence to practice gap is reduced. These strategies includeguidelines, education, audit and feedback and (more recently) electronic computerised order-reviewto name but a few.These strategies are indeed types of interventions, and moreover behaviour change interventions. As for any intervention, they can be subjected to the types of research scrutiny more commonly seen for drug trials or blood components. But how effective, are these interventions to change practice, and specifically transfusion practice, and what do we know about the relative or comparative (cost-) effectiveness of different interventions? An additional consideration is to understand which interventions work best in a resource rich country setting at a hospital, backed up by heavy investment in IT, compared to a rural and resource poor setting. This talk will focus on Audit and Feedback (A&F) as the most frequently used quality improvement strategy, which aims to improve patient care and outcomes. The impact of A&F has been explored in systematic reviews that document only modest and variable effects, despite the likely high costs of A&F programmes, such as those undertaken nationally. To further understand and enhance A&F, a programme of research termed AFFINITIE 'Development & Evaluation of Audit and Feedback InterventionstoIncreaseevidence-based Transfusionpractice';http://www.ccf.nih r.ac.uk/ PGfAR/about/Pages/Abstract.aspx?ID=12588) has been completed in UK. AFFINITIE adopted a multidisciplinary approach that applied behavioural theory and evidence to optimize the design and delivery of feedback on transfusion practice. These interventions were then tested by embedding them in the context of transfusion national audits intwo national randomized cluster trials. The audit topics were preoperative surgery management and use of blood in patients with haematological malignancies.

THE RENEWED ISBT CODE OF ETHICS

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The ISBT Code of Ethics defines the ethical principles and rules to be observed in the field of Transfusion Medicine.

The first version of the ISBT Code of Ethics was published in 1980 in response to WHA 28.72 which promoted the development of national blood services based on Voluntary Non Remunerated Blood Donation (VNRBD). It also recommended the introduction of legislation governing the operation of blood services and to take other actions necessary to protect and promote the health of blood donors and of recipients of blood and blood products.

The Code was revised in 2000 and 2006 but the changes were minimal.

The ISBT Board of Directors requested a review of the Code in 2014 because of Increasing criticism of the Code including failure to acknowledge the on-going, and increasing , commitment of Plasma Derived Medicinal Products (PDMPs) derived from paid plasma.

The Revised Code of Ethics outlines the responsibilities of Professionals involved in the field of transfusion medicine to donors and to patients. These responsibilities are aligned to the well acknowledged four principles of biomedical ethics: autonomy, non-maleficence, beneficence, and justice. A specific aspect of another principle, dignity, covering all four principles, specifically applies to the donor.

The new code contains a series of statements identifying the ethical principles that should underpin the way we, as a body of professionals in the field of transfusion practice, should work. These principles are within our control and aim to ensure the highest standards of professional service to both donors and patients. This approach aims to provide clarity on why the principles are important and allows the statements to be better grouped than is the case in the current version. A series of footnotes are also provided to provide information on the source underpinning the statements.

The statements are related to

- The patient; in addition to equitable access to treatment, the patient has a right to expect that her/his autonomy is respected, and that a decision to transfuse is made for her/his benefit and avoids the risk of unnecessary or unreasonable harm to her/him.
- The donor; The autonomy and dignity of the donor, including potential donors, must be respected at all times. The donor does not physically benefit from the donation, thus the donor should be exposed to as little harm as possible, in compliance with the principle of non-maleficence
- Health Authorities; Health Authorities have a responsibility to ensure that Blood Services are established and progressively developed so as to assure the needs of the patients using an ethical framework encompassing the care of both donors and patients.

The new code also contains a continuing commitment to VNRD and addresses the issue of access to PDMPs.

The new Code of Ethics was approved by the General Assembly held in Copenhagen in 2017. It should be a living document that is relevant to the professional activities of members of the Society and should be easily accessible. Ongoing review is needed to ensure that the Code remains relevant and that it responds to the changing world of transfusion medicine and science

EQAS IN IMMUNOHEMATOLOGY

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External Quality Assessment (EQA) involves provision of identical samples for testing by a group of laboratories at local, national, regional or international level. Inter-laboratory comparison of results provides objective assessment for individual laboratories and an insight into the overall level of performance. There is additional benefit where the EQA scheme has an educational focus and provides support to improve practice.

EQA is an essential part of a laboratory quality management system, complementing but not replacing other quality assurance measures such as internal quality control and competency assessment. EQA is primarily intended to identify problems with laboratory systems rather than individuals, and gives a 'snapshot' of a laboratory's performance at a given time.

EQA schemes can monitor qualitative tests such as blood grouping or antibody screening, quantitative tests, e.g. antibody titration, and other activities vital to the provision of safe blood transfusions, e.g. pre-analytical procedures, interpretation of results, selection of blood and reporting. Examples from UK NEQAS for Blood Transfusion Laboratory Practice (BTLP), which provides EQA to 350 UK and over 650 non-UK laboratories, are used throughout this presentation.

Participation in EQA is a requirement for ISO 15189 accreditation, where there is focus on the resolution of problems identified through EQA, rather than an expectation that errors will never be made. Most benefit is gained from EQA where laboratories process the samples, as far as possible, in the same way as clinical samples, ensuring that EQA errors reflect those that could occur with clinical testing in each laboratory, and overall data collected by the scheme is reliable and representative of clinical practice.

For individual participating laboratories, EQA can identify both procedural and technical issues, enabling implementation of corrective and preventive actions to improve testing and systems of working. Where EQA reports provide an anonymous commentary on all errors and associated learning points, laboratories can review at their own procedures to see whether similar errors could occur locally under different circumstances, leading to an improvement overall.

Collated EQA data can provide an insight into the effectiveness of reagents, kits and specific technologies and may identify inherent problems or limitations. This can be useful both to individual laboratories making decisions on selection of methods, and to manufacturers of blood bank technologies and reagents. By linking results with laboratory techniques and procedures, specific strengths and weaknesses can be identified, driving positive change.

EQA schemes can work with other organisations to contribute to raising standards. Reviewing data from EQA exercises or questionnaires that have been designed to investigate laboratory errors highlighted by haemovigilance schemes can help to pinpoint the underlying causes and give an indication of level of risk of these errors occurring elsewhere. Areas of practice that could be improved with clear guidance can be identified through EQA, and the uptake and effectiveness of current guidelines from professional societies can be monitored. Where subsequent EQA exercises demonstrate correlation between performance and implementation of guidelines, this can create a cycle of improved practice.

PLATELET SEROLOGY IN NEONATAL ALLOIMMUNE THROMBOCYTOPENIA

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Background -Neonatal alloimmune thrombocytopenia (NAIT) is caused by maternal alloimmunization to paternally derived fetal platelet antigens. These antigens are not present on the mother's platelets and hence the mother forms antiplatelet antibodies leading to neonatal thrombocytopenia. Hence NAIT is the platelet equivalent of haemolytic disease of the newborn (HDN).

Case Report – A 13 days old male baby born to a primi at 35 weeks of gestation developed respiratory distress and had to be ventilated for 3 days. Severe thrombocytopenia(21000/ul) was noted. .Hemoglobin, White cells coagulation parameters were normal. Mother had normal platelet count. Direct Antiglobulin test was positive, and was attributed to IV immunoglobulins received by child. Random donor whole blood derived platelet transfusion was given to correct the thrombocytopenia but did not yield a satisfactory response and only cross matched SDP compatible with baby's serum yielded a good response. Platelet cross match was done by using Capture-P, Ready screen Platelet- crossmatch kit.

Diagnosis-NAIT was suspected and the diagnosis established by demonstrating incompatibility between maternal serum and baby's platelets and also maternal serum and her husband's platelets.Platelet antigen studies are difficult to perform in our country.

Discussion: Most cases of NAIT are caused by alloantibody to HPA-1 a, HPA5 b (Br^a) and HPA -15B (Gov ^a). Other alloantigens implicated in Neonatal Alloimmune thrombocytopenia are PLA2, Bak^a, Bak^b, Pen^a,Pen^b, Br^b, Go^b.

Unlike Rh-HDN which usually spares the first pregnancy, up to 60% of the cases of NAIT occur during the first pregnancy. The incidence is estimated to be 1/1000 live births and NAIT account for approximately 20% of neonatal thrombocytopenia. Not all babies where there is incompatibility between the mother and fetal platelets develop NAIT, possibly because there is a genetic restriction to maternal alloimmunization based on HLA type.

Most cases of neonatal alloimmune thrombocytopenia are discovered after birth. Mildly affected infants may be asymptomatic. In those with severe thrombocytopenia, the most common presentation is the presence of petechiae or a cephalohematoma at birth in an otherwise healthy newborn. 10-20 % of neonates develop ICH and 10% die.

Therapeutic intervention focuses on increasing the neonate's platelet count in case of severe thrombocytopenia (<30,000/ul) by use of IVIG and platelet transfusions. The platelets to be transfused should be compatible with maternal serum.

Conclusion: NAIT is probably underreported and under diagnosed. Antenatal diagnosis and treatment will help prevent intrauterine ICH which may occur in 2-7% of NAIT patients. Genetic counselling as well as obstetrical high risk support for future pregnancies is strongly recommended once the diagnosis has been established

QUALITY CONTROL AND ACCREDITATION OF THE HLA LAB

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"Perfection is not attainable.....But chase it, and somewhere along the way, you will catch Excellence". The famous, and ever so true words of a football coach – Vince Lombardi, who revived a football team, which was considered done with. The journey towards perfection exists in all fields of our work. And particularly in the field of diagnostics, if we fail in continuously engaging on this journey, the consequences are extremely large. The entire concept of quality control and accreditation are steps in our journey, of achieving excellence, and minimising errors, thus enhancing the quality of patient care..

While quality has been defined in many ways, it is important to recognise that it is a culture that needs to be infused into our organisations. The setting up of a quality management system, a quality policy, quality objectives, quality indicators, standard operating procedures, document control, quality control and participation in external quality assessment schemes are some of the steps in this journey.

While the HLA laboratory is no exception to other laboratories, the involvement with pre transplantation work up of donors and recipients has made it necessary to ensure that it conforms to minimum standards required to support specific clinical activities. Apart from national accreditation in our country, accreditation by other organisations such as ASHI and EFI are also possible.

It is critical for HLA laboratories to embark on this journey of quality, which is ongoing, to ensure best possible diagnostic and clinical support services.

HLA TYPING IN BONE MARROW TRANSPLANT, CLINICIAN'S PERSPECTIVE

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Human major histocompatibility complex (MHC) is located on the short arm of chromosome 6 and contains more than 300 genes. Near one third of these genes are involved in immune related functions . Among these, genes involved in antigen presentation and processing are the classical Human Leucocyte Antigens(HLA), both class I and class II. HLA antigens are expressed on almost all the nucleated cells in body and hence play an important role in transplant immunology (rejection/acceptance).Clinically important HLA class I genes are A, B and C. Class II genes are DP, DQ and DR. At each HLA locus there are two parenterally derived alleles, majority of the time , being heterozygous.

Hematopoietic stem cell transplant from a fully HLA matched sibling is the curative treatment for a number of hematologic disorders. Unfortunately the chance of getting HLA matched sibling for any patient is only 25-30 %. The alternative options are variably mismatched related donors, matched unrelated donors, haplo identical donors, and umbilical cord blood stem cells (latter option less frequently used nowadays) .

Degree of HLA mismatch plays an important role in the success of transplant. Each allele mismatch leads to a progressive decline in survival post transplant. As stated, the best results are with matched sibling transplant due to less risk of GVHD , transplant related morbidity and mortality. If a fully matched sibling is not available, an unrelated donor search is immediately initiated. However it may take at least a period of 2-3 months for finding out and then procuring stem cell cells from an unrelated donor. So if the transplant is an emergency, the

physician will have to opt for haplo identical donors or cord blood stem cells, as the time time taken for getting these stem cells are much less . However these types of transplants are associated with higher transplant related complications and a higher chance of graft failure in cord blood transplants.

ERROR MANAGEMENT IN BLOOD COLLECTION

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Blood collection from a blood donor is a complex process which involves

- Donor Education/ Pre-donation counselling
- Taking a detail history of each prospective donor
- Physical examination
- Phlebotomy
- Post donation care

Highly regulated and technically specific blood collection process is vital to provide safe blood as well as for preparation of high quality blood component.

Errors in donor blood collection

Clerical Errors:

- Improper donor identification
- Improper preparation of blood bag
  Wrong identification number on the blood bag/ satellite bag
  Wrong collection/expiry date on the blood bag
- Mislabelling of pilot tubes

Technical Errors:

- Improper preparation of venipuncture site
- Faulty technique
- Inadequate mixing of blood with anticoagulant
- Inappropriate volume collection (under collection/ over collection)
- Sampling error

Sample collected in wrong pilot tube

Non collection of blood sample

- Improper sealing
- Inappropriate discarding of needle

These errors can lead to serious adverse patient outcome and indicate system failure. There should be a system for identification, documentation and analysis of such errors.

To prevent such errors all blood centres must have appropriate Standard Operating Procedure (SOP), trained staff and properly validated and functioning equipment for collection of blood from donors.

Blood collection Procedure

Pre-donation Education/ counselling:

- The potential donor should be given pre-donation information, advice and counselling about the process of blood donation.
- Consent of the donor should be taken for phlebotomy and screening test for various transfusion transmitted diseases.

Physical examination:

- The prospective donor should be in good health and must meet DGHS requirement for donor selection.
- Check for the donor weight, blood pressure and haemoglobin.

Preparation of blood collection bag:

- Check for labels on blood collection bag and all its satellite bags.
- Blood collection bag, satellite bag, sample tubes and donor record should have the correct donor name and identification number.
- Appropriate date of collection and date of expiry should be mentioned on blood collection bag.

Donor identification

Identification of the donor and thus the donor product from collection to final deposition is critical to the safety and protection of both donor and recipient. There should be a numeric or alphanumeric system to identify the donor and donor blood unit and pilot tubes.

Preparation of venipuncture site:

- An inspection of both anticubital fossae must be done to identify any skin disease, scarring or evidence of intravenous drug use.
- Adhere to aseptic technique by following thorough skin preparation procedure.
- Do not touch the venipuncture site once the skin has been disinfected.

Phlebotomy:

- Must be performed by the trained phlebotomist
- Collect blood by using closed system by a single clean venipuncture.
- Monitor filling of the blood bag and assure proper mixing with anticoagulant to prevent clotting
- Interact with donor. Collect adequate volume. NEVER LEAVE THE DONOR ALONE.
- After collection of desired volume, collect the sample in pilot tubes (after proper identification of pilot tubes).
- Seal the tube with sealer or by making multiple knots.
- Re inspect the blood bag for any defects; recheck donor registration no., pilot tubes, donor registration card.
- Ensure proper storage of blood bag at adequate temperature.

Post donation care:

- Guide the donor to refreshment room.
- Donor should receive post donation instructions, which include care of the venipuncture site, drinking liquids and appropriate post donation activity.
- The contact information of the transfusion centre should be provided to the donor to report any adverse reactions, to modify his or her donor history information.

Documentation:

The information pertaining to donor, adverse donor reaction or any deviation from Standard Operating Procedure should be documented in appropriate registers.

Equipment:

Proper maintenance and validation of equipments used in blood collection procedure is must.

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CHALLENGES IN SEROREACTIVE DONOR COUNSELING

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Reactive donor counseling forms an integral part of blood banking . Unfortunately changing guidelines and variability in screening techniques has created confusion in the counseling procedure. Presently there are still grey areas where the counsellers do not know how to direct the donor appropriately.

Department of Transfusion Medicine, KGMU deals with an annual collection of 70,000 blood units. Inspite of detailed interrogation , biometrics blood units come out to be reactive for HIV, HBV, HCV . Technology used is initial screening by chemiluminiscence technology (Abbot). ELISA negatives are screened by NAT Technology. All reactive donors are recalled and counseled . On recalling donors can be categorized into

Group1 - Contact details given by blood donor is false

Group 2- Donor receives the call but is unwilling to come to the blood bank

Group3 - Donor agrees to come and has to be counseled accordingly

Our policy for dealing for reactive donors are as follows:-

All reactive donors get registered as reactive in biometrics which ensures their traceability if they come for repeat donations.

Group1 : These donors probably may be professional donors or people not willing to reveal their identity. Confirmation is only possible if they come again for donation. Professional donors are permanently deferred by biometrics and the authorities intimated.

Group2: Donors may be coming from far flung areas and are unwilling to come due to economic reasons or time constraints. They are counseled to get themselves tested for all three tests of HIV, HBV and HCV in their local laboratories . They are also informed that the tests done by rapid methods may come out to be non reactive. Usually a follow-up call is done and the donors motivated to repeat their tests if non reactive or confirm their status if reactive so they can be counseled accordingly.

Group 3 : Donors which come into the blood bank are counseled for all the three TTI markers as initially informing them as HIV reactive has a lot of psychological and social hazards.

HIV reactives are usually taken to ICTC and their counselor takes over and performs their diagnostic test which is usually by rapid assays or by third generation ELISA. Donor reactive in Blood bank and ICTC is registered in ART. If a donor is non reactive by ICTC and reactive by NAT technology we recommend a follow up of 6 months to repeat the test. If the donor is Chemiluminiscence reactive and NAT non reactive we still recommend a follow up but usually in our experience these rare donors have turned out to be non reactive in the follow-up. Counseling has to be very guarded in these donors as the credibility and trust of the blood bank services have to be maintained. Once established they are non reactive in frequent follow ups , their biometric status also changed to allow them to donate again.

HBV and HCV reactive donors are usually informed of their status and are referred to Gastromedicine department for treatment and followup .

The process of counseling of reactive donors has to be supervised with strict vigilance as negligence at any step can lead to grave consequences for blood banks as well as the society.

MEDICATION AND DONOR DEFERRAL: SCIENCE BEHIND IT

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Selection or deferral of donors for blood donation is driven by the principle that All donors should be in good health to be able to tolerate a short period of hypotension and bradycardia as a result of donation and the

blood products prepared from these donations should be of acceptable quality and the medications present in the products should not cause any adverse effects in the recipient.

The following principles should be considered while designing deferral criterias for intake of medications at the blood donation centre:

- A plasma concentration of the medication below 10% of the therapeutic level is highly unlikely to be harmful to the patient
- 50 ml or more of plasma transfusion to an adult or less than that to child less than 12 years would roughly contain the 10% therapeutic level of the medication
- If Medications which directly affect the quality of component like aspirin are taken, accordingly such component should not be prepared from that donation
- Teratogenic and fetotoxic medicines have theoretical risk of causing a fetal abnormality in the unlikely event that the blood is transfused to a pregnant female during the first trimester

Class	Description	Examples	Deferral period
1	Dose-dependent effects, including drugs with teratogenic, embryo- or fetotoxic potential	retinoids, thalidomide, valproic acid, vitamin K antagonists	tmax + 5 t1/2
2	Non-threshold-related genotoxic mechanism to harm	Antineoplastic drugs	tmax + 24 t1/2
3	Lack systemic effects, have little pharmacodynamic potency or a very high therapeutic index	Herbal products Physiologic metabolites- Thyroxine, nutrients, vitamins	No deferral
4	Influencing the quality of blood products	Aspirin	tmax +5 t1/2

STEM CELL APHERESIS AND MOBILIZATION PROTOCOLS

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Hematopoietic Stem cell transplantation (HSCT) has become an increasingly important therapy for patients with various malignant & Non-malignant hematological conditions. Peripheral blood progenitor cell (PBPC) mobilization and collection is a critical part of the HSCT procedure. Effective mobilization agents include growth factors, chemotherapy & Novel agents like plerixafor. Many institutions have developed algorithms to improve stem cell mobilization success rates and cost-effectiveness based on their experience & local guidelines . However, an optimal stem cell mobilization regimen has not been defined. Practical guidelines are needed to address important clinical questions, like the effective mobilization regimen to use, apheresis scheduling, side effects along with remobilization regimens when initial attempts at mobilization fail. Special situations like role of plerixafor in obese donors/patients, use in allogenic & pediatric setting, use for chemosensitization in leukemias need to be addressed. Regimens in case of Poor & Very poor mobilizers need to be optimized on basis of safety,efficacy & Cost effectiveness. As per available literature & our experience in case of poor mobilizers, preemptive plerixafor regimen has promising results ensu

CRYOPRESERVATION PROTOCOLS FOR STEM CELLS AND FACTORS AFFECTING ENGRAFTMENT

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Biopreservation, in cellular therapy, is a mode to store cells ("living drugs") for transport and for long-term storage, so that they stay viable and return to optimal function post recovery. Not all methods of biopreservation are broadly validated into cell therapy products storage and transport. Hypothermic preservation (non frozen, low temperature) and cryopreservation are usually the accepted modes of storage for these therapeutic cells. Basic principle of cryostorage of cells involve "slow" freezing procedure resulting in hyperosmolality and in membrane destabilization. Cryoprotectants (CP) are often used to prevent or mitigate damage caused by hyperosmolality to the cells as these materials, allow for easier movement of water and affect crystal formation and structure.

Standard process for cryopreservation of hematopoietic cells is by using programmed controlled rate freezing and dimethylsulfoxide (DMSO) as cryoprotectant. Many variations to this standard method may arise due to following factors based on different protocols used. These factors include use of different type of diluents/ additive solutions, cell concentration used for cryopreservation, bags used as well as the volume of product in each bag, DMSO concentration as well as source of DMSO, process of adding DMSO, freezing programs or rates used and sample temperature measurement system used.

The current standard cryopreservation protocols, controlled rate freezing with DMSO, are clinically effective; questions still remain as to whether or not they are optimal. This is of particular concern in the banking and therapeutic application of therapeutic cells for allogeneic use, where harvested volumes can be small and the total number of CD34+ cells/kg body mass is crucial to eventual engraftment in the recipient or to anticipate any response. Number of studies have been undertaken in order to replace the largely empirical approach to developing an optimized protocol with a methodological one that takes into account the sequence of damaging events that occur during the freezing and thawing process. Such studies have shown that, a cooling rates of 1–2.5°C/min are probably optimal for DMSO concentrations of 5 to 10%, recovery is likely to be improved if the osmotic damage that occurs through the introduction and removal of the cryoprotectant is tempered by the application of slow addition/elution protocols.

Reduced concentrations of DMSO have also been employed as a means to alleviate adverse reactions where washing procedures were not employed. There seems little adverse effect on cell recovery or engraftment in reducing DMSO concentration to 5% at optimal cooling rates and concentrations as low as 2% have been successfully employed. Alternative cryoprotectants such as hydroxethyl starch and trehalose, either in combination with DMSO or alone, has also been shown to be effective in cryopreserving haematopoietic cells, but only so far in laboratory studies.

Biopreservation offers an advantage of preserving cells at decreased metabolic activity but on the other hand it disrupts the ionic and osmotic balance of the cells, generates free radicles, initiates apoptosis and necrosis in stored cells. Hence ideal biopreservation method should involve cryoprotectants causing minimal damage to the therapeutic cells and retaining maximum viability and potency on infusion.

GRANULOCYTE TRANSFUSION IN HEMOPOIETIC STEM CELL TRANSPLANT

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Granulocyte transfusions are a therapeutic option in patients with severe neutropenia (absolute neutrophil count < 500/ul). Severe neutropenia is common in HSCT patients and is often associated with life-threatening

bacterial and fungal infections. Though granulocyte infusions were initially used three to four decades back, there was a decline in its use due to inadequate dose collected, adverse effects and limited clinical efficacy. However with the availability of granulocyte colony stimulating factor (G-CSF) in the early 1990s, larger doses could be collected and there was renewed interest in its use in HSCT.

Granulocyte components can be prepared by two methods; by apheresis using the cell separator and from whole blood donations. Apheresis granulocytes are collected by leukapheresis procedure from a donor who has been primed with G-CSF and /or steroids. Granulocytes from whole blood donations (buffy coat granulocytes) are obtained by processing blood collected in quadruple blood bags and these may be used singly or after pooling. The granulocyte yield collected by apheresis in most studies in the literature range from 4 to 10 X 10^10. Ten buffy coat granulocytes are considered as one adult dose and can be pooled before transfusion. In the multi-center study, Resolving Infection in Neutropenia with Granulocytes (RING trial) Price et al have suggested that patients receiving higher doses tend to have better outcomes than those receiving lower ones.

Apheresis granulocytes are considered superior to buffy coat granulocytes as they provide a higher granulocyte dose with fewer donor exposures as compared to the latter. However, buffy coat granulocytes are a viable option when an apheresis donor is not available and in under-resourced settings.

Granulocytes products have high red cell content and so the product must be cross match compatible with the recipient. Granulocytes are stored at room temperature and must be infused within 24 hours of collection due to the limited life span of these cells. The product must be irradiated prior to transfusion and transfused using the standard BT set (without leucocyte filters). Though studies describe a beneficial role of granulocyte therapy in patients with severe infections; few studies also fail to demonstrate any therapeutic benefit. Currently the role remains inconclusive and larger randomized control trials are needed.

Granulocyte transfusions are also associated with adverse transfusion effects. Febrile and allergic reactions are very common. Alloimmunisation to HLA antigens though uncommon, can occur, leading to platelet refractoriness. Patients receiving multiple units of buffy coat granulocytes often develop increase in hematocrit, necessitating therapeutic phlebotomy.

THERAPEUTIC LEUKAPHERESIS IN LEUKAEMIA

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Description of disease- Leukemia patients can present with hyperleukocytosis which is defined as a circulating white blood cell or leukemic blast cell count >100 x 109/L. It occurs in 5 to 13% of adult and 12 to 25% of pediatric AML cases. The reported incidence in acute lymphoblastic leukemia ranges from 10 to 30%. Hyperleukocytosis can lead to leukostasis which represents end-organ complications due to microvascular leukoaggregates, hyperviscosity, tissue ischemia, infarction and hemorrhage. Mortality rates of 20 to 40% have been reported.

Leukostasis in AML usually occurs with WBC counts >100 x 109/L and in ALL with WBC counts >400 x 109/L. The monoblastic/monocytic variants of AML (i.e., M4 and M5) are particularly susceptible to leukostasis complications and may occur at blast counts <50 x 109/L. Leukostasis complications with other leukemias are rare but may occur with chronic myelomonocytic leukemia and WBC counts >100 x 109/L with high LDH. Priapism may occur with chronic phase chronic myeloid leukemia and WBC; suggesting counts >500 x 109/L. It is also important to recognize significant symptoms which may occur at low WBC counts also.

Clinical features-CNS manifestations include confusion, somnolence, dizziness, headache, delirium, coma, and parenchymal hemorrhage. Pulmonary complications include hypoxemia, diffuse alveolar hemorrhage (DAH) and respiratory failure with interstitial and/or alveolar infiltrates. A leukostasis clinical grading scale defines greatest risk related to severe pulmonary, neurological and other end-organ manifestations and M4/M5 AML subtypes.

Role of leukapheresis-As per latest American society for Apheresis (ASFA) guidelines, for symptomatic patients rapid reduction of tumor cells by leukapheresis is category II indication and as prophylactic procedure in leukemic patients, it is listed as category III indication. Rapid reduction of tumor cells from circulation by leukapheresis, improves tissue perfusion with reversal of CNS, pulmonary and other manifestations leading to

improvement of the symptoms. A single procedure can reduce the WBC count by 30-60%. Generally one to 1.5 Total Blood Volume (TBV) is being processed. Replacement of removed blood volume (ie, the volume of leukocyte waste product) with crystalloid, 5% albumin, and/or plasma is recommended with large-volume leukapheresis. The patients may be severely anemic and may require red cell priming of the disposable kit.

Single or multiple procedures may be required depending on the WBC counts of the patients. For AML patients with leukostasis complications, procedures are discontinued when the blast cell count is <50–100 x 109/L and clinical manifestations resolved. For prophylaxis of AML patients, discontinue procedures when the blast cell count is <100 x 109/L. For ALL patients with leukostasis complications, discontinue when the blast cell count is <400 x 109/L and clinical manifestations resolved. For prophylaxis of ALL patients, discontinue procedures when the blast cell count is <400 x 109/L .

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OPTIMISING PEDIATRIC APHERESIS

Rima Kusumgar

Introduction:

Although the principles of the technique of apheresis performed in children are the same as in adults, apheresis personnel who are not familiar with pediatric patients may be uncomfortable providing apheresis therapy for them. Consideration for special adaptation of standard (adult) operating procedures to pediatric patients and special considerations unique to pediatric apheresis regarding anticoagulation replacement fluids , adverse effects, psychosocial aspect and role of apheresis in the treatment of specific diseases in pediatrics is utmost important .Since apheresis instruments has direct impact on the physiology of patients undergoing procedures , technical and physiological considerations must be taken care of. Improvement in procedural techniques and availability of various types of central venous catheters and ports have enhanced the safety and encouraged the use of apheresis in children.

Technical and Physiological Considerations

- Intravascular volume
  - Goal: to maintenance a constant intravascular volume- ¯ intravascular fluid volume and circulating red cell mass (temporary WB loss to apheresis system)ECV <15% TBV – no change in cardiac output nor O2 consumption, ECV >15% TBV signs and symptoms of hypovolemia, ECV >30% TBV - majority will experience circulatory shock due to hypovolemia
- Extracorporeal Volume
  - volume of blood out of the body during a procedure - dependent on the apheresis equipment and type of procedure - for a safe procedure, maximum ECV should be established for the individual patient - if ECV is predicted to be >15% TBV, modification of the procedure is indicated.
- Volume Shifts
  - limits should be set for volume shifts that occur during and at the end of the procedure - volume shifts should be ≤15% TBV both during and after the procedure - Blood prime for BV volume < 2840 ml for leukapheresis and < 1,700 ml for all other procedures.

- Vascular Access
  - adequate vascular access is a prerequisite for a successful apheresis procedure
  - recommended needle size:
    Inlet/ Draw: 18-gauge or larger needle in antecubital vein, Return: 22-gauge or larger angiocatheter in peripheral vein - if peripheral veins of smaller children cannot accommodate this, intravascular device must be placed in a central vein for adequate flow
- Equipments: Continuous-flow centrifugation Lower ECV, useful in smaller, unstable patients
  - Intermittent-flow centrifugation Larger ECV Max ECV per pass not reached until centrifuge bowl maximally filled with RBCs Lower patient hematocrit, increases ECV

Complications of Pediatric Apheresis

- Hypotension (↓ of 10 mm Hg in systolic or diastolic BP) ,Hypocalcaemia (ionized calcium below institutional normal) , Vascular Access Complication (thrombosis by sonogram or catheter-related infection by blood culture) , Reactions to Blood Products (allergic, anaphylactoid, febrile non-hemolytic) Lethal and near lethal adverse events Fever (temp ≥ 38C), anemia (Hgb < 7 gm/L)

Anticipatory Management in Pediatric Patients

- Intravascular volume deficit - Red cell prime
  - Maintains oxygen carrying capacity
  - Small patients < 15-20 Kg or at risk of hypoxic injury with RCV deficit
  - Saline infusion Prevents initial intravascular volume deficit
- Citrate Toxicity
  - Calcium infusions
  - Nursing vigilance (agitation, GI complaints most frequently reported)
- Vascular access
  - Pre & Post-procedural heparin
  - Patient distraction and monitoring

QUALITY CONTROL IN COAGULATION LABORATORY

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The coagulation laboratory plays an important role in the diagnosis and treatment of patients with bleeding and thrombotic disorders. Test methodologies used to assess common disorders or diseases of haemostasis are reviewed as well as the clinical relevance of each assay. The battery of tests used to diagnose the haemostatic disorders need to be monitored by internal quality control procedures to ensure accuracy and precision of test results. Of the three phases of analysis, the preanalytical phase of coagulation testing is highly vulnerable to errors. It is therefore essential that sample collection, transport and storage are monitored carefully to ensure that the preanalytical variables are controlled. The analytical phase refers to processing of samples which includes centrifugation, appropriate incubation and measurement of clot formation. The reagents used for the various assays and the platforms used for testing also influence the results. The post analytical phase refers to interpretation of result in the clinical context

IQC procedures must be performed with each assay, at appropriate levels of the analyte and at appropriate time intervals as a means for assessing ongoing assay performance. EQAS , a peer group assessment process is supplementary to IQC, offers in addition the opportunity for evaluation of long-term performance of laboratories, including comparisons between laboratories and different methodologies.

Participation in an EQA program is a requirement of laboratory accreditation and a EQA programs are available at national and international levels for haemostasis testing. These programs provide invaluable information on assay performance. The incorporation of IQC and EQA in to a laboratory program cannot only assist in the assurance that testing is reliable and accurate but also improve the quality of the testing.

The discussion will include relevant cases to highlight the role of internal quality control and EQAS for reliability and accuracy of test result.

DAT NEGATIVE AIHA

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Although positive DAT is considered the hallmark of autoimmune haemolytic anemia (AIHA), the incidence of a negative DAT in patients with AIHA is reported to be between 2 and 4%. A possible explanation given by Issitt et al in 1989 for these findings is that the number of IgG molecules per red cell necessary for accelerated in-vivo destruction is sometimes lower than the number necessary to yield a positive DAT. In other patients with negative DAT, but with clinical and hematological features typical of AIHA, IgA autoantibodies or monomeric IgM may be involved. It has also been observed by Garratty in 1988 that sometimes low affinity antibodies may be involved in the causation of AIHA and these antibodies can easily dissociate from the RBC surface when DAT is performed under standard technique. In standard DAT performed by conventional tube technique (CTT), RBCs are repeatedly washed in large volumes of room temperature saline solution, which possibly separates a low affinity antibody from RBC surface; thus, RBCs that are strongly sensitized with IgG in vivo may appear to have little or no IgG on the RBCs when tested in vitro. Garratty in 1988 also found that washing the patient's red cells with ice cold saline, preferably in a refrigerated centrifuge, helps to keep low-affinity IgG bound to the RBCs. This cold wash DAT resulted strongly positive with anti-IgG serum. This technique of cold wash DAT is most preferred because it is extremely simple, easy to interpret and require neither special training nor sophisticated equipments.

The smallest number of IgG molecules per red cell normally detectable in a conventionally performed DAT is in the order of 300-500. Thus, occasionally patients with warm AIHA have a negative DAT because the number of IgG molecules per red cell is less than this value. For many years, this type of AIHA was diagnosed by exclusion as par the clinical status of the patients, until Garratty in 1988 introduced the technique of cold wash DAT, which has the ability to retain the low affinity immunoglobulins, bound to the red cells. In recent years more sensitive tests are available which helps in the diagnosis of conventional DAT negative warm AIHA. These tests include Column agglutination technology (CAT), Enzyme linked antiglobulin test and flow cytometry. Flow cytometry is the most sensitive of all these techniques and can detect antibodies as low as 35 IgG molecules per red cell. Chaudhary et al from India described that FC is definitely a more sensitive technique than the CTT & CAT in the detection of red cell bound autoantibodies. FC is a very useful tool in assessing coomb's negative AIHA and should be employed when CTT and GT give discordant results and there is a strong clinical suspicion of AIHA. Das et al from India concluded that DAT negative patients with clinical suspicion of AIHA and positive laboratory evidences should be evaluated for the presence of autoantibody by alternate simple sensitive methods which are otherwise less practiced. Blood banks should establish these useful simple techniques and stick to the defined protocols to diagnose DAT negative AIHA.

MOLECULAR BASIS OF WEAK D PHENOTYPE IN INDIANS

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The Rh blood group system is the most polymorphic system and is implicated in hemolytic transfusion reaction and hemolytic disease of the fetus and newborn. Molecular genetics of the RH genes has been extensively studied in Caucasians, Africans and East Asians and the variant alleles giving rise to weak and partial RhD phenotypes have been reported. Though the variability of Rh expression has been documented in Indian population, extensive genetic studies on Rh antigens have not been carried out. Hence, we studied the molecular bases of weak D expression in Indians.

Weak D phenotype (n=223) samples identified at NIIH, Mumbai by serological analysis were genotyped

for the RHD gene by conventional molecular approaches. Firstly, all samples were tested for the three common variant RHD alleles (weak D, type 1, 2, and 3) prevalent in the Caucasian population by melting curve analysis. Three common variant RHD alleles were absent in our study population. Samples were then analyzed by sequencing the RHD coding regions and only a limited number of variations, including novel single nucleotide substitutions (RHD(A59T), RHD(G63C), and RHD(A237V)) and three complex hybrid alleles (RHD-CE(5:E233Q,V238M,V245L)-D, RHD(T201R)-CE(5)-D(I342T) and RHD(L214F)-CE(7)-D) were identified.

Quantitative multiplex PCR of short fluorescent fragments (QMPSF) assay was performed for assessment of RHD exon copy number variations. This test aims to calculate the number of both the RHD and the RHCE genes/exons in two separate tests and is performed mainly to look for partial D variants resulting by the formation of hybrid genes by rearrangement. QMPSF approach revealed duplication of exon 3 in a significant proportion of weak D samples (58.3%), suggesting a novel, predominant rare allele specific to the Indian population. Further functional analysis by cloning/sequencing, minigene splicing assay showed that this genetic variation results in the expression of several transcripts, including a wild-type product. These results suggest that this allele quantitatively affects the expression of the normal transcript, and then subsequently the expression of the normal RhD protein, finally resulting in a weak RhD phenotype.

Commercially available testing platforms for genotyping of D variants cannot be used for Indian population as the mutations covered in these panels are not frequent in our population. Thus, on the basis of the systematic study, on RhD variants led us to discover a new molecular mechanism producing weak RhD variants in Indians and develop an Indian-Specific genotyping assay. This discovery not only extends the current knowledge of RH molecular genetics but will also help to know the correct RhD status and will have a significant impact on the transfusion practice in India.

PERFORMANCE EVALUATION AND QUALITY CONTROL OF NAT ASSAYS IN BLOOD SCREENING LABORATORIES BY USING VIRAL STANDARDS CALIBRATED IN NUCLEIC ACID COPY OR VIRION NUMBERS

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Studies in seroconversion panels have demonstrated that the viral nucleic acid and antigen concentration increase in parallel during early HBV, HCV and HIV infection. The log-linear increase of HBV-DNA and HBsAg (or of HIV-RNA and p24-Ag) in the ramp up phase of viremia in seroconversion panels can be mimicked by viral standard dilution panels. The length of the infectious window period depends on the analytical sensitivity of the NAT method and can be established by testing viral standard dilutions calibrated in nucleic acid copies or virion numbers. The infectious window period starts in the early ramp up phase when the concentration reaches one virion in a blood donation (one virus in approximately 10-20 mL of plasma present in a RBC unit). This represents the worst case situation since the 50% minimum infectious dose is estimated somewhere between 1 and 10 virions (as could be established by comparing HBV and HCV standards against chimpanzee plasmas with known infectivity titers). The residual risk of virus transmission during the window period depends on the probability of NAT detection and the probability of infectivity (of undetected virus). Using the probability curves of detection and infectivity a mathematical risk model for window period infection has been established. The reliability of this model and the accuracy of the residual risk estimate has its foundation on standards calibrated in nucleic acid copies. Such viral standards have been established in the early 1990s and were found to be stable for more than two decades when stored at -80°C. For twenty-five years these standards have been used in proficiency studies and performance evaluation studies of different NAT assays. There are however limitations in the accurate calibration of viral plasma standards in nucleic acid copies and therefore it has been decided to quantify the WHO standards in International Units (IU)/mL. Our viral standards have also been extensively calibrated against the first WHO International standards showing conversion factors of 0.58, 2.73 and 5.33 copy/IU for HIV-1, HCV and HBV respectively. Unfortunately there is a significant drift of the amount of virus per IU as a consequence of the frequent replacement of International Standards. This is caused by the inconsistent recovery of virus after heat-inactivation and lyophilization, even when the same source material is used. The drift in IU

values over time is inevitable because there is a change in NAT methods over time in the WHO collaborative studies and more importantly the quantification of different viral standards turns out to be dependent on the NAT method used. The concern about the continuity of the IU assigned to WHO standards is not only caused by the complexity of calibration using multiple NAT methods but also by a lack of stability of some of the lyophilized reference materials when they are not stored below -20°C. There is however no need for lyophilization of NAT standards. It is possible to consistently manufacture reference panels and run controls for decades by a process of gravimetrical recorded dilutions of viral standards in an appropriate matrix (comparable to clinical samples). Once the analytical sensitivity of a NAT method on standard dilution panels has been established run controls can be designed at 4-5 times the 95% LOD (check controls) or near the 95% LOD (trend controls). Such carefully positioned external controls were found to be instrumental in identifying NAT reagent batches of poor analytical sensitivity. The use of not well standardized run controls of a too high viral concentration becomes meaningless when a suboptimal functioning qualitative NAT blood screening system is not recognized (because the run control signal is still in the saturation range of the assay). It is recommended to use well standardized reference panels and run controls to monitor the analytical sensitivity of NAT reagent batches over time. Only by using quality control reagents that are consistently produced and are calibrated independently from the NAT manufacturers the safety of the blood supply can be continuously guaranteed.

NAT TESTING COST UTILITY ANALYSIS

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Detection of Transfusion transmitted infections (TTI) continues to be a challenging task for safe blood practices. TTI detection strategies include rigorous history taking followed by diagnostic procedures including ELISA, Chemiluminiscence and/or nucleotide testing. TTIs continue to occur even if in small measure, and main reasons for the transmission is inability of the test to detect the disease in the pre-seroconversion or window phase of their infection, immunologically variant viruses, non-seroconverting chronic or immunosilent carriers and laboratory testing errors. This has necessitated the detection of viral nucleic acid markers, which are propagated prior to serological markers. Nucleic acid testing (NAT) significantly reduces the 'window period' and thus allows earlier detection of infection. Apart from shortening the window period, implementation of HBV NAT reveals occult HBV infection (OBI) in blood donors which is characterized by the absence of detectable HbsAg in serum. OBI is transmissible by blood transfusion and a high incidence of OBI is relevant in high endemic areas worldwide making it a burden in blood safety. The likelihood of detecting OBI (occult Hepatitis B infections) donations by NAT is increased by increasing the test sensitivity by a small margin. HBV has a long doubling time (2.6 days) as compared to HCV (14.9 hours) and HIV (20.5 hours). One should opt for the best blood testing platform in terms of the sensitivity as missing the detection of even one window period sample or a case of a donor in an early phase of viraemia effectively means transmissibility of infection to 4 prospective recipients.

NAT testing in addition to serological screening, has a significant budget impact despite the increased benefits. In most developed countries where the incidence of TTIs is relatively low, economic evaluations performed result in unfavorable cost-effectiveness ratios. Health consequences are measured in terms of the quality-adjusted life-year (QALY) and cost effectiveness of adding ID-NAT to serologic test. QALY is estimated by multiplying the utility value associated with a given state of health (quality of life) by the years lived.

However cost of high technology and cost needs a critical appraisal as there would be many challenges for implementation of NAT in India considering the low resource setting in our country. Other issues that need critical considerations are poor blood collection at some centres, infrastructure, equipment and manpower making it not so convenient to carry out NAT testing at all the centres. It is essential to study the utility, effectiveness and feasibility of NAT testing in reference to conventional tests and thus design possible recommendations on how blood safety can be ensured despite limited resources in our country. However, it is also of particular importance to keep in mind that the overall long term burden on health may be far more than that incurred in preventing transmission of these viruses by their detection in early window period as one undetected infection carries the risk of disease transmission to three or more recipients of various blood products. Hence it has huge implications on society health burden.

ROLE OF HOSPITAL TRANSFUSION COMMITTEE IN STRENGTHENING BLOOD TRANSFUSION SERVICES

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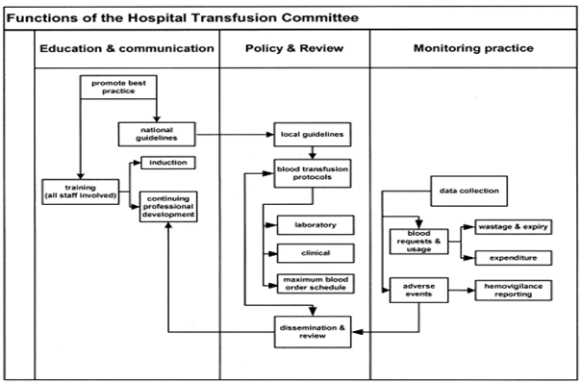
Hospital Transfusion Committees (HTC) have been created to oversee all aspects of blood product transfusion within individual institutions. A fundamental role of hospital transfusion committees is to ensure appropriate blood product use by developing local policies, educating clinicians, and auditing blood use.

Functions of the HTC

The HTC performs a number of functions in ensuring safe and appropriate transfusion practices. On a simplistic level, the HTC sets appropriate policies and procedures, reviewing and revising them as necessary, and monitors practice against them. However, this is a dynamic process with a number of overlapping components that need to be addressed regularly to be effective.



The role of the HTC can be described as the promotion of transfusion best practice through the enhancement of awareness and education, facilitation of policy development, and monitoring and review of the use of blood and blood products and adverse incidents involving these products.

Membership of the committee is specific to the hospital, and the nature of its activity may even be dictated by local bylaws. In general, however, the body should represent the main clinical units with a significant transfusion activity, executive management, quality assurance/clinical risk management, nursing and transfusion medicine department.

Transfusion policy and guidelines

In general, a hospital transfusion policy sets out the procedures to be followed in all aspects of the transfusion chain from consent, sample collection, and request procedures (elective and emergency situations), through to collecting blood, checking patient identity, conducting the transfusion, monitoring, documentation, and reporting. These procedures set out the responsibilities of all staff involved and the standards to which they must work. Although the emphasis of such policies is on safety, the appropriateness of blood use is also a concern; policies should give guidance on the indications for transfusion of specific components and the circumstances in which blood should be reserved in advance to reduce wastage.

Blood ordering

Blood product conservation not only encompasses the appropriate use of blood and components but also the efficiency of use. Blood products usually have a finite lifespan, whether it be packed red cells (35–42 days from the time of collection), FFP (4 hours from the time of thawing), or platelets (5 days from the time of collection). Blood products can be wasted by mishandling or by incorrect ordering resulting in the component expiring. The "Maximum Surgical Blood Order Schedule" (MSBOS) was first proposed in the 1970s as a means to rationalize blood usage by limiting the number of units held out of circulation and therefore reducing the risk of outdating.

The MSBOS is a listing of surgical procedures performed at a given institution with recommended maximum blood orders for each procedure (type and screen versus type and crossmatch and the appropriate number of units to be crossmatched). These blood orders are based on a retrospective analysis of routine preoperative crossmatches. The aim is to correlate as closely as possible the amount of blood crossmatched (C) with the amount of blood actually transfused (T). The efficiency of the scheme can then be periodically monitored using the C:T ratio to assure conformity with the guidelines.

The ideal value for the C:T ratio is 1:1, but a more realistic objective for surgical procedures is a ratio of 2:1, which corresponds to 50% blood usage. The instigation of an MSBOS involves the construction of a draft schedule of expected blood usage for each surgical procedure based on an audit of hospital blood usage. Procedures having a blood use of less than 30% are typically allocated to type and screen only. Other procedures are allotted a tariff based on the average number of units transfused. Once implemented, the MSBOS should be reviewed regularly to allow for variations in transfusion requirement as a result of changes in practice.

Education and audit

In addition to policy development, education and audit are the 2 main tools in the possession of HTCs to optimize blood use. Hemovigilance reporting has highlighted the need for a comprehensive training strategy to ensure the safety of transfusions. The main error in transfusion practice occurs by transfusing the wrong blood to the wrong patient. Such an error can occur anywhere along the chain of events in the transfusion process from sample collection, laboratory handling, in transit, to bedside administration. There is therefore a need to educate and inform all staff involved in the process, at regular intervals, to reduce the potential for mishaps. Although the concepts of safe and appropriate transfusion cannot be dissociated, education of clinicians who prescribe blood products is the key to blood conservation. Generally speaking, clinicians have little or no formal training during medical school in the clinical indications for blood transfusion therapies. Without a formal education program, transfusion practice is inherited from colleagues and mentors and may not always be appropriate.

There are a number of educational interventions that can be used to change clinical practice, including reminders, formal continuing professional education, computerized decision support systems, printed educational materials, academic detailing, and continuous quality improvement programs. HTCs can promote best practice by providing continuing professional education and monitoring performance by clinical audit and peer review. In this way, prescribing practice can be monitored and corrective measures taken as necessary as part of a continuous quality improvement program.

Clinical audit, probably the most commonly advocated mechanism, involves evaluation of ongoing practice and its comparison to set standards; when such standards are not met, appropriate changes are implemented and their effect monitored. Audit is thus a continuous process aimed to ensure best practice in line with accepted evidence. Standards should be regularly upgraded along with the publication of new research findings, the availability of local resources, and the needs of the local patient population.

Every HTC should develop their local transfusion protocols based on national guidelines. Compliance with such protocols, clearly, should constitute the standard for clinical audit: transfusions given in violation of the protocol constitute inappropriate therapeutic interventions. Because evidence suggests that information on the appropriateness of transfusion is difficult to obtain retrospectively, audit should, in general, be performed prospectively.

Conclusions

HTCs play a key role in blood conservation. There is evidence that interventions such as development of an appropriate transfusion policy, properly conducted clinical audit, education of clinicians, and implementation of autologous transfusion in surgery lead to improved use of blood products. There is not, however, enough information on the efficacy of particular interventions to allow the development of a standardized approach to blood conservation.

Although new tools such as hospital transfusion teams, computerized algorithms, or transfusion safety officers have been proposed, the task of HTCs in ensuring appropriate blood use will ultimately be hampered by the lack of universally accepted transfusion triggers. Further research in this area is clearly required to optimize the use of an expensive therapy with limited availability

DESIGNING A BLOOD CENTRE

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Blood centres, an evolutionary step forward from traditional "Blood Banks" must be designed to be responsive to local conditions, fulfilling needs of all stakeholders and keeping in mind prevailing national regulations and guidelines. There is no "cookie-cutter" solution to this. Workflow processes must be carefully thought through and mapped in detail prior to locating functional roles to rooms. Likewise, facilitating distribution of blood between blood banks, linked storage centres and hospital staff who come to collect blood around the clock must be a strong consideration. Access control and safety is also an increasingly relevant consideration that must be addressed. The sensibilities of voluntary blood donors – who are not patients – and remain best source of safe blood need to be respected and taken into consideration.

Other important factors include the level of computerization and process automation that the blood bank has access to. Computerization of workflow and records can help in reduction of physical human movement, stop redundant writing activities and perform automated checks at error-prone points and will play a significant role in designing the blood centre.

Factors such as infrastructure, air-conditioning, electricity, water, drainage etc are important ones and co-locating a blood centre with a hospital (point of clinical demand) has its advantages and relative disadvantages. Finally, this talk is not intended to promote the starting of new blood banks. At 2905 blood banks, we are one of the countries on the world with the largest number of bloods banks; it is intended to allow us to think as to how to improve our existing ones.

INNOVATION IN BLOOD BANK INFORMATION SYSTEM: "EXPERIENCE SHARING"

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The blood and blood component are considered as a "Drug" under Drug & Cosmetic Act-1940. All the blood banks, irrespective of their management by Government, Trusts, Red Cross and Corporate or Private Organization, are under regulatory control of DCG(I).

Blood banks are required to maintain quality standard with the relevant rules/guideline and so also consistency of operations. The blood banks are facing many challenges e.g. the intense clerical activity and maintaining paper work may lead to errors which may harm a human life or may lead to legal consequences. Documentation and maintenance of records for five years, is an important aspect of blood bank and is statutory requirement under Drug & Cosmetic Act-1940, which is a cumbersome task.It is also time consuming for blood banks to provide data when asked by State authority/Central authority. Such a dynamic nature of blood banking presents significant challenges, especially in data preservation, authenticity of the data, retrieval of data, and traceability of data.

So we felt that, blood sourcing and supply has to be administered with the fullest accuracy in terms of legal, technical, and managerial aspects. The existing manual methods of blood transfusion service needs to be automated. All the data should be available with a click on a system-computer including real time information of stock of blood and blood component should be available.The blood bank information system is the answer but it has been quite difficult task due to the complexity and intricacies of the activities carried out at the blood bank. But we have well-designed blood bank information system /application covering all the activities of blood bank, installed as client/server architecture.

The software is designed as per the regulation, guidelines and quality. Department of IHBT is an NABH accredited blood bank. Blood bank information system was designed after our finalisation on User Required

Specification, Functional Specification and Output layouts. User Required Specification was our key document which describes what the process we want or expect from the blood bank information system. It reiterates the quality assurance programme. Our Users Required Specification is uniquely referenced to our existing documents kept in our blood bank, Drug & Cosmetic Act-1940, NBTC guideline documents, NABH standards, our Quality Manual, SOPs, Registers, Reports, and Labels.

A functional specification describes how software will work entirely from our perspective. It specifies features, screens, menus, dialogs, alerts, authorisation and so on as per our requirement. An output layout means Registers Records, Reports, forms, labels.

Development/operation environment and way of Input of data by key-board, Mouse, scanner were decided by the vendor. Our database structure is in MySql server and front end is Asp.net. All the documentation is in digital form except two documents (1) Donor Consent form (2) Patient's request form are maintained as a hard copy as both carry signatures of donor and prescribing doctor/clinician.

The users can log in the software by their encrypted password which users can modify. The rest of data is to be entered by clicking mouse on the screen of software or scanning the barcode. The blood bank software/ application is being updated from time to time.

Advantage of blood bank software/application:

Users can enter data on different modules on permission basis and logs are generated for every data entered for future checking. Alert on patient/donor past data, if exist in the software, alert on blood group discrepancy of patient/donor samples, alert on expiring unit, alert on calibration and maintenance date, alert on pending testing. Software automatically generates unique ID of donor, patient and donation. Software has validation facility for critical test parameters e.g. blood grouping, compatibility testing and TTI testing to prevent ATR. Software has also provision for vertical and horizontal auditing by tracing unique donation ID and unique patient ID. The product label and compatibility report so also all the report, registers and records are printed. The software provide facility of sending massage to clinician and donor for getting relevant information. The software helps in recruitment and retention of blood donors through donor calling and messaging facilities, thereby it helps in increasing voluntary blood donation. The equipment are interfaced with the software so without manual intervention data are fetched in software. The blood bank information system has modules for human resource, equipment management and inventory. The digital data in blood bank server is used for administration, technical, legal and research purpose. These digital data may also be uploaded through internet to a dedicated Portal either online or on schedule for access remotely.

Conclusion:

21st century is the century of information and technology. Blood bank information system integrates and manages all the complex processes and procedures of different sections of blood bank as per the regulation/ guideline/quality standard. By using blood bank information system we can ensure patients and donors safety and improve the efficacy of the Blood bank, so also displaying real time stock.

AN ANALYSIS OF BLOOD TRANSFUSION SERVICES IN KERALA– A WHO INTIATIVE

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Among Indian states, Kerala (population 33.4 million) has the highest human development indices. The high life expectancy rate and maternal and child health indicators are comparable to those of upper-middle income countries. The challenges lie in enforcing regulations, efficient service delivery, providing access and ensuring quality of care. These are the commonly reported issues with Kerala's health system. These challenges are closely mirrored in the blood transfusion services.

As Kerala commits to strengthening its health systems, a review of the performance of Blood transfusion service (BTS) is useful to assess readiness to expand coverage of transfusion services. A baseline assessment of all blood centres in Kerala was conducted under the guidance of WHO experts at the request of Government of Kerala with overall objective of understanding the current situations of Blood Transfusion Services in the state.

Achievements and outcomes

- Mapping of all Blood centres in the state
- Comprehensive assessment of blood transfusion services by a trained team
- Targets and indicators established for future monitoring and evaluations

Constraints and gaps

The assessment highlighted the following major constraints and gaps

- Weak regulatory oversight
- Inefficient functional service delivery network with poor co-ordination among stakeholders. Low number of true voluntary blood donors .

Inadequate no. of skilled staff.

Lack of quality system essentials.

Variable prescribing practices among clinicians

- Inequitable access to marginalized and disadvantaged population groups
- Shortage of blood components in emergencies

Recommendation

Kerala should consider

- Re organization and restructuring of blood transfusion services
- Establish an integrated functional network
- Establish quality assurance in all critical process
- Ensuring availability of and timely access to blood and blood components
- Promote effective clinical use of blood
- Establish a core team to lead the process of change and develop a strategic plan of actions.

ROLE OF THERAPEUTIC PLASMA EXCHANGE (TPE) IN ABO INCOMPATIBLE AND HLA SENSITIZED PATIENTS

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The quality of life of an end stage renal disease (ESRD) patient is extremely poor in a developing country like India. Most of the ESRD patients in India are dialysis dependent. Kidney transplantation in such patients is the only hope for their better quality of life and improved survival. In developed countries, deceased donor kidney transplantation is the commonest modality of kidney transplantation while in India live related donor kidney transplantation is the commonest one. Human organ transplantation act, 1949 of India allows only close family members to donate kidney. However, due to lack of awareness in society, ABO blood group mismatch and sometimes due to poor health status many of the donors are rejected. In this limited resource, if the patient is found to have preformed donor-specific HLA antibody (DSA) then the patient is left with limited options only. The first logical option is to swap the donors (paired kidney exchange) and the second is to desensitize the patient to overcome the HLA barrier. Because of some reasons swap program is not that successful In India so patients are mainly left with no option other than the desensitization. During last one decade, there has been a continuous increase in the number of kidney transplantations in patients having anti-HLA antibodies (HLA sensitized) with excellent success rate. Several desensitization protocols have been developed to prevent antibody-mediated acute rejection (AMR) of kidney allograft, and this has increased the success rate of transplantation in sensitized recipients. Sensitization to HLA is typically defined as the presence in the serum of antibody (usually IgG) to HLA. These antibody formations can occur after exposure to foreign HLA antigen as a consequence of blood transfusion, pregnancy and previous organ transplantation. These events limit the access to and success of kidney transplantation. In patients with high levels of pre-formed anti-HLA antibody transplant rates are extremely low because of the additional immunologic barrier with increased risk of AMR (antibody-mediated rejection). The presence of IgG complement fixing antibody specific for donor HLA antigen (class I or class II)

represents an unequivocal contraindication to transplantation. Patients transplanted across this barrier are at a very high risk for AMR and allograft loss. protocols differ between centers and have different clinical outcomes. Comparisons have been difficult because of differences in patient characteristics, the assays used to define the presence and level of donor-specific antibody (DSA), and the assessment of outcomes. Until recently, no therapeutic approaches were available to deal with this problem. Currently, there are several protocols which have been successfully employed. These include the plasmapheresis protocol (Johns Hopkins Protocol) and the high-dose IVIG protocol (Cedars-Sinai Protocol), rituximab, as well as newer agents such as bortezomib and eculizumab [24-26]. Plasmapheresis is a well-tolerated procedure with modern apheresis equipments provided being done with an experienced team with close monitoring of vitals and appropriate fluid balance. TPE is an important constituent of desensitization therapy and its compliance is extremely good provided done with close monitoring. Kidney transplantation in HLA sensitized patients using desensitization therapy is a useful tool to bridge the gap of demand and supply of organ in a country like India where there is high disease burden and lots of patient are waiting to find a suitable donor and to get rid of dialysis and having a better quality of life.

THERAPEUTIC PLASMA EXCHANGE IN ACUTE LIVER FAILURE

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The management of liver failure remains a challenge for physicians. Despite great improvements in the field of liver transplantation, many individuals with liver failure die while awaiting transplantation because of its various limitations, including organ shortage and its significant morbidity and mortality. Acute liver failure (ALF) is defined as the rapid onset of encephalopathy and coagulopathy after the onset of jaundice in patients with no known previous liver disease. ALF can develop in a normal liver (known as fulminant hepatic failure [FHF]) or in the setting of chronic liver disease. The common causes are Hepatitis B, Hepatitis A, Hepatitis E, drug induced, Wilson's disease (defect of copper metabolism), yellow phosphorus poisoning and others. The mortality rate in FHF is 50–90% due to acute metabolic disturbances, hepatic encephalopathy and severe coagulopathy; however, following liver transplantation, survival rates improve. In severe cases multiple organ systems are affected, but with no known curative therapy, treatment is aimed at providing physiological support and preventing irreversible intracranial hypertension until, either a suitable cadaveric liver becomes available for transplantation, or spontaneous recovery of liver function occurs.

ASFA has recently categorized the use of high-volume plasma exchange as Category I in acute liver failure and Therapeutic plasma exchange (TPE) as a Category III indication. TPE seems to be an effective approach for clearing toxins, immune-mediated antigens, and other particles from the circulation. In the setting of ALF, TPE with fresh frozen plasma as the replacement fluid improves laboratory measures of coagulation, facilitating invasive procedures, without the risk of excessive fluid loading.

In AHF, TPE removes albumin bound and large molecular weight toxins – aromatic amino acids, ammonia, endotoxin, indols, mercaptans, phenols, and other factors. The increase in plasma of these toxic substances may be responsible for hepatic coma, hyperkinetic syndrome, decreased systemic vascular resistance, and cerebral blood flow. TPE restores hemostasis by supplying the coagulation factors and removing activated clotting factors, tissue plasminogen activator, fibrin, and fibrinogen degradation products. It was also reported improved cerebral blood flow, mean arterial pressure, cerebral perfusion pressure and cerebral metabolic rate, increased hepatic blood flow, after TPE. In some patients, the liver may regenerate during TPE and in other patients TPE can be viewed as bridging therapy to LT. In a recent large case series, TPE was shown to decrease cytokine levels (IFN-g, IL-10, IL-4, IL-2, and TNF-a) which are generally seen as important for the systemic inflammatory state in these patients. Bektas and colleagues reported a significant reduction of serum aminotransferases and bilirubin level after TPE in patients with liver failure.

At our centre, TPE procedures were done for patients with various liver diseases with ALF and Acute on chronic liver failure with various indications – Alcoholic liver disease, Drug induced, yellow phosphorus poisoning, HBV, HAV, HEV related ALF, Wilson's disease, NASH and others. All patients underwent one to 1.5 PV TPE with a Spectra Optia(Terumo BCT) and Comtec (Fresenius) cell separator. Replacement fluid included 5% albumin and

fresh frozen plasma. Citrate based anticoagulation is used and intravenous calcium therapy is given as required for hypocalcaemia. All treatments were performed in the ICU with continuous monitoring. A significant reduction in bilirubin level, serum aminotransferases and coagulation profile was seen. In our experience, TPE plays an important role in improving survival of Acute liver failure as a supportive therapy as well as a bridging therapy for liver transplantation.

QUALITY ASSURANCE OF LEUCOREDUCTION PROCESS

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The greatest interest in removing leukocytes from red cell transfusions has been in preventing febrile non-hemolytic reactions. The likelihood of such a reaction has been correlated with the absolute number of leukocytes transfused. However, there is considerable variation between

patients (and perhaps donors) in the minimum number of leukocytes necessary to produce a

reaction, ranging from 0.25 x 10^9 to 2.5 x 10^9 (1). Furthermore, the number of leukocytes may be insufficient to produce a detectable reaction in a patient, but sufficient to cause or enhance alloimmunization. Therefore, it seems desirable, when practical, to reduce the number of transfused leukocytes to the lowest possible level. Further incentive to further reduction of leucocyte transfusion exists in the possibility that leukocytes are a major vector in the transmission of viruses: CMV (2), HBV (2), non-A non-B hepatitis (3), EBV, and

HIV. The potential exists for removal of leukocytes, and thus any viral agents contained therein, by filtration incorporated into the donor collection system (4); this would have certain practical advantages, and prevent the problem of viral release due to any leukocyte lysis during storage.

With the implementation of universal lecuodepletion of blood components, quality assurance of the process including enumeration of residual WBC (r WBC) count has become a demanding issue which requires new quantification technologies. Leucodepleted blood components are expected to contain 1x10^6 – 5x10^6 white blood cells per unit. Techniques for enumerating rWBC's include the cell counters which can be used for pre-LD samples (least count: 100WBC'S/µl), Microscopic Counting Methods-Nageottes (least count : 10 WBC's/µl), Molecular based enumeration (least count: 1 WBC's/µl) and Flow cytometry (least count: 0.1WBC's/µl). QA of leucocyte depletion processes is a demanding issue. Modern and quick validation tools are required for r-WBC enumeration. Even thawed plasma may contain enough viable lymphocytes to induce harm to the recipient (5). Blood bags from different manufacturers are used by every centre for blood collection. The type of filter used for filtration also affects the outcome of leucodepletion. The Nageottes method has a low accuracy (largely underestimation of WBC's) especially with RBC components. As low as 0.08x10^6 WBC's/L in RBCs and 0.25x10^6 WBCs/L in PCs can be detected with the flowcytometry platform (6). It is necessary to prepare and run samples within 48 hours of leucodeplection for best results. Though the components are labelled as leucodepleted (rWBC count <5x10^6), a lot of variation may occur in the rWBC count and this is of great clinical significance for certain patient sub groups. Having an EQA program for residual WBC enumeration and standardization of the manual Nageottes chamber counting is the need of the hour today in order to ensure safer transfusions.

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LEUKOREDUCTION: PAST, PRESENT AND FUTURE

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The medical intervention known as blood transfusion is associated with both beneficial effects and adverse events in recipients. Over the past 100 years, transfusion medicine has experienced many challenging periods resulting in the introduction of improvements in technology like leukoreduction to increase the safety of allogenic blood transfusion.

The removal of leukocytes from various blood components can be associated with several improved clinical outcomes (Table 1). These outcomes, subdivided as to whether each benefit has been proven by evidence-based guidelines to be clinically relevant, likely to be clinically relevant, and of unproven benefit (i.e. those that can be considered only of theoretical relevance)

Table 1: Putative clinical benefits of leukocyte reduction, subdivided as to whether the benefit has been proven by evidence-based guidelines to be relevant clinically, likely relevant clinically, or clinical relevance is unproven

Proven relevant clinically:
– Reduced frequency and severity of NHFTRs;
– Reduced risk of CMV transmission;
– Reduced risk of HLA-alloimmunization and platelet refractoriness.
– Reduced mortality and organ dysfunction in cardiovascular surgery patients.

Likely clinically relevant:
– Reduced infectious risk associated with immunomodulation (TRIM);
– Reduced direct risk of transfusion-transmission bacteria.

Unproven clinically:
– Avoidance of vCJD transmission.
– Avoidance of HTLV I/II, EBV etc.
– Reduced risk of GVHD.
– Reduced risk of TRALI.

NHFTRs, non-hemolytic febrile transfusion reactions; CMV, cytomegalovirus; vCJD, variant Creutzfeldt-Jacob disease;

GVHD, graft-versus-host disease; TRALI, transfusion-associated acute lung injury

To attempt to prevent the adverse effects of the leukocytes contained in blood components, several methods have been developed to remove leukocytes from the various blood omponents. Leukocyte reduction procedures can be performed either pre-storage at the blood collection facility or post-storage either at the hospital transfusion service or at the patient's bedside just prior to transfusion.

Analyses on the cost-effectiveness of leucodepletion are scarce and are mainly based on observational data, mainly in selected patient cohorts. One RCT is available that can be applicable to estimate the general costs of ULR. In this study all patients in the Massachusetts General Hospital (Boston,Massachusetts, USA) were randomised to standard RBC and LR-RBCs. No clinical benefit but also no increase of costs were associated with LR.

If zero risk is the goal of transfusion medicine, the legacy from the HIV/HCV experience over the last two decades dictates that all risks should be considered and the resources allocated for each according to priority goals. In this regard it is important to note that most early manufacturing interventions or changes in practice

in transfusion medicine were not introduced based on quality of evidence! Moreover ULR should also be seen as an important processing step that will contribute to improving the safety and purity of blood components.

HOW DO I IMPLEMENT GOOD BEDSIDE TRANSFUSION PRACTICES?

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Blood safety for patients cannot be ensured by making safe blood available for transfusion alone. Besdside transfusion safety is of paramount importance & Transfusion Medicine Specialists have a special role to play in ensuring good bedside transfusion safety. However a big question which looms over any budding Transfusion specialist after joining the services in a hospital or Institution is how to ensure bedside transfusion safety by putting relevant knowledge & skills acquired during training & practice.

Though it is relatively easier in a new Institution where hospital services & transfusion Medicine speciality are started simultaneously, it is tad difficult in a Institution with established bedside transfusion practices which are not up to the mark & there lies the CHALLENGE.

Dr RMLIMS where I am currently based since August 2017, was a 350 bed Super Speciality Institute at Lucknow with MD & DM/MCh courses running in several departments but did not have Transfusion Medicine Department or Blood Bank of their own. All Blood components including Apheresis platelets were being provided by adjacent Dr RML combined Hospital Blood Bank which was a part of UP State Medical Health services.This 500 bed Hospital is also now merged with the Institute for the MBBS course which has been started in 2017. Besides this blood components are also being provided for 200 bed Maternal & Child Referral Hospital located around 5 km away from the main hospital through a Blood Storage Center for the time being.

On the audit of bedside transfusion practices many lacunae were found in knowledge, attitude & skills of Medical as well as paramedical staff which were discussed with the Institute administration & blood Policy was included in the hospital Policy & Hospital transfusion committee was formed. Guidelines for good bedside practices i.e. patient identification, Blood sample collection, storage & transfusion of blood components were made available to clinical areas in form of charts. Lectures for Medical staff was taken up department wise & also as foundation course for those joining fresh. Regular CMEs have also been planned in the coming time. Usefulness of technology in ensuring transfusion safety was also discussed with hospital administration. Last but not the least, interactions & dialog with clinical colleagues to generate confidence in scientific basis of transfusion services is a ongoing effort.

PLATELET CROSSMATCH: ROLE AND FEASIBILITY IN ONCOLOGY SET UP

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Platelets are essential for normal hemostasis. Platelets express a variety of immunogenetic markers on their surface:HLA antigens, shared with all nucleated cells in the body, Human Platelet Antigens (HPA), ABH antigens and other glycoprotein antigens. Thrombocytopenia is caused by disorders impairing platelet production, causing platelet destruction or leading to platelet sequestration. In addition, there are both congenital and acquired disorders of platelet function. Platelet transfusion represents an important therapeutic option for most of these disorders. Onco-hematologic diseases induce thrombocytopenia and hemorrhagic manifestations as a result of bone marrow failure caused by the disease itself and/or by the type of treatment used (radiotherapy and/or chemotherapy causing myelosuppression). In these cases, platelet transfusion is the main therapy used for the prevention and treatment of hemorrhagic manifestations. Major complications of platelet transfusions are Transfusion reactions most commonly allergic transfusion reactions, Transmission of bacterial infections,

Alloimmunization to platelet surface antigens, Platelet transfusion refractoriness.

Alloimmunization is defined as development of antibodies against HLA and/or HPA due to prior exposure from transfusion, pregnancy or transplantation. The Trial to Reduce Alloimmunisation to Platelets found that in patients with acute myeloblastic leukemia receiving non-leukocyte-reduced blood components, the incidence of HLA alloimmunization was 33% in those who had never been pregnant, and 62% in those who had been pregnant; in patients receiving leukocyte-reduced blood components, it was 9% and 32%, respectively. (1) Reduction of alloimmunization and alloimmune refractoriness can be achieved through manipulation of the transfusion product or the recipient's immune status. Some of the better studied approaches are product-focused, e.g. using only single-donor platelets, prophylactic HLA-matching, and leukoreduction of cellular blood products. Alloimmunization to platelet antigens is associated with in vivo production of antibodies against implicated platelet antigens. If the platelets possessing the same antigens are transfused subsequently to the same patient, secondary immune response by IgG antibodies is triggered which leads to immune destruction of the transfused platelets resulting in poor response to platelet transfusion. Anti-HLA and anti-HPA antibodies implicated in such phenomenon are collectively referred to as "Immune Detrimental Factors". This is especially important in multiply transfused patients of hematological malignancies. A less than expected increase occurs in 20%-70% of such patients (2)The corrected count increment (CCI) or percent platelet recovery (PPR) are the measurements commonly used to assess the success of platelet transfusions (2, 3)

Some patients fail to receive the full benefit of platelet transfusions because they do not achieve the appropriate platelet count increment following transfusion, and are of concern to both clinicians and transfusion services.

Responses to platelet transfusions are most often quantitated using CCI 1 hour after transfusion (2).

Corrected count increment (CCI) of less than 5000 to 7500 between 10 to 60 minutes of transfusion is a poor response to platelet transfusion and such response for two consecutive platelet transfusions adequately defines the refractory state. Immune causes for this include alloimmunization to Human Leucocyte Antigen (HLA) and/or Human platelet antigen (HPA). Non-immune causes can be fever, sepsis, disseminated intravascular coagulation (DIC), circulating immune complexes, thrombotic microangiopathies, increased sequestration such as in splenomegaly, and properties of platelet unit itself such as quantity transfused and duration of storage. The incidence of alloimmunization among patients receiving multiple transfusions of cellular blood components ranges from 20%to 71%. Such patients need to be transfused with compatible platelet units to maintain their platelet count above the threshold count.

There are three strategies for identifying compatible platelet units: HLA-matching, crossmatching and antibody specificity prediction.Transfusing HLA matched platelets is the best strategy to obtain such units, major disadvantage of HLA matching approach is the cost of establishing and maintaining necessary panel of several thousand HLA typed apheresis donors which is logistically very difficult, and it is expensive and time consuming. Antibody specificity prediction method involves the identification of antibody in patient's serum and transfusing platelets lacking the corresponding antigen. This also comes with the similar disadvantages as those of HLA matching approach.

Pre-transfusion platelet crossmatching is a more direct means of identifying compatible donors for alloimmunized recipients. Platelet crossmatching assays are relatively low cost with the advantage of quick availability of compatible platelets This test can be completed before the availability of patient's HLA type and HLAantibody testing. Along with HLA, HPA compatibility can also be identified. Infact, it may be the only way to find compatible platelets for patients withalloimmunization to HPA antigens. Platelet crossmatching has the advantage ofallowing selection of platelets from a larger pool of donors who otherwise would nothave been selected because either they are poor matches or their HLA type is unknown. Even in highly alloimmunized patients, 5% of unselected screened donors may be compatible by crossmatch.

Different crossmatching methods have been developed to identify compatible platelet units, including radioactive antiglobulin test (RAGT), Platelet Radioimmuno assay (PRIA), flow cytometry, Platelet Enzyme Linked Immuno-Sorbent Assay (P-ELISA), solid phase red cell adherence (SPRCA), platelet immunofluorescence test (PIFT). Among these, flow cytometry is highly sensitive and can be completed within 2 hours. But handling of flow cytometer requires trained personnel. Other methods also have some limitations,they are generally more labor intensive, require special handling.

Compared to other methods of crossmatching, SPRCA is an effective and rapid first line approach for management of patients refractory to platelet transfusions. It allows for a direct test of the unique combination of the patient's plasma and specific platelets for antibody-antigen interaction. SPRCA assay is sensitive to all IgG antibodies that adsorb onto target platelets by Fab moiety. But it cannot identify IgMantibodies as it utilizes IgG sensitized red cells to bind to platelets in the reaction. The best thing about the assay is that it is logistically very simple to carry out, does not require expert or special handling and can be completed within a time duration as

short as 90 minutes of the time of request for platelet transfusion.

Transfusion of crosssmatched platelets from the available inventory to multiply transfused patients of hematological malignancies can be a better option to transfusing randomly selected platelets which could be incompatible with the patient's serum resulting in failure of transfusion.

It is very important to assess the post-transfusion platelet responses in such patients by calculating CCI on regular basis.The management of nonimmune and immune factors leading to poor post-transfusion platelet count increments has an important role in patient management.

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HOW DO I SET UP A THALASSEMIA DAY CARE CENTRE?

Dr. Atul Sonker

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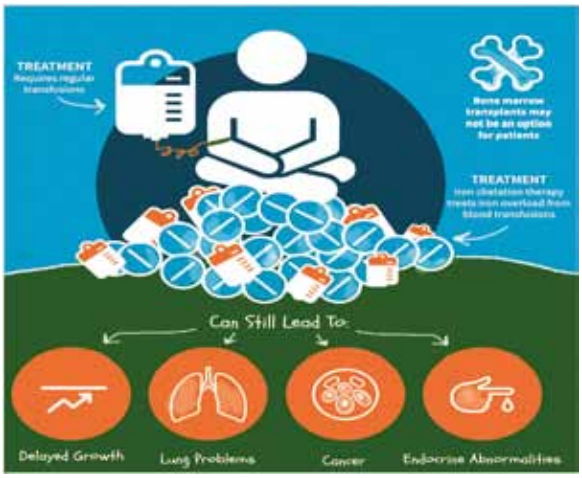
Introduction:

Thalassemias represent the most common single-gene disorder causing a major public health problem in India. It has high frequency extending from the Mediterranean basin through the Middle East (Iran), India and Southeast Asia.



Pic 1: Comprehensive care-program for Thalassemia patients

Effective management of thalassaemia syndromes has converted a disorder that was fatal in the 1950s to that of a chronic long-term condition associated with good survival. Today, in the developed world, the life expectancy of patients with thalassemia varies between 25 and 55 years, mainly depending on compliance with medical treatment. In developing world, especially India, poor availability of proper medical care, safe and adequate red blood cell transfusions together with high cost and poor compliance with chelation therapy remain major obstacles.

Concept of Day-Care-Transfusion Center:

Blood transfusion services are undergoing a period of significant changes as a result of National Blood

Policy. The thalassemia patients need repeated transfusion of blood and blood components at regular intervals. Therefore, hurdles and its association with time consuming procedural formalities for in-patient admission for getting transfusion therapy force the thalassemia patients towards non-compliance group.

Daycare transfusion centers play the most vital role of providing blood transfusions and monitoring children suffering from thalassemia major. A day care unit is to be created in recognition of the need for patient privacy and safety, and to facilitate multidisciplinary care. The available healthcare systems can be best organised to deliver optimal care to patients with thalassemia.

Setting-up a day care transfusion center

Important points:

1. To deliver a state of the art medical treatment to a group of patient who desire day care transfusion therapy, therefore, keep up with the latest available technology in our field.
2. How many patients are going to be catered by this day care facility?
3. How much is the potential to recruit more patients' in-future?
4. It is important to find out the presence of an existing centre of the same hospital.

Resources required to start a day care center

Thalassemia day care center

Laboratory Unit:
For investigating Transfusion associated immune causes of red cell lysis in Thalassemia.

Para-clinical staff Unit:
Specialized nurse, usually acting as liaison between the patient and medical team.

Multi-disciplinary clinical Unit:
haematologist, or paediatrician to supervise the provision of basic care to patient . Support team contains cardiologist, endocrinologist,hepatologist,psychologist and counselor.

Immunization

All patients should be screened for the human immunodeficiency virus (HIV), Hepatitis B, Hepatitis C, followed by Immunization as per standard protocol.

Regimen for giving transfusion therapy to thalassemia patients

- Optimal time to start transfusion?
- What red cell component is indicated?
- How much blood to be transfused?
- Transfusion interval?
- Transfusion efficiency?
- Adverse reaction during transfusion?

A thalassaemia centre should provide the following

- Day care with access to inpatient facilities if needed.
- Facilitates equal access to quality care for every thalassaemia patient. This may be achieved through multidisciplinary specialty team of doctors.
- Close collaboration with necessary services, such as the blood bank and other laboratories.
- Follows evidence based guidelines / standards, providing comprehensive and holistic care.
- Close collaboration with patient support groups.
- Provides advocacy to health authorities for service development and patient's rights.

Summary:

The day care transfusion center is gaining a valid relevance in today scenario of providing effective transfusion

therapy to thalassemia patient group and also an accepted way of ensuring compliance to the therapy. Emphasis should be given on meticulous care and following of instructions especially for iron chelation. Well functioning day care transfusion centers require dedicated and coordinated multidisciplinary support team along with transfusion medicine physician who provides basic care to the patients.

CRYOPRESERVATION OF BLOOD COMPONENTS WORKING TOWARDS A LONGER SHELF LIFE

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Throughout the years, tackling the matter of cryopreservation of cells and tissues has been derived from findings about the protection of cells against the impacts of frost. This effect had long been attributed solely to the mechanical damage that cells suffer from ice crystals generated in the course of freezing. However, concepts of solution effects, pH change and cellular dehydration also came into light. Based on this knowledge, James Lovelock proposed that the cells can be protected from freezing by adding cryoprotectants, which were later divided into two groups based on their type of effects i.e. Intracellular (penetrative) and Extracellular (non-penetrative) cryoprotectants.

Intracellular cryoprotectants such as Glycerol, dimethyl sulfoxide (DMSO) and certain types of glycol, due to their relatively simple chemical structure, penetrate the cellular membrane and do not present any toxic danger for the cell when in low concentration. They are mostly applied when the long-term preservation of frozen tissues is needed (e.g., sperm banks, erythrocyte cryobanks, banks for stem cells and umbilical cord blood cells). Glycerol is mostly used in concentration of either 40% w/v (high glycerol method) or 20% (low glycerol method) for red cell freezing, with their own pros and cons.

Extracellular cryoprotectants such as trehalose, polyethylene glycol and other macro-molecular substances like, hydroxyethyl starch, due to their molecular mass, do not penetrate cellular membrane and are mostly used for rapid and ultra-rapid freezing. The effect lies in their ability to stabilize cellular membrane and also in so called vitrification.

There came a revolutionary breakthrough and significant prolongation of the erythrocytes life after thawing after the fully automated device (Haemonetics ACP-215) had been invented and homologated for general usage by FDA in 2011. This invention made the glycerolization as well as the deglycerolization possible in a fully closed manner, while locking it out of external environment.

Similar to red cells, platelets and stem cells could also be cryopreserved in different cryoprotectives, such as, intracellular (DMSO, glycerol) as well as in extracellular (HES, dextran). The cryopreservation methods may be by Controlled rate freezing, or by Dump freezing Techniques. The stem cells can be preserved at minus 80 degrees C for 6 months and at minus 186 degree C for 10 years.The most widely used method for the platelets cryopreservation is freezing in 5-10% DMSO at minus 80 °C with a maximum shelf life of one year for platelets.

Cryopreservation of blood is a method which solves various problems in blood transfusion service. The main application is in Military Medicine and Disaster Management situations, but also in special transfusiology fields, such as the storage of rare red blood cells, platelets, stem cells, and long-term storage of autologous blood. With the development of modern procedures, prolonged shelf time after thawing and reconstitution of frozen blood is possible, which has enhanced the flexibility and usage of frozen blood.

INDIGENOUS CAR T CELL TECHNOLOGY DEVELOPMENT: PRESENT AND FUTURE IN INDIA

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CAR-T cell therapy has demonstrated remarkable success in long-term remission of relapsed or refractory B-ALL. However, this technology is not yet available in India. Considering socioeconomic conditions of patients in our country, CAR-T-cell therapy will be unaffordable to majority of them due to high cost. To harness this technology and bringing it to the clinic in India at affordable-cost, there is a clear need of developing indigenous CAR-T cell technology platform. In this talk, I will briefly introduce the CAR-T cell technology and its success story. Further I will discuss the work we have been doing on developing this technology against CD19+malignancies. Finally, I will emphasize the need of bringing CAR-T cell technology to the clinic in India, which requires translation of our patented indigenous CAR-T cell platform, and capacity building of human and capital resources.

HOW TRANSFUSION MEDICINE CAN EVOLVE TO ACHIEVE HORIZONS IN REGENERATIVE MEDICINE

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Transfusion medicine is a branch of medicine concerned with transfusion of blood and blood components and encompasses issues of blood donation, immunohematology, clinical transfusion practices, therapeutic apheresis, stem cell collections, cellular therapy and coagulation. The evolution of transfusion medicine over the last 3 decades has been phenomenal with advances in donation testing, molecular immunohematology techniques, developments in stem cell mobilization, collection, sorting and cryopreservation; cell therapy and cutting edge research towards making red cells in the laboratory. However, the research horizons which seek our attention are adequate availability of universal red blood cells and platelets, blood derived biomaterials, availability of rare groups, prevention of alloimmunisation, provision of pathogen free blood components and many more. Regenerative medicine represents the field of medicine that endeavor the replacement or regeneration of human cells, tissues, and organs with the intention of re-establishing normal functionality. It refersto a group of biomedical approachesto clinical therapies that may involve the use of stem cells. Examples include cell therapies (the injection of stem cells or progenitor cells); immunomodulation therapy (regeneration by biologically active molecules administered alone or as secretions by infused cells); and tissue engineering (transplantation of laboratory cells, grown organs and tissues). Since the discovery of induced pluripotent stem cells (IPSCs), the concept of reverse programming of somatic cells has helped the researchers in transfusion medicine to study key check points which are involved in cell differentiation and maturation. Based on these checkpoints, forward programming protocols were developed to generate fully differentiated blood cells in vitro from Hematopoietic stem cells (HSCs), Induced pluripotent stem cells (IPSCs) or Embryonic Stem cells(ESCs). However, the cells produced have immature phenotype; they express fetal, not adult globin and they fail to enucleate efficiently. Furthermore it had proven particularly difficult to produce fully functional hematopoietic stem cells that are capable of reconstituting the entire hematopoietic system from human pluripotent stem cells (HPSCs) in vitro. Overcoming the above problems, the Centre for Regenerative Medicine based at Edinburgh, United Kingdom are close to initiating first transfusion medicine clinical trial relevant to regenerative medicine. It would involve transfusion of red cells produced in laboratory to healthy volunteers. Our research group have successfully addressed aforementioned problems of forward programming along with those of sustainable scalability and hemoglobin type with respect to red cells. The approach used is forward programming of HPSCs by over expression of key transcription factors (HOXB4, KLF1, TAL, SOX17) at defined time-points during the in vitro differentiation processto attain cells expressing adult globin chains and demonstrating better enucleation. Our group also produced reporter HPSCs lines that mark the expression of these key transcription factors to allow

high throughput monitoring of modified differentiation protocols. At the University of Cambridge, the platelet biology research group is applying a similar forward programming method based on the over expression of key transcriptional regulators to "force" cellular identity for the production of megakaryocytes (MKs). In addition, using novel genome editing technologies, they are exploring novel ways to forward programme HPSCs to megakaryocytes. Cellular maturation varies from one HPSC line to the other, hence they are also investigating the genetic and epigenetic determinant of PSC-derived MK maturation variability. Thus we are very close to achieving scalable in-vitro production of red cells and platelets engineered using regenerative medicine technologies. These cells would be free of transfusion transmitted pathogens and could be transfused across blood groups. Similar studies in various sub specialties of transfusion medicine are going on across the globe. On the evolutionary path, the transfusion medicine research is taking small but significant steps towards becoming an integral part of regenerative medicine landscape. As I see the horizon, we as a part of transfusion medicine fraternity shall focus on similar approaches to realize the tremendous research potential of this specialty in our country.

NEXT GENERATION SEQUENCING IN HLA TESTING

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The hyper polymorphic human leukocyte antigen (HLA) system, spanning about 4 Mb on the short arm of chromosome 6, contains a number of genes that play key roles in the adaptive immune response. Especially the "classical" HLA genes encoding the 6 major antigen-presenting proteins (HLA-A, -B, -C, -DRB1, -DQB1, and -DPB1) play a crucial role in solid organ and haematopoietic stem-cell transplantation (HSCT), where outcome is mostly determined by the genetic concordance of HLA alleles between donors and recipients.

Current methods (Sanger sequencing, sequence-specific primers [SSP], sequence-specific oligonucleotide probes [SSOP]) continue to generate ambiguities that are time-consuming and expensive to resolve. However, next-generation sequencing (NGS) overcomes ambiguity through the combination of clonal amplification, which provides on-phase sequence and a high level of parallelism, whereby millions of sequencing reads are produced enabling an expansion of the HLA regions sequenced.

Sequencing the HLA region can provide critical insight into immune disorders. Achieving high-resolution HLA typing results with conventional methods requires multiple assays, systems, and analysis programs. HLA typing by next-generation sequencing (NGS) generates unambiguous, phase-resolved HLA typing results using a single assay, system, and analysis program.

In principle, NGS is similar to Sanger sequencing. The bases of a DNA fragment are identified sequentially from signals emitted as each fragment is resynthesized from a DNA template strand. NGS scales up this process; millions of reactions occur in a massively parallel fashion, rather than being limited to a single or a few DNA fragments. This advance enables rapid sequencing of large stretches of DNA, with the latest instruments capable of producing hundreds of gigabases of data in a single sequencing run.

To illustrate how this process works, consider a single genomic DNA (gDNA) sample from an individual. The gDNA is first fragmented into a library of smaller segments and sequenced. The newly identified strings of bases, called reads, are then reassembled using a known reference genome as a scaffold (resequencing), or compared to a database of known HLA types. The full set of aligned reads reveals the entire genomic sequence of the sample. After the sample library is prepared, all of the sequencing steps through primary data analysis (base calling) can be performed on a single instrument, facilitating rapid turnaround with minimal hands-on time.

Sequencing the ends of the library DNA fragments generates high-quality base calls. The physical link between the 2 reads (originating from the same clonally amplified library DNA fragment) allows association of variants found in each read pair. The distance between the paired reads varies as a result of the random library fragment generation process, allowing the direct resolution of the phase of 2 variants.

NGS has proven instrumental in advancing scientific fields from human disease research to environmental and evolutionary science. It lends itself particularly well to HLA typing. NGS enables sequencing of multiple HLA genes from many samples in a single run. The data generated is higher in resolution compared to conventional methods, yielding accurate results across the entire HLA region mapping to thousands of unique HLA alleles.

The ability to interrogate more of the HLA region is becoming more important as new HLA disease associations are discovered. The comprehensiveness of this technique reduces the need for additional testing to resolve ambiguities, decreasing overall turnaround time. Next-generation sequencing (NGS) has now been established, and widely recognized, to be the preferred choice for human leukocyte antigen (HLA) typing. This transformation is based upon the many scientific, operational and economic benefits this technology affords.

GREY AREAS IN LICENSING AND ACCREDITATION OF BLOOD TRANSFUSION SERVICES

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As blood has been treated as a 'drug' under the Drugs and Cosmetic Act (D&C Act), 1940 and Drugs and Cosmetics Rules, 1945, the Blood Transfusion Services are under the regulatory authority. The Drugs & Cosmetic Act along with the National Blood Policy and NACO guidelines, provide a framework for Blood banks to establish and function, right from the application for License to the infrastructure, manpower, equipments, consumables, documents etc. On the other hand, the accreditation Standards laid down by the National Accreditation Board for Hospitals & Health care Providers (NABH) complement the regulations in setting up a blood transfusion service which is of the highest achievable quality putting into practice all the elements of a good Quality Management System.

There are many areas which are left unattended by the D & C act. This is mainly as a result of continuous developments in the field of Transfusion Medicine, the last amendments to the act came into force only in 2001.

Issues in Licencing which need to be addressed to are:

1. Continuous Training of drug inspectors
2. Better and smooth (online) procedure for application
3. Delay in the grant/renewal of License
4. Infrastructure requirements
5. Staff requirements
6. Equipment requirements
7. Uniformity in the donor Selection criteria
8. Use of techniques like Chemiluminescence, Nucleic acid testing (NAT), Leukoreduction, Antibody Screening, Antigen Typing, Pooled platelet concentrates
9. Therapeutic procedures like erythrocytapheresis, plasma exchange, stem cell collection
10. Use of Platelet Additive Solution
11. Revision of List of Components
12. Clarity on GMP

Also certain obsolete practices need to be omitted from the act. Hence, periodic revision of the Act is necessary. Or else, like any other field of Medicine, adopting the latest technology & methodology should be permissible with maybe just a notification to the authority.

The first standards for Blood bank accreditation were made available in 2007 and the latest are in place since 2016. The standards provide a framework for the implementation of quality management systems in the blood transfusion services. Most of the clauses described in the Standards are actually incorporated in the D & C Act, except for some managerial clauses. It may be reiterated that accreditation is a Voluntary process in contrast to licensing which is a mandatory procedure.

The biggest grey area in accreditation is the Subjective Assessments by Assessors. The Standards need to be more Objective with maybe a scoring system or a "YES/NO". There is a lot of reading in between the lines. For the blood banks, there is a lot of confusion regarding the action to be taken for many clauses. The points mentioned in some clauses are not practical as it may involve a third party which may not be under the direct control of blood banks.

Lastly, though the blood banks are legally bound by the D & C Act and though accreditation is voluntary, certain work ethics need to be followed by blood banks. All of us who are associated with the Healthcare, need to understand that it is our moral duty to strive for better patient care and adopting any policy, procedure, technology which will help achieve this goal is always welcome.

ROLE OF QUALITY INDICATORS IN BLOOD BANK

Dr. Bharat Singh
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Definition:

Accreditation is the process which ensures the organization certification practices are acceptable, typically meaning that they are competent to test and certify third parties, behave ethically and employ suitable quality assurance.

Why Accreditation:

1. It provides support and advice to blood bank in maintenance and enhancement of quality processes.
2. Confidence and assurance on quality to various stake holders.
3. Assurance of good standards in the organization (Panels')
4. Organizations can display in its premises that voluntarily it has accepted accreditation.
5. Medical tourism

Impact of Accreditation:

- Accreditation helps the institution to know its strength, weakness and opportunities.
- Initiate the institution to use modern technology
- Provide institute a new sense of responsibility.
- Promote intra and inter institutional coordination
- Provide reliable service

Benefits of Accreditation:

a. Significant improvement in the service of the blood bank.
b. Market driven, national and international acceptance.
c. Wide spread recognition and greater appreciation
d. Improve the institution by the experience of independent competent quality assessors.
e. Accredited institutions are preferred by the funding agencies.

Need of Accreditation:

1) National & international recognition.
2) Improvement of service provided.
3) Encourage self improvement and initiatives taken by the institution.
4) Accountability of the institute to the stake holders.
5) Improvement in overall quality assurance program.

Quality Indicators in Blood Bank:

Quality Indicators are measurable aspects of process outcomes that provide indication of the condition or direction of performance over a period of time and progress towards stated quality goals or objectives.

Q I Indicates:

Adequacy of service. The policy & procedure of Blood Bank are adequately addressed. Blood bank is providing safe & quality product. Equipments are calibrated & are under regular AMC. The reagents used are of good quality. The staff is well trained & well versed with quality management system in Blood bank.

All the incidents are being analyzed by root cause analysis (RCA) & corrective actions (CA) are being taken.

Ten Quality Indicators have been defined by quality council of India for Blood Banks These are:

1. TTI %
2. Adverse Transfusion Reaction Rate %
3. Wastage rates

4. TAT of Blood Issues
5. Component QC failures
6. Adverse Donor Reaction Rate %
7. Donor Deferral Rate %
8. % of components
9. TTI outliers %age
10. Delays in transfusion beyond 30 min. after issue

TTI%

Combined TTI cases (HIV+HBV+HCV+Syphilis+MP) X 100
Total number of Donors

- It should be less than 4%.
- Reflect the adequacy of donor screening.
- If it is more it implies screening not adequately done by medical officer.
- Sensitivity of Test (III/IV Gen.)
- The TTI % of each marker should be within the normal range of the population of Country.
  HIV <0 .2% , Hep. B < 2-2.5% , HCV < 0.5% , TPHA < 1% , Malaria < 1%

Adverse Transfusion Reaction Rate %

Number of adverse transfusion reactions X 100
Total number of units issued

It should be less than 1%. It Reflect the quality of working of Blood Bank.

Non Hemolytic transfusion reaction can be controlled by proper documentation. Hemolytic transfusion reaction can be controlled by screening donor & patient for Red cell antibody.

Wastage rates

Number of blood/ blood components discarded X 100

Total number of blood and blood components prepared

- It should be less than 10%.
- Reflect the management and planning skill of services.
- Under/Over collection can be avoided by adequate training of phlebotomist.
- Components should be prepared as per requirement and following GMP.

Turn Around Time (TAT) :

Sum of the Time Taken
Total number of blood and blood components cross matched/reserved

- 45 min for Coomb's cross match and 120 min if antibody screening in patient is to done.
- It provides confidence in the stake holder.
- Surgeon can plan accordingly.
- TAT can be changed in urgent and immediate demand.

Component QC failures:

Number of components QC failures X 100
Total number of component tested

- QC failure should not be > 25%.
- Indicate processing procedure in component preparations.
- Calibration of equipment.
- AMC / Regular service.

Adverse donor Reaction Rate% :

Number of donors experiencing adverse reaction X 100
Total number of donors

- Less than 1%.
- Reflect adequate donor screening by medical officer.
- Pre donor testing.

Donor Deferral Rate % :

Number of donor deferrals X 100

Total number of donations + Total number of deferrals

- Depend on type of population coming for donation.
- Low Hb, Low Body weight in slum & poor.
- Elderly donor might be having DM /Hypertension.

%age of Component:

Total component issues X 100

Total Whole Blood + Component issues

- As per policy 100% component preparation.
- Whole blood may be required in exchange transfusion.
- Rational use of blood.

TTI outliers %age

Number of deviations beyond ± 2SD X 100

Total number of batch assays

- L J Chart.
- Within ± 2 SD.
- Shift /Trend pattern.
- Westgard Rules.
- Plotted for known I / C.

Delay in Transfusion beyond 30 minutes after issue:

- 100 % within 30 minutes.
- Rational use of blood.
- Unnecessary transfusion.
- Confidence in BTC.

The QCi recommends all ten parameters to be defined and records to be maintained in Blood Bank and NABH accredited blood banks needs to send the details to QCI office every six months

Bacterial Detection in Platelets

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Bacterial contamination of blood components and theprevention of transfusion-associated bacterial infectionstill remains a major challenge in transfusion medicine.It iscurrently the most frequent infectious complication of transfusion therapy, with between 1 in 1,000 and 1 in 3,000 platelet units being bacterially contaminated at time of transfusion.

The predominant organisms implicated in platelet bacterialcontamination are the skin flora, including staphylococci(Staphylococcus aureusand coagulase-negativestaphylococci), Corynebacteriumspecies, and Propionibacteriumspecies. In March 2004, AABB added a new standard that requires membersof this organization to implement measures to detectand limit bacterial contamination in all platelet components.

Several factors have contributed to the persistence of this problem including lack of sensitive detection methods, lack of recognition of the frequency of the problem, inadequate recognition of septic reactions by clinicians treating patients receiving platelet transfusions, differences in transfusion reactions between bacterial species and bacterial inocula transfused, and differing methodologies and time of testing for detection of bacteria in platelet units.

Overview of currently commercially available bacterial screening methods

Method (Manufacturer)	FDA/ CE-IVD	Principle of detection	Analytical sensitivity, CFU/ml	False-positive rate, %	Sample volume	Hands-on-time/ time-to-result	References	Advantages	Disadvantages
Culture methods combined with early sampling									
BacT/Alert (BioMérieux)	Yes	Colorimetric detection of CO_2 production during automated cultivation	1–10	0.03–0.36	4–10 ml	5 min/depending on bacterial load	[13, 21–23, 31, 55, 66, 67]	High sensitivity Easy performance Automation	Risk of sampling error Time-to-results strongly depending on bacterial load Limited clinical value (negative-to-date)
Bactec (BD Biosciences)	No	Fluorimetric detection of CO_2 production during automated cultivation	1–10	0.10	4–10 ml		[28, 30, 31]		
VersaTrek (Trek Diagnostics)	No	Detection of pressure changes in culture bottle due to gas consumption/production	10–20	n.s.	4 ml		[29]		
Haemonetics eBDS (Haemonetics)	Yes	Electrochemical detection of oxygen consumption at the end of cultivation	1	0,008–3.5	2–3 ml	n.s./24–30 h	[28, 32, 33, 55, 66]		
Rapid methods combined with late sampling									
BactiFlow (BioMérieux)	No[1] Yes	Fluorescence-assorted cell sorting based on esterase activity of viable cells	300–500 35	0.05–0.57 n.s.	1 ml 1.0	5 min/1 h 30–60 min/4 h	[35–37] [35]	Short hands-on-time, time-to-result Reduced risk for sampling errors High clinical efficiency	Decreased sensitivity PC release without testing
16S rDNA real-time PCR	Yes	Amplification of nucleic acids	GP: 10^3 to 10^4 GN: 10^3 to 10^5, some > 10^6	0.5–1.15 n.s.	0.5 ml 1.0 ml	5 min/1.5 h 1 h	[23, 42–45] [51]		
PDG (Verax Biomedical Inc.)		Lateral-flow immunoprecipitation of bacterial lipopolysaccharide or lipoteichoic acid	10^3 to 10^4						
BacTx[2] (Immunetics)		Colorimetric detection of bacterial peptidoglycan							

GN = Gram-negative, GP = Gram-positive, n.s. = not specified.
[1]Currently in progress.
[2]No published comprehensive validation studies.

UPDATES IN MANAGEMENT OF ITP

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The main approach towards an ITP is achieving an adequate hemostasis rather than a normal or near normal cell count. Initial management depends upon the disease status, including, extent of bleeding, co-morbidities predisposing to bleeding and complications of specific therapies. ITP has no cure, and relapses may occur years after seemingly successful medical or surgical management. Therapeutic options for ITP are detailed below.

1. Corticosteroids

They are considered as backbone for initial treatment if ITP. Oral prednisone 1 mg/kg/day in tapering doses for 4 to 6 weeks are the most common initial regimen. High-dose dexamethasone 40 mg daily for 4 days per month) for several cycles is another regimen. In most patients the platelet count decreases once the dose is tapered or stopped.

2. Intravenous Immunoglobulin

When patients don't respond to corticosteroid therapy, intravenous immunoglobulin in a dose of 0.8-1 g/kg is recommended. Intravenous immunoglobulin rapidly increases platelet counts in almost 80% of patients, but the effect is transient and the drug requires frequent administration. It is usually a well tolerated drug.

3. Anti-D immunoglobulin

Anti-D in a dose of 50-75 microgram/kg, has a high response rates with platelet effects lasting for more than 21 days. Studies have shown better results at a high dose (75 µg/kg) than with the approved dose (50 µg/kg). Anti-D immunoglobulin can also be given intermittently whenever the platelet count falls below a specific level. This allows some patients to avoid splenectomy and may even trigger long-term remission.

4. Rituximab

Rituximab is used in treating ITP due to its safety profile and ability to deplete CD20+ B cells responsible for antiplatelet antibody production. Use of rituximab in ITP reported an overall platelet response in 62.5%. Rituximab has also been investigated as an alternative to splenectomy. A single course of rituximab (375 mg.m2 weekly for 4 weeks) induces a complete remission in approximately 40% of patients at 1 year, one third after 2 years, and 15% to 20% at 5 years. An initial rise in platelet count often occurs within 1 to 2 weeks, suggesting an effect on platelet clearance, but more durable responses may not be observed until several months after treatment. Many patients who achieve an initial complete remission and subsequently relapse respond to retreatment.

5. Thrombopoietin receptor agonists

Thrombopoietin receptor agonists mimic the effect of thrombopoietin and stimulate the production of platelets.

In 2008, the US Food and Drug Administration approved two drugs of this class for treating ITP: romiplostim and eltrombopag. They are mainly used to treat patients with chronic ITP who have had an insufficient response to corticosteroids, immunoglobulin, or splenectomy.

6. Newer Agents

Drugs under investigation include ARK-501, totrombopag, LGD-4665 and MDX-33.

7. Combinations for Refractory Cases

Refractory cases are usually given combination chemotherapy. Combined azathioprine, mycophenolate, and cyclosporine achieved an overall response in 73.7% of with chronic refractory ITP.

8. Hematopoietic stem cell transplantation

Hematopoietic stem cell transplantation has provided remission in limited number of patients. However, it is associated with fatal toxicities such as graft-versus-host disease and septicaemia, and therefore it is reserved for severe refractory ITP with bleeding complications unresponsive to other therapies.

RED CELL EXCHANGE IN SICKLE CELL DISEASE

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Red Cell Exchange (RCE) has been widely used as first line therapy in management of sickle cell disease. RCE using automated cell separators is beneficial in reducing the sickle cell percentage with a simultaneous lower accumulation of iron when compared to simple top transfusions. RCE reduces HbS to pre-defined levels. However, this requires specialized equipment and trained personnel, and also exposes the patients to more red cell units.

Abnormal red blood cells are removed and replaced with healthy donor red cells using automated instrument with integrated programmable computer. This facilitates customized collection, replacement rates for each patient based on clinical data that are entered prior to the exchange procedures.

Apheresis equipment calculates the replacement red cell volume required to achieve the target HbS (proportion of the patient's RBCs remaining at the end of the procedure) and hematocrit levels. The fraction of cells remaining (FCR) is the percentage of abnormal cells remaining in the patient at the end of the procedure. Various studies have shown that end-of-procedure FCR rates of <30% have a positive effect on patient outcomes.

USE OF TRANEXEMIC ACID TO REDUCE BLOOD LOSS AND TRANSFUSION REQUIREMENTS

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Various blood-conserving techniques have been developed to reduce blood loss and transfusion rates including controlled hypotension, autologous blood transfusion, intra-operative blood salvage, and the use of erythropoietin and antifibrinolytic agents. The popular antifibrinolytics include tranexamic acid (TXA), aprotinin and ε-aminocaproic acid (EACA), which have different mechanisms to inhibit the dissolution of blood clots.

Tranexamic Acid ,a synthetic derivative of the amino acid lysine, acts by binding to plasminogen and blocking the interaction of plasminogen with fibrin, thereby preventing dissolution of the fibrin clot.TXA has been available for more than 20 years. It was first approved by the US Food and Drug Administration in 1986 for short-term use (2-8 days) as an injection to reduce or prevent bleeding during tooth extraction in hemophilia patients.

TXA has gained popularity in reducing peri-operative blood loss, particularly after the publication of a trial in high-risk cardiac surgery.In case of injury,Patients sustaining injury of various kinds present with appropriate or physiological fibrinolysis, exaggerated or hyperfibrinolysis, or fibrinolysis shutdown. Patients with substantial bleeding who die early after injury tend to have hyperfibrinolysis where administration of tranexamic acid may have a role.These observations are supported in both the CRASH-2(Clinical Randomisation of an antifibrinolytic in

Significant Haemorrhage)trial ,and WOMAN(World Maternal Antifibrinolytic Trial). In these two large, randomised controlled trials, tranexamic acid reduced mortality and bleeding. Based on the results of the CRASH-2 Trial, it has been estimated that TXA use could save between 70,000 and 100,000 lives per year worldwide and TXA was added to the World Health Organization list of essential medicines. These trials also suggest that effect is observed only when tranexamic acid is given within 3 hours of injury. Anti fibrinolytic Trials Collaboration , a meta-analysis of individual patient-level data from 40138 bleeding patients supports this finding. Immediate treatment improved survival by more than 70% .Thereafter, the survival benefit decreased by 10% for every 15 min of treatment delay until 3 h, after which there was no benefit.Also,Patients with severe brain injury or multi-organ trauma are more likely to present with shutdown of fibrinolysis than with massive bleeding. In these patients, administration of tranexamic acid might not be as effective. Also caution should be exercised to avoid using TXA in patients with DIC, Subarachnoid haemorrhage and color vision disturbances.

Currently ,utility of tranexemic acid is being widely studied in management of obstetric haemorrhage, orthopedic surgeries including spine, GI bleed, trauma and cardiac surgeries.Topical and pediatric use also are studied. Major outcome measures are vascular occlusive events ,myocardial infarction, stroke, pulmonary embolism and deep vein thrombosis ,seizures,blood loss, receipt of blood transfusion, and units of blood products transfused. Tranexamic acid for hyperacute primary IntraCerebral Haemorrhage (TICH-2)trial reported no significant change in functional status although potential benefits were seen with reductions in haematoma expansion and early death without significant adverse effects .A systematic Cochrane review by Bryan smith et al suggests that antifibrinolytic treatment such as TXA is effective treatment with women of reproductive age with heavy menstrual bleeding compared with placebo, NSAIDS,oral luteal progestogens, ethamsylate, or herbal remedies ,second only to LIUS(levenorgestrel Intra Uterine system). HALT- IT Trial(Haemorrhage Alleviation With Tranexamic Acid- Intestinal System) is a global trial which investigates the utility of TXA in GI bleeding.

Despite the impressive findings of the CRASH-2 trial an audit of UK hospitals in 2011 showed that, of 412 trauma patients who required blood transfusion and were eligible for TXA treatment, only 12 (3%) received TXA. A survey of 24 member institutions of the Trauma Center Association of America documented that only 2 were using TXA as part of an institutional protocol and 7 institutions were considering its use. Reasons reported for lack of TXA use included lack of availability, ineffectiveness, cost, and unfamiliarity with the drug. Larger trials with adequate power are warranted to prove the absence of major side effects ,dosing and timing of administration and once popularized it may contribute largely to reduction of allogenic transfusion.

EVIDENCE ON EFFECTIVE HEMOGLOBIN THRESHOLDS FOR RED CELL TRANSFUSIONS

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The clinical rationale for RBC transfusion is to restore Oxygen delivery to hypoxic tissues and protect against clinically significant bleeding. Most appropriate red cell transfusion trigger has been addressed by a number of randomized controlled trials over the last decades in a variety of clinical settings. Various systematic reviews and meta analysis have performed pooled analysis of data from these randomized control trials, and results have been utilized by societies, and recommendations and guidelines on red cell transfusion thresholds have been put forward. Arbitrary transfusion trigger has been gradually lowered towards a restrictive one (transfused when hemoglobin levels are below 7-8 g/dl) due to lack of clinical evidence demonstrating an improved outcome with liberal RBC transfusion practice and reduced transfusion related complications and cost.

Despite different levels of evidence and variable degrees of recommendations , all scientific societies recommend a restrictive policy in surgical, hemodynamically stable patient .There is more uncertainity on optimal transfusion policy in particular categories of patients like those with acute coronary syndrome, traumatic brain injury, acute neurological disorders , stroke, thrombocytopenia, cancer, hematological malignancies and bone marrow failure. Well designed adequately powered trials in these populations of patients are required to assess the appropriate transfusion thresholds. A multi disciplinary, multi model, individualized strategy collectively termed Patient Blood Management aimed at minimizing transfusion of allogenic blood components with ultimate goal of improving patient outcome .This will imply a change in paradigm from restrictive use to optimal or appropriate use with transfusion of minimum volume of RBC needed to revert symptoms and signs of hypoxia.

PLATELET TRANSFUSION IN REFRACTORY PATIENTS

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Platelet transfusion therapy is an essential part of the treatment of cancer, haematological malignancies, bone marrow failure, and hematopoietic stem cell transplantation. Around 30% to 70% of these multiply transfused patients become refractory to the platelets transfusion therapy during the course of their treatment. The term "refractoriness", is defined as two consecutive failures to respond to platelet transfusions after ABO matched platelet transfusion within 48 -72 hours of storage. Platelet refractoriness indicates that platelets from random donors do not give rise to expected post-transfusion platelet count increments in the recipient, despite being administered an adequate dose of platelets after taking into consideration the patient weight & blood volume. Platelet transfusion refractoriness may have underlying alloimmune or non-alloimmune mechanisms, with the latter being responsible for majority (upto 80%) of cases. Nonimmune causes include sequestration due to splenomegaly, and accelerated consumption or decreased production in states such as fever/infection, disseminated intravascular coagulation, circulating immune complexes, drug-related antibodies or toxicity, thrombotic microangiopathies and, finally, the properties of the platelet unit itself (quantity transfused and duration of storage). Any of these non-immune insults may manifest with platelet transfusion refractoriness in 50% of patients. In contrast, alloimmune mechanisms consist mainly sensitisation to foreign class I A or B human leucocyte antigens (HLA) through transfusion, pregnancy or transplantation. The attack of variably expressed major-incompatible A, B antigens on donor platelets by pre-formed recipient ABO-isogglutinins also plays a role in this category, and least often, sensitisation to polymorphic antigens in the human platelet alloantigen (HPA) system may occur. Two main strategies have been used to transfuse alloimmunised patients: matching donor-recipient HLA antigens and crossmatching platelets. HLA-matching is one of the most frequently used modern methdoes reliably improve platelet increments in patients with alloimmune refractoriness, some studies have found that up to 40% of HLA-matched platelet transfusions remain unsuccessful . HLA typing of patients as well as platelet donors is expensive and the long turn-around time decreases its utility in some clinical situations. In addition to these drawbacks, HLA matching requires the availability of large numbers of HLA-typed donors1. Even large blood suppliers periodically have difficulty identifying HLA-matched donors for some patients. As a result, alternative strategies have been developed to obtain HLA-compatible, if not fully HLA-matched platelets. Platelet cross-matching assays are a relatively low-cost and rapid alternative to the HLA-matched approach to the management of platelet refractoriness. Cross-matching assays have been used for the identification of candidate platelet donors and may be beneficial for patients in whom refractoriness is due to HPA alloimmunisation, so the HLA-matched platelet transfusion has no value. Different cross-matching methods have, therefore, been developed to identify compatible platelet donors, including radioactive techniques, flow cytometry, enzyme-linked immunosorbent assay (ELISA) and solid-phase procedures. In a common version of this assay, a solid-phase capture method is used to screen patients' plasma for platelet antibodies directed against HLA or other antigens on platelets. Typically, a given patient's plasma is tested against platelet samples. Donor platelets lacking reactivity in the assay are considered to be "cross-match-compatible" and are selected for transfusion support. Selection of products based on platelet cross-matching has been shown to improve post-transfusion platelet increments in refractory patients. Despite the routine use of platelet cross-matching at many institutions, little has been published about the safety or effectiveness of this strategy in the mid-term (several weeks-months) management of refractory patients. We will present transfusion-related and clinical outcomes observed at our institution in a study, wherein we tried to evaluate the efficacy of cross-matched platelets for managing platelet refractoriness to determine whether platelet cross-matching can effectively identify platelet units that will improve the post-transfusion platelet counts in all patients who are refractory to randomly selected platelets.

PROTOCOLS IN DONOR LYMPHOCYTE INFUSION

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Relapse is the most frequent cause of failure after allogenic stem cell transplantation (allo-SCT) for hematologic malignancies and it carries very poor prognosis. Second allo-SCT, although curative, is not an appropriate treatment option for a large number of relapsing patients. Donor lymphocyte (or leukocyte) infusion (DLI) or buffy coat infusion is a form of adoptive immunotherapy used after hematopoietic stem cell transplantation to treat mixed chimerism and minimal residual disease.DLIs can induce remission in these patients and help to avoid an expensive and difficult second transplant.

DLIs were initially pioneered by Weiden et al. in long-term canine radiation chimeras and humans by Kolb et al. Initially treated with allo-HCT for chronic myeloid leukemia (CML), Kolb et al. treated CML relapsed patients with buffy coat infusions from the donor. The investigators observed unmaintained cytogenetic remissions after treatment with interferon alpha and donor buffy coat. Subsequent studies from Kolb et al. reported remissions in other diseases relapsing after allo-HCT. Therefore, after the observation that DLI overcame the immune tolerance between donor and recipient by the achievement of responses (and the development of GvHD), the use of donor lymphocytes increased widely.

Applications of Donor Lymphocyte infusion:

1. Therapeutic DLI
   DLI is a powerful weapon in the treatment of relapsed or persistent hematological malignancies following allo-HSCT.Recent advances in DLI have focused on enhancing the GVL or graft-versus-tumor effects of the infused donor T cells, while decreasing DLI-related toxicities, such as GVHD and aplasia.

The following protocols have been adopted in case of therapeutic DLI

a. Modified DLI for relapse treatment after HSCT
   The Sloan–Kettering transplantation group ideated a dose escalation schedule of donor lymphocytes to achieve better responses minimizing the risk of GvHD. Since that study, the dose escalation schedule has been adopted broadly in DLIs.Transplantation group ideated a dose escalation schedule of donor lymphocytes to achieve better responses minimizing the risk of GvHD.
b. Infusion of allo-depleted donor T cellsThere are studies in literature in which CD4+-selected DLI have been explored as an alternative option to unprimed DLI .
c. Infusion of mHAg-specific CTLs
   The adoptive transfer of donor T cells that recognize recipient minor histocompatibility antigens (mHAgs) is another potential strategy for treating relapse after allo-HSCT.

2. Preemptive immunotherapy using DLI
   DLI is of limited value when initiated during frank hematologic relapse. Therefore, preemptive immunotherapy using DLI has been introduced by several groups to decrease relapse rates following allo-HSCT.
3. Prophylactic DLI
   Recurrence after allo-HSCT for patients with refractory or relapsed hematological malignancies remains a challenge. Recent research has focused on allo-HSCT plus prophylactic DLI to decrease relapse rates and improve survival in these patients.

COLLECTION PERFORMANCE METRICS OF MNC COLLECTION

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Hematopoietic stem cell transplantation (HSCT) is a potentially curative treatment for several hematological malignancies, bone marrow (BM) failure syndromes, hemoglobinopathies and some inherited metabolic disorders. Hematopoietic stem cells from bone marrow, peripheral blood, or cord blood are used for autologous or allogeneic HSC transplantation (HSCT). Peripheral blood stem cell transplantation (PBSCT) is the most common transplantation procedure performed in Medicine. Its clinical introduction in 1986 replaced BM as a stem-cell source to approximately 100% in the autologous and to approximately 75% in the allogeneic transplantation setting. Most common source of stem cell graft for both autologous and allogeneic hematopoietic transplants are peripheral blood hematopoietic progenitor stem cells (PBSC). PBSC procedure gained importance over bone marrow (BM) harvest as they were associated with faster recovery, fewer transfusions and shorter hospital stay. Different mobilizers that can be used for sufficient mobilization of stem cells into peripheral blood include G-CSF, GM-CSF,and GCSF& Plerixafor with routine administration of G-CSF once or twice daily until the prescribed CD34+ cell yield is achieved. An adequate number of nucleated or CD34+ cells in the graft are of utmost importance to achieve sustained engraftment and good survival. This is one contributory rationale for the increasing use of peripheral blood stem cells (PBSCs) in HSCT, because a PBSC graft contains approximately 5 to 10 times more CD34+ and T cells compared with a BM graft. This in turn result in decreased risk of rejection and it also shorten the phase of aplasia. An optimal CD34+ cell dose has been found to be associated with 1) greater reduction in relapse in myeloid malignancies than that in lymphoid malignancies, 2) greater reduction in reduced-intensity conditioning than in full-intensity conditioning, 3) greater reduction in relapse when there is a inhibitory killer-cell immunoglobulin-like receptor ligand (iKIRL)-mismatch in the GVH direction, 4) greater reduction in relapse when there is a lack of iKIRL, suggesting that the protective effect of CD34+ cell dose against relapse may be immune-mediated, possibly through NK cell recovery. Higher CD34+ cell doses are generally associated with reduced transplant-related mortality (TRM) and relapse rates and superior survival and disease-free survival (DFS) rates.

It is possible to predict accurately the hematopoietic progenitor cell (HPC) dose that will be collected in an apheresis session depending on:

- Peripheral CD 34 concentration at the start of collection
- Patient weight
- Volume of blood to be processed (from predicted end-run results), and benchmark mean “CE2” Collection Efficiency of the cell separator

The final outcome in an MNC transplant recipient depends a lot on the quality of the final product. Therefore it is important to define a performance metrics of the entire transplant process.

Performance metrics – what do they mean?

Performance metrics describe the characteristics of a product such as collection efficiency of the procedure, product volume & purity and quality level.

- Efficiency (CE%): the higher the efficiency, the less blood needs to be processed to obtain a desired cell yield.
- Throughput: the higher the throughput (cells/min), the less time it takes to process a given volume of blood.
- Platelet loss: the lower the platelet loss, the lower the bleeding risk of the patient/donor, and the less likely a platelet transfusion will be required post-collection.Platelets in the graft can cause clumping after freezing and thawing and during extra processing
- Product volume: cell processing labs like smaller products; they require less cryo-protectant DMSO (it is toxic for patients) and take less space in the nitrogen tanks.
- Product purity: granulocyte contamination in products generally causes problems during the freezing & thawing process, and granulocytes are toxic for the patient.Red cell contamination becomes significant in ABO mismatched allografts

The ideal PBSC collection technique will minimize granulocyte, erythrocyte and platelet contamination in the apheresis product while maximizing mononuclear cell collection. The extraneous cells, if excessive, may complicate processing and cryopreservation of the PBSC product. Excessive collection of red blood cells, with their subsequent cryopreservation and transfusion, has been implicated in cases of acute renal failure seen with some PBSC transplants. Furthermore the red blood cells will be destroyed during the freezethaw process, thereby producing hemoglobinuria and interfering with in vitro treatment. It has been demonstrated that excessive platelet contamination in the final product with resultant increased platelet aggregation after thawing will lead to in vivo stem cell losses at transfusion. Platelet depletion during the procedure may be critical in patients who have a low platelet count. The blood volume processed per hour is another important parameter to take into account for an evaluation of cell separator efficiency. The extracorporeal volume during the procedure may be critical in pediatric patients with small circulatory volumes. The final product volume may be important in lessening the quantity of potentially toxic dimethylsulfoxide needed for freezing, as well as reducing storage space. Commonly used systems available for leukapheresis till recent time required intermittent optical/manual input from the operator, making it labor-intensive and prone to user-dependent variability. Some devices are based on a continuous flow method controlled by computer software. They consist of a single chamber designed to collect PBSC, but the collection occurs in phases. The new generation of cell separator is instruments have been optimized for HPC(A) collection efficiency(CE) by combining an automated , continuous flow process using single or dual stage separation chambers and cyclic MNC collection with a software application. Therefore a performance metrics need to be defined to have the best quality product even in cases with poor mobilization with lesser amount of blood volume to be processed and less procedure time/ sittings and minimal risk to the patient/donor during the collection phase and the recipient during the transplant.

WHOLE BLOOD AUTOMATION

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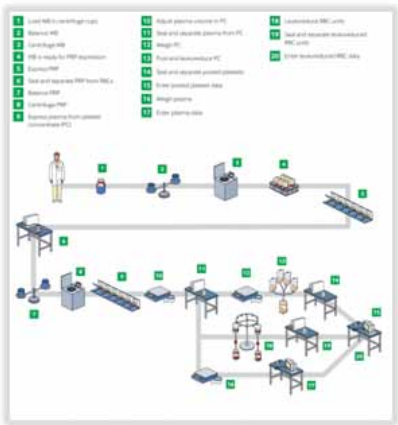
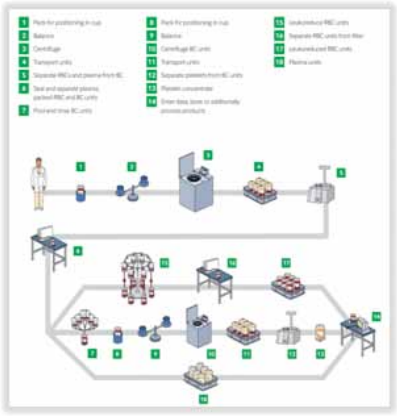
In 1950, William Murphy and Carl Walter invented plastic bag bags replacing the breakable glass bottles that were used until that point1and allowed evolution of a collection system capable of safe and easy preparation of multiple blood components from a single unit of whole blood2.

Manual Blood Component processing is a tedious process involving many operations such as centrifugation, component separation etc3.In the past two-decadeblood centers adopted semi-automated component extractors. These devices are flexible and helps standardizing processing of centrifuged blood. It performs a first- and second-separation processes to produce Red Blood Cells, Platelet-Rich Plasma, Platelet-Poor Plasma, Buffy Coat Platelets and Platelet Concentrate4. To do so, multiple steps are involved, and considerable human resource hours are invested. Major steps involved in processing are given in the pictures below5.



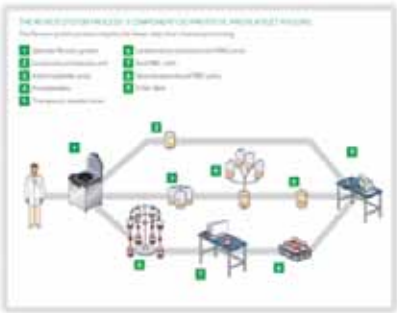
Picture 1: Platelet Rich Plasma Method



Picture 2: Buffy Coat Method

Often blood banks are not able to optimize quality of blood components. In modern era "unambiguous traceability" is required of all blood and blood components from donor to patient and vice versa or final fate if not transfused6. The same might not be addressed by using semi-automated blood component extractors.

Globally, blood centers are adoptingwhole blood automationto overcome limitations of semi- automated devices and to standardize and optimize blood componentsproduction process.Whole blood automation system combines balancing, centrifugation, component separation, and sealing into one platform and thus offers standardization and simplification for whole blood processing in comparison to semi-automated processing systems7. Furthermore, the system allows simultaneous processing of four whole blood units.



Whole blood automation offers several benefits over semi-automated blood component separation techniques. The processing of blood components is considerably easier reducing the likelihood of error and shortening training time7. Blood centers who have adopted whole blood automation experienced increased logistical flexibility, procedural efficiency and output7. Few other benefits are as follows:

- Improves blood component efficiencies through reductions in processing time9.
- Pooling by-products like platelets helps to maximize the value of a whole blood donation in a very easy way7. When whole blood automation device is used pooling of platelets is guided by means of platelet yield optimization9.
- Allows improved cell separation with less orange-red plasma9.
- Traceability is optimized through software9.
- Blood components meet the quality criteria stipulated by American Association of Blood Banks Standards and Council of Europe Guidelines10.

To maintain highest quality of blood components Indian blood centers should aspire to adopt whole blood automation. It offers standardization and simplification for whole blood processing when compared to semi-automated processing systems.

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ORAL Paper Presentation

OP 1

DETERMINATION OF THE CORRELATION BETWEEN HEMATOPOIETIC PROGENITOR CELL (HPC) COUNT AND FLOWCYTOMETRIC CD34 CELL ENUMERATION IN HEMTOPOIETIC PROGENITOR CELL HARVEST BY APHERESIS [HPC(A)]

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BACKGROUND:

The gold standard for estimation of Hematopoietic Progenitor Cells (HPC), to determine the Time-To-Initiate Harvest (TTIH) and Adequacy-Of-Harvest Dose (AOHD) is Flowcytometric CD34 cell enumeration. However, flowcytometer is available at very few centers in India, is expensive, requires trained staff and is time-consuming. The Sysmex XN-9000 cell-counter provides HPC count which is the count of immature and blast cells in a sample. Cell-counters are more widely available, cheaper, easy to perform and gives quicker results.

AIMS:

We have evaluated the correlation of HPC, Mono-Nuclear Cell (MNC) and White Blood Cell (WBC)count with flowcytometric CD34 cell enumeration at our center in 114 samples from data available from January 2016 to June 2018

METHODS:

The gold standard for HPC count is flowcytometric CD34 cell enumeration. HPC count was estimated by XN-9000 in White Precursor Cell (WPC) channel which detects the abnormal membrane composition and nuclear content. HPCs are relatively resistant to permeabilization by WPC reagent. Samples were run simultaneously to determine the HPC count by flowcytometer and cell counter.

RESULTS:

114 samples were evaluated. The correlation coefficients (r) for HPC, MNC ,WBC counts and flowcytometric CD34 cell enumeration were 0.850, 0.649 and 0.422 respectively.

CONCLUSION:

As the correlation between the HPC count and flowcytometric CD34 cell enumeration is very strong, we could use HPC count to estimate TTIH and AOHD in HPC(A).The correlation of MNC count with flowcytometric CD34 cell enumeration is good, so at places where advanced automated cell counters are not available, MNC count can serve as a supplementary method to determine TTIH.

In a resource constrained country like India where flowcytometers are not available everywhere, HPC could replace or serve as an adjuvant to flowcytometric CD34 cell enumeration.

OP 2

COMPARISON OF HEMATOCRIT CHANGE IN PRETERM NEONATES WITH BIRTH WEIGHT BASED VERSUS FORMULA BASED PACKED RED BLOOD CELL TRANSFUSION

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BACKGROUND:

Conventionally the packed red blood cell (PRBC) transfusion volume given to neonates is 10 ml/kg to 20 ml/kg. The weight based formulae underestimate the volume of PRBC required to achieve a target hematocrit (Hct) in preterm neonates.

AIM:

The study was done to compare the rise in Hct after transfusing PRBC volume calculated either based on body weight or using formula considering Hct of blood bag and Hct of preterm neonates.

MATERIALS AND METHODS:

This prospective study included a total of 56 preterm neonates requiring transfusion for first time having ≤ 34 weeks of gestational age. Neonates were randomized using block randomization, to receive 15 ml/kg of PRBC transfusion (Group A) or transfusion based on formula (group B). Primary outcome of interest was post transfusion rise in hematocrit. Secondary outcome was effect of transfusion on neonatal morbidities in terms of retinopathy of prematurity, broncho-pulmonary dysplasia, intraventricularhemorrhage, necrotizing ente rocolitis,periventricularleukomalacia and death.

RESULTS:

Baseline variables (birth weight, gestation age, APGAR score and Score of neonatal acute physiology) pretransfusionhemodynamics and hematocrit of the bag were comparable in both groups. Mean volume of PRBC in group A was 18.39±5.16 ml, whereas in group B it was 28.5±7.1 ml, p=0.0001. Group B transfusions had statistically significant change in 24 hrs post transfusion hematocrit. Secondary outcomes were comparable in two groups. Four neonates died in group A and three in group B.

CONCLUSION:

Post transfusion rise in Hct of patient in group B was significant as compared to group A but the need for re-transfusion was not decreased in group B despite transfusion of more volume of blood.

OP 3

EFFICACY OF PLASMA EXCHANGE IN MICROANGIOPATHIC HAEMOLYTIC ANAEMIAS- EXPERIENCE FROM A TERTIARY CARE CENTER OF NORTH INDIA

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BACKGROUND:

Microangiopathichemolytic anaemia (MAHA) encompasses a spectrum of disorders characterised by widely disseminated thrombosis in small blood vessels resulting in formation of schistocytes and concomitant thrombocytopenia. Plasma exchange (PE) needs to be considered as empirical and urgent life saving therapy in these disorders.

METHODS:

A retrospective analysis of all PE procedures performed in patients diagnosed as having MAHA done over a period of 9 years (2007-2016). Procedures were done on apheretic device (Cobe spectra, Terumo BCT, Lakewood Co. USA). Patients' pre and post procedural hematological and renal parameters were analyzed by applying paired T test.

RESULTS:

PE was performed in 46 patients with diagnosis of MAHA (27-aHUS , 16 -TTP, 1 each of post stem cell transplantation drug induced thrombotic microangiopathy (TMA), post thyroidectomy TMA and post-partum TMA). The mean age of patient was 19.94±19.58 years with M:F as 1.5:1. Number of procedures per patient varied from 1 to 27. Post PE recovery was observed within 10-14 days with statistically significant increase in mean platelet count from 40.05±5.9 to 82.11±12.10 x103/µl (P=0.000) and significant decline in mean lactate dehydrogenase level from 2928.86±2079.92 to 657.20±388.76 IU/l (P=0.000). There was also significant decline in mean percentage of schistocytes in peripheral smear from 5.44±3.96% to 0.56±0.89% (P=0.000). The mean serum urea changed from 136.92±68.79 to 68.63±49.81 mg/dl and creatinine from 3.49±1.87 to 2.27±1.67 mg/dl (P=0.000 and 0.001 respectively) with significant increase in urine output from 0.71±0.53 to 1.06±0.33 ml/kg/hour (P=0.000). Adverse events were observed in 10 patients (21%), allergic reaction to replacement fluid (n=6) being the commonest followed by hypotension (n=2), rigors and chills (n=2). Overall survival rate at 6 months was 89%.

CONCLUSION:

TPE had proven its usefulness as life-saving first line treatment modality in MAHA.

OP 4

CAN WE PREDICT OPTIMAL TIMING OF PERIPHERAL BLOOD STEM CELLS BASED ON MONONUCLEAR CELL COUNT(MNC) AND PRE-HARVEST CD34 COUNT?

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BACKGROUND:

Peripheral blood stem cell harvesting is most commonly used and preferred approach for stem cell collection for bone marrow transplant procedures. Many factors can influence stem cell mobilization and post-harvest CD34 count yield. To ensure that adequate CD34 cells are harvested, many parameters such as pre-harvest WBC count, platelet count, mononuclear cell and pre-harvest CD34 count are considered as predictive factors.

AIM:

To correlate the predictive value of MNC count and pre-harvest CD34 count in obtaining sufficient post CD34 cell count and to review the impact of these parameters on the timing of the procedure.

RESULTS:

In this prospective study, 68 stem cell harvesting procedure were done on 47 donors/patients. Amongst them 36 were male and 11 females with an age range of 9-65 years (median:50). Autologous procedures were 34 and allogeneic procedures were 13. The diseases treated included Hodgkinslymphoma(13), multiple myeloma(15) and Non Hodgkins lymphoma(5). Of the 68 harvesting procedures done, adequate yield of CD34 cells(>3.0 x 106/kg) were obtained in 32 patients/donors by one procedure while 10, 4 and 1 patients required additional 2, 3 and 4 procedures respectively to obtain the same. Preharvest CD34 count was found to be most useful predictor of CD34 yield (Pearson correlation coefficient:0.80) as compared to the preharvest MNC count (0.36). When the pre-harvest CD34 counts were >30/ul, the success rate of the procedure was 96%(26/27 procedures had adequate yield). Pre-harvest CD34 counts of 20-30/ul and <20/ul had successful yields in 37%(3/8) and 0%(0/24) respectively. 13 procedures were postponed in view of CD34 < 10/uL.

CONCLUSION :

Preharvest CD34 count is highly predictive of successfully harvesting adequate CD34 cells for BMT procedures. This can be reliably used to decide the timing of the stem cell harvesting as well as predict postharvest CD34 yield

OP 5

AUTOLOGOUS PLATELET RICH PLASMA FOR REGENERATIVE PROLOTHERAPY IN CHRONIC MUSCULO-SKELETAL PAIN

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BACKGROUND

Autologous Platelet Rich Plasma (PRP) when injected into injured tissues will release growth factors due to the activation of platelets which in turn promotes regeneration of tissues. PRP prolotherapy may open a gate of relief for those patients who are suffering from chronic musculo-skeletal pain.

AIMS:

To assess the effectiveness of Autologous PRP regenerative therapy on symptomatic pain relief and improvement of functional activity in patients with chronic musculo-skeletal pain.

METHODS:

This was a pre-post interventional study. Same participant acted as both control arm and test arm. Pre-procedural period was taken as control arm and post-procedural period was taken as test arm. 22 patients with chronic musculoskeletal pain were recruited. Visual Analogue Score (VAS) for pain and Functional Improvement Scoring (FIS) for activity were analyzed. Patients were given PRP prolotherapy at the diseased site and were followed up at the end of 2 weeks, 4 weeks, and 12 weeks. Pre and Post intervention data was analyzed and compared.

RESULTS:

There was significant improvement in VAS at 2 weeks, 4 weeks and 12 weeks following intervention. Improvement in FIS, sleep, mood and quality of life at 2 weeks, 4 weeks and 12 weeks was also noticed. Improvement in pain and functional activity was maximum at 4 weeks and started declining before 12 weeks following prolotherapy. There were no local or systemic adverse events following intervention.

CONCLUSION:

Autologous PRP prolotherapy is found to have significant effect on pain relief in patients with chronic musculo-skeletal pain. It is also found to improve functional activity in these patients. It offers a curative approach rather than symptom relief and may help to delay or avoid surgical interventions. Repeat procedures after 2 months may be considered for desired therapeutic effect.

OP 6

PLERIXAFOR USE IN AUTOLOGOUS STEM CELL MOBILIZATION: EXPERIENCE FROM TERTIARY CARE CENTER OF SOUTH INDIA

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BACKGROUND:

Plerixafor (AMD3100) is approved for patients who show inadequate mobilization of CD34+ PBSCs. No such studies had been conducted in our institute evaluating the usage of Plerixafor for mobilization in autologous hematopoetic stem cell collection. The purpose of this study is to observe the overall profile of the patient's receiving the plerixafor and response to the same.

METHODS:

Patients who underwent autologous Hematopoietic Stem Cell Collection (aHSCC) using mobilization regime with plerixafor were reviewed from Jan, 2013 to Dec, 2017. An audit of the total no. of patients undergoing mobilization with plerixafor was assessed based on the clinical and laboratory parameters. Also the number of collection days required to obtain sufficient cells for indicated aHSCC and time to neutrophil and platelet engraftment following transplant to assess the quality of the stem cell harvested.

RESULTS:

Over last 5 years, a total of 78 patients had undergone aHSCC requiring 110 collections by apheresis technology. Out of which 22 patients (28%) required plerixafor to augment stem cell yield with a median age of 37.5 years (Range 14 – 65 years) requiring 33 apheresis collection. Among them 19 patients required plerixafor at the upfront, due to various reasons age >60 years (n=2), progressive disease (n=5), severe BM involvement (n=4), previous chemo- and/or radiotherapy (n=5), and chemotherapy affecting bone marrow (n=6). Among the upfront plerixafor group, 63% (n=12) patients successfully harvested with one collection with a CD34+ cell count of 2.6 X 106/kg. Remaining required two or more to complete the harvest with a CD34+ cell count of 1.7 X 106/kg. Among the remaining 21 patients who underwent the transplant, median number of days to polymorphonuclear leukocyte and platelet engraftment was 10.5 and 13.0, respectively.

CONCLUSION:

Plerixafor was generally well tolerated. Mobilization of PB CD34+ cells was consistent with previous clinical trials.

OP 7

TO EVALUATE THE IMPACT OF PLATELETPHERESIS ON HEMOSTATIC SYSTEM IN HEALTHY DONORS

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BACKGROUND:

Provision of Platelets for component therapy, assumes challenging proportions during war/mass casualty scenarios due to inherent logistic constraints of transporting platelets over long distances while ensuring short shelf life of 5 days and constant agitation enroute. One way to handle this issue is by performing plateletpheresis at the remote location itself from available donors, mostly healthy soldiers nearby. However, knowledge of effects of the procedure on hemostatic system of the donor following plateletpheresis is scarce.

AIM:

To evaluate the hemostatic system, prior to and 24 hours after plateletpheresis and whether it poses any significant risk of hemorrhage to the donor(soldier) post procedure, on his subsequent injury, if any, in the combat/disaster zone.

METHODS:

102 voluntary male donors were included in the study. Blood samples were collected before and 24 hours after plateletpheresis and were evaluated for platelet count, PT, APTT, TT, Fibrinogen, Factor V, VII, VIII, IX, X, vWF, AT, Protein C & Protein S using automated analyzers.

RESULTS:

All measured values were expressed as mean ± standard deviation and analyzed using a paired t-test, with level of significance, $p < 0.05$. Mean age of the donors was 25 ± 7 years. Following plateletpheresis, platelet count decreased from 267.8 x 109/L to 235.9 x109/L. Statistically significant prolongation of PT, APTT and TT was observed. Except Factor VII, VIII and vWF, all other factors showed statistically significant reduction in values. However, the reduced values were still within normal physiologic limits.

CONCLUSION:.

This study confirms that plateletpheresis does not significantly jeopardizes the haemostatic system of the donor, post procedurally, since the reduced values of several coagulation parameters still fall within normal physiological limits. Thus, a soldier can safely perform the duties of a combatant, 24 hours after plateletpheresis. Furthermore, the concept of "walking blood bank" can also be extrapolated for plateletpheresis.

OP 8

DONOR GRANULOCYTAPHERESIS COLLECTION AT A TERTIARY CARE CENTRE OF NORTHERN INDIA: OUR EXPERIENCE

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PGIMER Chandigarh, AIIMS Bhubaneswar

BACKGROUND:

Severe bacterial and fungal infection remains a persistent cause of morbidity and mortality in severely neutropenichemato-oncological patients.

AIM:

To support severely neutropenic patients having life-threatening infections with granulocyte transfusions until successful resolution or hematopoietic reconstitution.

METHODS:

We present our experience on donor granulo cytapheresis for 34 patients over a period of 9 years from 2010 to 2018. A total of 95 procedures were done in this period.Granulocyte collection was performed on donors fulfilling the donation criteria as per DGHS Technical Manual 2003.Donors were given G-CSF, 12 hours prior alongwith oral dexamethasone. Collection was done in Cobe-Spectra (Terumo BCT) using WBC kit.

RESULTS:

Donor & Product profile: A total of 95 donors donated the units with median age of 26 years (IQR 23 – 31) without any adverse events. The median donor pre-hemoglobin was 14.6g/dl (IQR 13.9 to 15.4), and median pre-WBC count was 32300/ul (IQR 28000 – 37000). The median blood volume processed was 8000ml (IQR 7000 - 9000) yielding a median TLC of 2.3 x 10^10/ unit (IQR 1.6 - 3.2) with a median granulocyte yield of 1.5 x 10^10/ unit (IQR 1.0 – 2.1)

Patient Profile: Products were transfused to a total of 34 hemato-oncological patients (M:F = 22:12). Median pre TLC count was 600/ul (IQR 300 – 800) and pre ANC was 80/ul (IQR 37 – 221). Post transfusion TLC was 600/ul (IQR 500 – 1000) and post ANC was 110/ul (IQR 39 – 292.5). Significant increase in TLC was observed after transfusion (p value < 0.043). 82.4% patients (28/34) recovered from underlying infection with rise in ANC > 500/ul.

CONCLUSION:

Donor granulocytapheresis is safe and clinically useful adjunct in management of severely neutropenichemato-oncological patients not responding to antibiotics and antifungals

OP 9

EFFECT OF DONOR VARIABLES ON YIELD IN SINGLE DONOR PLATELETPHERESIS BY HAEMONETICS MCS PLUS

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BACKGROUND:

Apheresis is a Greek word that means to separate or remove. In apheresis blood is withdrawn from a donor or patient in anticoagulant solution and separated into components. This study was planned to investigate the influence of donor demographic and laboratory factors on platelet yield.

METHODS:

The study included 100 healthy, plateletpheresis donors. All the donors were selected according to the guidelines laid down by Drugs and Cosmetics Act.8 Details of plateletpheresis were explained to each donor who gave due consent before the procedure. All donations were performed by Haemonetics MCS plus apheresis machine

RESULTS:

The mean platelet yield was 3.16 ± 0.62 x 1011; 71 donors gave a platelet yield of more than 3 x 1011 per unit. Haemoglobin level was more than 14 g/dL in 85 donors. The mean BMI was 29.4±0.86 Kg/m2. A positive correlation was observed between pre donation platelet count and platelet yield ($r = 0.284$, $p<0.01$) and a negative correlation was observed between age (years) and platelet yield ($r = –0.229$, $p<0.01$) but no such correlation was noticed between platelet yield and haemoglobin (0.052), haematocrit ($r = – 0.011$), or blood group ($r = – 0.098$) of the donor (Table 4). A positive correlation was also observed between BMI and platelet yield ($r = 0.257$, $p<0.01$).

DISCUSSION:

There are very few studies related to donor clinical and laboratory factors that may influence number of platelet yield. Identification of these factors would allow for better selection of donors resulting in higher platelet yield and consequently a lower number of donor exposures to the patients. Our study showed a significant negative correlation between the donor age and platelet yield ($r = –0.229$, $p<0.01$) but no such observation was reported in another study.

OP 10

ROLE OF ESTIMATING SERUM FERRITIN LEVELS IN A REPEATED VOLUNTARY BLOOD DONOR –HAEMOVIGILANCE

Dr. Nishi jaswal, Rakesh Jaswal

BACKGROUND:

It is seen that repeated blood donations can cause iron deficient

anaemia in the voluntary blood donors. A study was conducted to estimate the serum ferritin levels among voluntary blood donors with different frequency of donations and compared with haemoglobin and haematocrit levels.

METHODS:

A cross-sectional study was conducted in 435 donors with different frequency of blood donation. The control group donated for the first time and the study group donated once, twice, thrice or four times in a year. The red cell parameters were measured by automatic cell count and estimation of serum ferritin was done by ELISA method.

RESULTS:

There were 86.20 % males and 13.79 % females. All the donors were included in the study. The distribution of donors was on the basis of the frequency of donation in a year. The first time donors were taken as controls which were 50.57 percent. The study groups were donors who donated once (28.5 %), twice (11.59%), thrice (6.43%) and four times (2.52%) in a year. A statistically significant correlation was seen between frequency of donation and serum ferritin levels. Distribution on the basis of number of donations per year and serum ferritin <15 ng/ml in the donors were 4.54 % in first time, 16.12% in once a year, 19.23 % in twice a year 28.57% in thrice year and 36.36 % in four times a year donations .

CONCLUSIONS:

In our study, there was a definite correlation between serum ferritin levels and the frequency of blood donation in voluntary blood donors. Our study suggests that estimation of serum ferritin level is a mandatory tool for haemovigilance in the donors. We recommend iron supplementation and donor health education programme based on balanced nutritious diet for all donors.

OP 11

EXTENT OF CHANGES IN PRE DONATION AND POSTDONATION DONOR VARIABLES IN SINGLE AND DOUBLE DOSE PLATELETPHERESIS AND ITS IMPLICATIONS ON DONOR SAFETY

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BACKGROUND:

Proper selection of donors with good predonation platelet count is essential for achieving the optimal platelet yield in single donor plateletpheresis. Double dose plateletpheresis procedures are commonly done nowadays to reduce the immunogenicity and cost of the product.

AIM:

The aim of this study was to assess the donor safety as this is an important area of concern in plateletpheresis

METHODS:

45 plateletpheresis procedures were done with COBE Spectra continuous flow cell separator. Statistical analysis was done to find out whether there was significant difference between pre and post donation donor hematological values after single and double dose collection.

RESULTS:

Average platelet yield achieved in single dose plateletpheresis was 3.4 +/- 0.28 X 10 11 platelets per unit. Mean pre-and post-donation platelet counts were 273,000/µL and 209,000/µLrespectively, mean Hb decreased slightly from 14.76 g/dL to 14.11 g/dL, mean red cell count was unchanged, whereas mean WBC counts dropped from 6543/µL to 6120/µL. Mean Hct decreased slightly from 44.7% to 44.2%,

Double yield was collected in 16 procedures. Donors with preplatelet count >300,000/µl were subjected to double yield collection. Average yield achieved was 6.28 +/- 0.18 x 10 11 platelets. Mean post donation TPC was 167,000/µl, and no one had value <100,000/µl. WBC, RBC, HB, and HCT had similar trends as of single yield collection. Even though there was significant drop in donor platelet count after both single and double dose platelet collection, plateletpheresis procedure is relatively safe with no adverse effect.

CONCLUSION:

Guidelines for high dose platelet collection should be individualized according to each transfusion medicine department's policy and need with special concern to donor safety and product quality. Post donation hematological parameters should be monitored in all those donors who are undergoing regular and high dose plateletpheresis for donor safety and to maintain optimal donor pool for plateletpheresis.

OP 12

COMPARATIVE STUDY OF ADVERSE DONOR EVENTS IN VOLUNTARY AND REPLACEMENT WHOLE BLOOD DONORS :NEED OF ROBUST DONOR HEMOVIGILANCE PROGRAM

Dr Lubnanaseer, Dr Vijay Sawhney, Dr NeetiDutt

BACKGROUND:

Adverse donor reactions can lead to negative impact on donor retention in the time when need of blood transfusion is soaring up all over the world.

AIM:

The aim of this study was to compare the frequency and severity of Adverse Events in voluntary and replacement whole blood donors.

METHODS:

A single centre retrospective study of all adverse donor events was conducted at Transfusion Medicine Department of Government Medical College, Jammu over a period of 1 year from April 2017 to March 2018. Selected donors were observed during and following donation for any adverse events. Blood donors were asked to report for any delayed adverse events.

RESULTS:

The overall reaction rate was 3.65% (641 out of 17527 donations) with higher rate in replacement donors(3.93%) than in voluntary donors (3.2%), in female donors (6.8%) than in male donors (3.6%). Most common type of reaction in both replacement and voluntary blood donors was mild vasovagal type (486 out of 641). Vasovagal reactions included dizziness in 312, fall in 51, injury due to fall in 2, pallor and perspiration in 402, palpitation in 8, chest tightness in 201, bladder incontinence in 1, nausea in 384, Vomiting in 12. Hematoma bruising in 115, Nerve injury in 7, Convulsions in 5 male donors, irritation due to skin preparation in 28 blood donors. Vasovagal type of reactions were seen more in females, low age and thin built, replacement donors, donors with fear and anxiety

CONCLUSION:

This study has increased our knowledge of risk factors associated with blood donation. and provided an insight into the importance of voluntary donation and need to increase the same and highlighting the need for specific guidelines for the management of higher risk donor groups.

OP 13

COMPARATIVE STUDY OF COMMERCIAL AND IN-HOUSE PREPARED LISS IN A TERTIARY CARE HOSPITAL

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BACKGROUND:

Enhancing agents are used in Immunohematology techniques to potentiate antigen antibody reaction by reducing the net negative charge on the surface of red cells. Low Ionic Strength Salt Solution (LISS), Albumin, Polyethelene Glycol(PEG), Polybromide are few examples of enhancing agents. In our set up LISS is used as enhancing agent in immunological testing. LISS contain 0.2% sodium chloride, which results in an increased rate and degree of antibody uptake two to four times as compared to normal saline during sensitisation with an incubation time of 15 minutes.

AIMS:

The present study aims to compare serological and non-serological parameters of commercial and in-house prepared LISS. If results are comparable, in-house prepared LISS can be used for routine Immunohematology testing.

METHODS:

A total of 10000 samples were screened over a period of 4 months from April 2018 to July 2018 in Department of Transfusion Medicine, KEM hospital, Mumbai. Antibody screening was done by conventional tube technique (CTT) using pooled 'O' cells (In-house). Quality Control of In-house prepared LISS was done using following parameters. Nonserological parameters: Conductivity (3.6-3.7mmho/cm), Osmolarity (270-285 mmol). Serological parameters: Test for Hemolysis, Titer of AntiD (IgG). Results were compared with commercial LISS (Diamed GmbH switzerland), and found comparable.

CONCLUSION:

In-house prepared LISS had comparable results with commercial LISS. It is a cost effective alternative to use in routine immunohematological test procedures.

OP 14

PREDICTION OF OUTCOME IN ABO INCOMPATIBLE NEONATES WITH RESPECT TO MATERNAL Ig-G ANTI-A AND ANTI-B TITRE IN O GROUP MOTHERS

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BACKGROUND:

The fetus may inherit father's blood group whose antigen on red cells has corresponding antibodies in the mother resulting in maternal-fetal blood group incompatibility. As the incidence of Rh D alloimmunization has decreased after the introduction of anti-D prophylaxis, ABO-incompatibility is now the major cause of immune haemolytic disease of the newborn. Problems encountered from ABO maternal antibodies to the corresponding A or B antigens on the fetal red cells stimulated this study.

AIMS:

To evaluate predictors for risk of hyperbilirubinaemia in ABO-incompatible neonates with emphasize on maternal IgG anti-A /-B titres and to assess if maternal antibodies were associated with increased duration of phototherapy or repeated invasive treatment with IVIG or EXT

METHODS:

Blood group O women admitted for labour at T.D. MCH, Alappuzha, from Jan 2017 to Jun 2018 were included. Offspring with blood group A or B had direct antiglobulin test performed and IgG anti-A / -B levels measured in maternal plasma. Blood group A or B infants developing severe hyperbilirubinaemia, receivng phototherapy, immunoglobulin treatment or exchange transfusion were also noted.

RESULTS:

Of the 200 ABO incompatible pairs, 99 were O-A (49.5%) and 101 were O-B (51.5%). Maternal antibody-titres were significant predictor for hyperbilirubinemia ($p<0.000$), positive DAT ($p<0.000$), signs of hemolysis ($p<0.000$) and ICU admission. Ten neonates with blood group A or B received at least one immunoglobulin treatment and 2 received exchange transfusion. The need for invasive treatment (IVIG ± EXT) increased sharply for antibody titres ≥256 by tube technique.

CONCLUSION:

Maternal IgG anti-A /-B titres contribute to the prediction of risk of severe hyperbilirubinaemia in ABO-incompatible neonates, in addition to blood-grouping and DAT testing.

OP 15

SIGNIFICANCE OF DETECTION AND RESOLUTION OF BLOOD GROUP DISCREPANCIES

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BACKGROUND:

ABO discrepancies occur when the reactions in forward grouping are not corroborative to those in the reverse grouping which may be due to weak subgroups of A and B, missing or weak ABO antibodies or unexpected alloantibodies.

AIM:

To determine the frequency of ABO discrepancies and their resolution to correctly identify the blood group of the donors.

METHODS:

This was a retrospective study on donor samples collected from 1st April, 2013 to 30th September, 2015 (two and a half years). For discrepant samples, the ABO and RhD grouping was repeated using tube technique using commercial antisera {anti-A, anti-B, anti-AB and anti-D, anti-D blend (IgM+IgG), anti-H anti-A1 lectins}. Adsorption-elution testing was done for detecting weak subgroups of A and B. Antibody screen (3-cell) and identification (11-cell) was done by gel technique (Bio-Rad, Switzerland).

RESULTS:

We detected 104 (0.072%) ABO discrepancies out of the total 144279 donor samples tested. Out of these, 135043 (93.6%) were RhD positive. The causes of ABO discrepancies were weak anti-B antibody (33/104; 31.73%), weak anti-A antibody and weak subgroups of A (24 each; 23.07% each) and weak subgroups of B (5/104; 4.8%). We found agglutination with O cells in 18 (17.3%) samples and 7 (38.88%) of them showed agglutination either at room temperature only or by an IAT as well and were RhD positive. The alloantibodies identified were anti-M in 5 donors and anti-Lea in 1, while the remaining 1 was 'Bombay' (Oh) phenotype. Among the 9236 (6.4%) RhD negative donors, the indirect antiglobulin test (IAT) was positive in 11 (0.12%) and the alloantibodies identified were anti-D (7), anti-D with anti-C (2), anti-D with anti-E (1) and anti-N (1).

CONCLUSION:

The frequency of ABO discrepancies in our donor population is 0.072%. The presence of clinically significant antibodies re-emphasizes the testing with O cells during blood grouping

OP 16

COMPARISON OF ABO ANTIBODY TITRES BY TUBE AND COLUMN AGGLUTINATION METHODS

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BACKGROUND

Outcome in ABOincompatible transplant is influenced by ABO antibody titers. Antibody titers determine the need for intervention in hemolytic disease of the newborn. Inter-laboratory variation in titration resultsis known to occur. This study was conducted to assess the conventional tube technique(CTT) and column agglutination technique(CAT) for antibody titration.

AIMS

To compare the CTTwith CATfor antibody titration. To assess IgM interference (if any) in IgG antibody estimation

METHODS

Twenty voluntary blood donors, each from blood group A, B and O were assessed for anti A and anti B antibody titers. A total of 80titers were assessed, each for IgM and IgG (with and without IgM inactivation) by both CTT and CAT (Ortho BioVue system). Dithiothrietol (DTT) treatment was used for IgM inactivation. Results were analysed by applying wilcoxin rank sum test.

RESULTS

IgM titer was more than IgG titer(with DTT treatment), for groups A, B, O ($p<0.001$). Higher titers were obtained by CAT as

compared to theCTT method. IgG antibody titer with DTT treatment was less than IgG titer without DTT treatment, by both CAT and CTT methods(statistically very significant). The high IgG titers of non-DTT treated plasma wasnotedeven when using monospecific IgG AHG cards. The IgM and IgG titers (with and without DTT)amongst the three blood groups by CTT and CAT were: group O > A>B.

CONCLUSION

The study revealed that DTT treatment significantly reduced IgG titers by both CTT and CAT methods. IgM interfered with IgG estimation by CTTand also when mono-specific IgG card was used. Antibody titers by CAT were higher than by tube method. Variation in results due to different titration methods and whether IgM inactivation was done; could lead to inter-laboratory variation in results.

OP 17

MOLECULAR CHARACTERIZATION OF RARE D--/D-- VARIANTS IN INDIVIDUALS OF INDIAN ORIGIN

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BACKGROUND:

The Rh system is the most polymorphic and immunogenic protein based blood group system with five main antigens: D, C, c, E, e. Rh antigens are of clinical importance because of their role in HDFN and HTR. Unusual Rh phenotypes such as Rhnull and D-- are rarely encountered in routine testing. D-- phenotype is a rare blood group characterized by the lack of expression of C, c, E and e on the red cells because of mutations in both alleles of the RHCE gene. The D antigen expression is exalted (up to 2,00,000 D antigenic sites per RBC) to the extent that IgG anti-D can agglutinate the RBCs in saline. Such individuals show presence of anti-Rh17 or anti-Hro.

AIM:

To determine the molecular basis of D-- individuals (n=5) of Indian origin.

METHODS:

Five RhD positive postnatal women who had produced antibodies against all Rh antigens except D, leading to HDFN and fetal loss were referred to ICMR-NIIH for further evaluation. Extensive serological and molecular analysis was carried out.

RESULTS:

Serological testing with anti-C, anti-c, anti-E, and anti-e showed absence of C, c, E and e antigens, thus identifying the rare Rh variant as D--/D--. Flow cytometry confirmed absence of these antigens with exhalted expression of D antigen. Antibody screening and identification showed presence of anti-Rh 17. Molecular analysis by QMPSF showed gene conversion event between RHCE and RHD causing D-- phenotype. Most common hybrid was found to be RHCE-D(3-9)-CE followed by RHCE-D(3-8)-CE and RHCE-D(2-6)-CE.

CONCLUSION:

This is the first study reporting molecular mechanism of D-- phenotype in Indian population. Identification of RHCE-null variants facilitates confirmation of D-- phenotypes in patients and donors, helping improve transfusion safety.

OP 18

PHENOTYPE FREQUENCY OF RH AND KELL ANTIGENS AMONG THE BLOOD DONORS OF NORTH INDIA: A STUDY ON 21000 DONOR SAMPLES

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Transfusion Medicine and Transplant Immunology

BACKGROUND:

The Rh & Kell blood group system is the next most highly immunogenic blood group systems to ABO blood group system. Among all the minor blood group systems prevalence of alloimmunization is found to be highest against Rh & Kell antigens. This study was carried out with the aim to determine the phenotype frequency of Rh and Kell antigens in north Indian population.

METHODS:

During four years(May 2014 and June 2018) a total of 21000 blood donor samples tested for Rh(D,C,E,c,e) and Kell (K) antigens. The Rh & Kell antigen typing of donors was performed by hem-agglutination method (NEO, Gamma Immucor, USA). Monoclonal IgM antisera were used (Immucor Inc. Norcross, GA.US).

RESULTS:

There were a total of 21000 healthy blood donors samples which were tested for D,C,E,c,e & Kell(K) antigens. The most common Rh antigen observed in the study population was 'e' (98.88%) followed by 'D' (91.24%), 'C' (85.58%), 'c' (58.76%) and 'E' (18.47%). The frequency of the Kell antigen (K) was (2.79 %). According to nomenclature, the most common frequency observed was R1R1 (41.1%). The second commonest frequency observed was R1r (31.94%). Remaining were as follows: R1R2 (11.76%), R2r (5.25%), R2R2 (1.09%), R1Rz (0.1%), rr (7.81%), r'r(0.65%), r"r(0.27), r'r' (0.03%). A rare phenotype r'r' was found in one donor. Thus, phenotypically R1R1 (DCCee) group was the most common phenotype and r'r' (dCCee) was least common.

CONCLUSION:

Antigen typing and transfusion ABO and other 18 antigens is practically next to impossible and do not seem practical. But, typing and transfusion of Rh and Kell phenotype matched blood have been proven to be a good practical approach for transfusion especially among mutitransfused patients. Thus, In modern transfusion era, providing Rh and Kell phenotype matched blood can prevent alloimmunization to a large extent.

OP 19

A PROSPECTIVE OBSERVATIONAL STUDY TO ANALYSE FACTORS INFLUENCING PLATELETPHERESIS YIELDS AND POST-TRANSFUSION PLATELET RECOVERY

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BACKGROUND:

The currently observed sharp increase in demand of apheresis platelets has prioritized need for harvesting maximum platelet yield from donors and promoting optimum post-transfusion platelet recovery among patients.

AIMS:

1. To evaluate donor parameters influencing plateletpheresis yields.
2. To compare mean 1 hour post-transfusion platelet increment, CCI (Corrected Count Increment) and PPR (Percent Platelet Recovery) among ABO identical, major incompatible, minor incompatible and bidirectional incompatible transfusions.
3. To determine incidence of platelet refractoriness.
4. To evaluate patient and product factors influencing CCI.

METHODS:

A prospective observational study of 15 months duration was conducted in Department of Transfusion Medicine at a tertiary care hospital. Eligible 200 plateletpheresis donors and 98 patients receiving those 200 platelet transfusions were enrolled and evaluated. P<0.05 was considered statistically significant.

RESULTS:

Pre-donation platelet count correlated positively; whereas MPV (mean platelet volume) and PDW (platelet distribution width) correlated negatively with platelet yield.Mean 1 hour post-transfusion platelet increment, CCI and PPR were 24 ± 11 x103/µL, 10631 ± 4765 and 27.76 ± 12.73% respectively. ABO identical platelet transfusions resulted in significantly higher mean platelet increments, CCI and PPR as compared to ABO major and bidirectional incompatible transfusions No significant difference in mean platelet increments, CCI and PPR was found between ABO identical and minor incompatible transfusions. Incidence of platelet refractoriness was 13.79%.Transfusion of 4 to 5 day old platelets were more likely to

result in CCI <7500 as compared to 0 to 1 day old platelets. Patient with cardiac or other diagnosis were less likely to have CCI <7500 as compared to haematological diseases. CCI <7500 was more likely in presence of one or more non-immune patient factors (fever, bleeding, infection, sepsis, splenomegaly, disseminated intravascular coagulopathy).

CONCLUSION:

Consideration of these significant factors can aid in implementation of efficacious platelet transfusion therapy, through coordination between clinicians and transfusion medicine specialists.

OP 20

ROLE OF SOLID-PHASE PLATELET CROSSMATCH IN DIAGNOSIS OF FOETAL NEONATAL ALLO-IMMUNE THROMBOCYTOPENIA (FNAIT): A CASE SERIES

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INTRODUCTION:

Foetal and neonatal allo-immune thrombocytopenia (FNAIT) is major life-threatening condition which challenges clinicians. Early diagnosis of FNAIT would allow better outcomes with advent of newer treatment options like IVIG. With the current cost, HPA- typing, anti-HPA antibody detection and confirmation poses a financial challenge. The platelet cross-match using the solid phase red cell adherence(SPRCA) technique appears to be an interim solution for the diagnosis and management of FNAIT despite the inherent limitation of sensitivity. This case series describes 6 consecutive cases referred with a clinical suspicion of FNAIT.

METHODS:

For all 6 cases platelet crossmatch(PCXM) was performed using SPRCA technique using maternal plasma and paternal platelets. In the event of platelet transfusion requirement, PCXM was performed with maternal plasma and RDPs.Patients tested included 2 antenatal mothers with scans showing foetal intracranial haemorrhage, one with a previous history of NAIT, two infants aged 2 and 3 months with history of malena and one 7day old neonate with history of per vaginal and umbilical bleeding. The latter had a normal coagulation profile with thrombocytopenia. All patients had a negative TORCH screen and normal maternal platelet count.

RESULTS:

All 3 antenatal mothers showed positive PCXM with paternal platelets. However, the two infants and the neonate showed negative PCXM with paternal platelets. Two of these who required platelet transfusion were found to have positive PCXM with RDPs.

CONCLUSION:

PCXM proved to have the potential to diagnose FNAIT in the 3 antenatal patients tested. It might not be incorrect to conclude that FNAIT could be excluded in the 3 infants tested, given the negative PCXM, unusual time of presentation and a possibility of a multifactorial etiology for the thrombocytopenia and bleeding symptoms. However we acknowledge that the final diagnosis of FNAIT will require sensitive platforms for antiplatelet antibody screening and concomitant HPA-typing.

OP 21

CLINICAL OUTCOME OF NEONATES BASED ON THE AGE OF RED BLOOD CELLS TRANSFUSED – A PROSPECTIVE STUDY

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BACKGROUND:

Red cell transfusion forms an important aspect of treatment administered to neonates in Neonatal ICU. Usual indication is to maintain desired hematocrit level in severely ill neonates and to treat symptomatic anemia in stable infants. Well characterized biochemical, structural, metabolic and physiologic changes occur within RBC during storage known as red cell storage lesion which affects effective oxygen delivery by transfused cells.

AIM:

To assess association between age of red cells transfused and clinical outcome (lab parameters, oxygen requirement, intensive care requirement , hospital stay) among neonates

Methodology: Depending on age of red cells transfused, clinical course in terms of laboratory parameters (Hb, HCT), oxygen requirement (FiO2), intensive care requirement and hospital stay are evaluated on days 1, 2, 3 and 4 following transfusion

RESULTS:

Among 86 neonates, 23 (26.7%) had average increase in Hb and HCT. Majority were transfused with 0 day old blood followed by one day old blood. Neonates transfused with 3, 4 and 5 days old blood did not have an average increase in Hb& HCT. Decrease in oxygen requirement (FiO2) was also pronounced after transfusion with 0 day old blood followed by 1 day old blood. Statistical significance of morbidity outcomes (NEC, BPD,IVH) and mortality with regard to age of red cells could not be assessed. Incidence of neonatal transfusion reactions is nil and all transfusions were guideline based.

CONCLUSION:

Study is in favor of transfusion of fresh red cells (<24 hours) to neonates especially preterm for a better clinical outcome with respect to increment in Hemoglobin and Hematocrit which in turn leads to better oxygenation and decrease in additional oxygen requirement during hospital stay. However gestational age at birth does have a significant impact on outcome with extreme prematurity itself being a significant factor contributing to the morbidity and mortality

OP 22

TITLE:ROLE OF AUTOMATED RED CEII EXCHANGE IN METHAEMOGLOBINEMIA – OUR CENTER STUDY

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BACKGROUND:

Two cases of methaemoglobinemia where RBCX were done as a life saving procedure since first line of treatment methylene blue was contraindicated.

Case 1: Patient was 25 yrs old doctor who had P. Vivax malaria, took chloroquin for 3 days, started having weakness and breathing difficulty, shifted to ICU due to desaturation and breathing problem. On admission pulse 140/min, B.P. 84/70 mmHg, SPO2 70 % and cyanosis was present. On investigation found to be G-6PD deficiency. RBCX done since MB was contraindicated.

Case 2: Patient with h/o high grade fever since 5days, vomiting, oliguria having done 2 dialysis locally. On admission patient was tachypnic, hypoxic having cyanosis and pallor. On investigation Hb< 5 gm %, altered RFT& LFT, high methaemoglobin and urine myoglobin. Since patient was having AKI, RBCX along with hemodialysis done.

AIM:

To improve the tissue hypoxia by replacing red cells having methaemoglobin with simultaneous normal red cells infusion.

METHODS:

Automated red cell exchange done from central line access with the help of compatible leucodepleted red cell units. In both the cases,custom prime done with red cells.Isovolemic exchange was targeted. FCR were aimed to keep <50% and Hct at >30%. The whole procedures were done guarded and slowly as patients were on BiPaP and Norad infusion pump.

RESULTS:

In both cases, immediate post procedure SPO2 was significantly improved from 64% to 90% and 70% to 92% respectively.

CONCLUSION:

These two cases calls for a heightened awareness of RBCX as a life saving procedure where first line of treatment is not possible.

OP 23

THERAPEUTIC IMMUNOADSORPTION AND CONVENTIONAL PLASMA EXCHANGE: AN EXCULPATORY EVIDENCE

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AIM:

To compare efficacy of immunoadsorption (IA) with conventional therapeutic plasma-exchange (cTPE) in ABO-incompatible (ABOi) renal transplant.

METHODS:

A prospective study was conducted for patients undergoing ABOi renal transplant from July-2015 to June-2017 (category-1, N=11) (IA±cTPE). Their data on rituximab conditioning, average length of stay (ALOS), number of cTPE/IA, antibody titers (AT), creatinine at discharge, patient and graft survival at 1 year were compared retrospectively with similar patients in period from February-2012 to June-2015 (category-2, N=29) (cTPE only). AT of patients started on cTPE (category 1) not decreasing to < 1 fold after 2 cTPE were shifted for IA. AT was determined at baseline, after each cTPE and daily till discharge. For patients undergoing IA, real time AT was done and IA stopped once the target titer (TT <1:8) was achieved. Post-transplant cTPE was done if, titers rebounded (≥1: 8). Intravenous- immunoglobulin (IVIG) was given after every cTPE/IA. For comparing costs, the procedure, IVIG and bed charges were assessed.

RESULTS:

In category-1, 7 patients (63.63%) were shifted to IA from cTPE. Mean cTPE procedures in category 1 and 2 is 3.5±2.4 and 4.8±2.5 respectively (p=0.206). Mean IA procedures in category-1 is 1.6±0.5. Number of patients requiring post-op cTPE was less in category-1 than category-2 i.e. N=5,45.5% vs N=20,69% respectively (p=0.171). Expense of IA in category-1 vscTPE in category-2 was statistically not significant (p=0.422) but had significant lesser ALOS (p=0.044) and rituximab conditioning days (p=0.043). Expenses when patient is undergoing both cTPE and IA (category-1) is significantly higher to category-2 (p=0.003). The two groups were comparable in AT at all times, creatinine value, graft and patient survival rates at 1 year.

CONCLUSION:

Contrary to the general judgment of IA being expensive than cTPE, this study shows equivalent overall expenditures with comparable therapeutic outcomes and improved patient comfort by decreasing ALOS.

OP 24

FACTORS AFFECTING THE CLINICAL OUTCOME OF MASSIVE TRANSFUSION- A PROSPECTIVE STUDY.

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INTRODUCTION

Massivehemorrhage calls for massive transfusion (MT) in order to maintain adequate hemostasis. Nowadays Massive Transfusion Protocols (MTP) is the most appropriate treatment strategy.

AIM

To propose an ideal ratio of blood components after evaluating the relationship between ratios of blood components transfused and mortality.

METHODS

MT was defined as receiving more than 4 Packed Red Blood Cell (PRBC) units within 1 hour with the anticipation of continued need. All such massively transfused patients above 13 years regardless of the cause of bleed were included in this prospective observational study from Dec-15 to Oct-17 totaling to 61patients. Subgroup categorization done and physician driven ratios were calculated. The ratios were grouped as High(>1), Equal(=1) and Low(<1) Ratios of FFP: PRBC and Platelet: PRBC.

RESULTS AND DISCUSSION

61 patients underwent MT with overall 7- day hospital mortality for patients treated with MTP as 8.1% with 100% mortality observed among penetrating trauma. Emergency admission was independent risk factor for mortality. Hypotension prior to the initiation of MT had a detrimental effect on survival. Efficient communication existed between treating physicians and transfusion medicine services. Majority of survivors received equal ratios of FFP: PRBC & Platelet: PRBC. All non-survivors received low ratios of FFP: PRBC and high ratios of Platelet: PRBC.

CONCLUSION

Providing a fixed ratio of blood components approximating a ratio of 1:1:1 of PRBC:FFP:Platelet during massive transfusion is associated with lower mortality in the present study. The need of the hour is prospective randomized trials & compliance to protocols.

OP 25

CORRELATION OF THE IGG SUBCLASSES WITH OCCURRENCE AND SEVERITY OF HEMOLYTIC DISEASE OF FETUS AND NEW BORN

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BACKGROUND

Hemolytic disease of fetus and new born (HDFN) is a leading cause of mortality and morbidity in the antenatal and neonatal periods. Maternal alloimmunization against paternal red cell antigens is the most important cause of HDFN. According to literature, HDFN cases with IgG1 and IgG3 have more severity when compared to IgG2 and IgG4. In present study, IgG subclass (IgG1 and IgG3) was identified using column agglutination test to evaluate the prevalence and clinical significance of IgG Subclasses in cases of HDFN. The findings might be helpful in early referral to higher centers and in determining prognosis of the case.

METHODS

Fourty-eight alloimmunized (with anti-D alone) antenatal cases were studied. "DAT IgG1/IgG3 ID" card (Bio-Rad) was used in IgG subclass determination. Pregnancy outcome was classified into unaffected or mild/ moderate/ severe HDFN. Subclass prevalence was calculated and HFDN severity was correlated with IgG subclass in the study population.

RESULTS

Subclass distribution among 48 alloimmunized (with anti-D) women was 24% for IgG1, 16.6% for IgG3, 41.6% for IgG1+IgG3 and 14.5% had neither IgG1 nor IgG. HDFN severity was significantly higher when IgG1 was present alone or in combination with IgG3 (p value < 0.01). Disease occurrence and severity was also significantly higher in case of IgG1 or IgG3 present, alone or in combination (p value < 0.01).

CONCLUSION

The presence of IgG1 / IgG3 was significantly related to occurrence and severity of HDFN. Both disease occurrence and severity was significantly lower if neither IgG1 nor IgG3 was present. Therefore, alloimmunized antenatal women with IgG1/IgG3, alone or in combination require close and antenatal monitoring to detect HDFN features at early stage, timely and appropriate referral and intervention. We recommend IgG subclass determination by CAT to predict occurrence and severity of HDFN more accurately.

OP 26

IMPACT OF IATROGENIC BLOOD LOSS AND BLOOD TRANSFUSION IN CRITICALLY ILL PATIENTS

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Jubilee Mission Medical College

BACKGROUND

PRBC transfusions remain a cornerstone of critical care practice, but there is still a point of concern in the risk of anaemia and the benefits of red cell transfusion . Phlebotomy for routine and specialized laboratory investigations in critically ill patients contributes to a mean daily loss of 40 to 70 ml of blood.

AIMS

1. To study the mortality and morbidity of adult general ICU patients who required transfusion
2. To study the association between length of ICU stay and number of units transfused
3. To find out the association between volume of sample taken for investigation during ICU stay and the haemoglobin level.

METHODS

A prospective observational study conducted in the department of Transfusion Medicine, Jubilee Mission Medical College, Kerala over 22 months in all patients who received transfusions under Critical Care unit. Demographic data and clinical data were recorded along with APACHE II score.

RESULTS

The mean haemoglobin at the time of admission and discharge were 8.89g/dl and 8.83g/dl respectively. The mean phlebotomy volume loss during ICU stay was 15.8 + 1.456 ml/day. The mean PRBC units transfused during ICU stay were 3.68+ 2.52 units. Amongst the patients transfused those who received 7-9 units of PRBC had more length of hospital stay (14.50+5.260 days). Mortality(75%) was seen higher amongst those who were transfused with more than 10 units of PRBC.

CONCLUSION

Current study demonstrated that higher number of PRBC transfusion is associated with prolonged ICU stay and higher iatrogenic blood loss. However, given the risks associated with blood product administration and the intermittent shortage of blood supply, more attention is to be focussed on restrictive transfusion policies and pharmacological strategies to prevent and treat anaemia of critical illness.

OP 27

RETROSPECTIVE ANALYSIS OF MASSIVE TRANSFUSION PRACTICE IN NON-TRAUMA RELATED HEMORRHAGIC SHOCK IN A TERTIARY CARE CENTRE

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INTRODUCTION:

The desired effect of massive transfusion in critically bleeding patients is to prolong survival in the acute setting, allowing time to perform directed interventions to control the site of bleeding. This study intended to review the transfusion practice and outcomes of a massive transfusion protocol in a non-trauma population.

AIMS & OBJECTIVES:

To analyse retrospectively the massive transfusion practices and resultant outcome of patients over a period of two years.

MATERIALS AND METHODS:

This is a retrospective observational study of all patients who received a massive transfusion protocol for non-traumatic hemorrhagic shock over a two-year period (2016-2017). The primary outcome was in-patient hospital survival. Electronic medical records of 70 non-traumatic patients including both adult and paediatric cases that were admitted and had massive transfusion were assessed. Variables include age, sex, co-morbidities, drug intake, pre-surgical laboratory investigations, diagnosis and nature of surgical procedure, ratio of blood components transfused, post surgical laboratory parameters, period of ICU and hospital stay and recovery index.

OBSERVATION & RESULTS:

0.78% of total surgical cases received massive transfusion. The diagnosis of the patient especially associated co-morbidities and the surgical procedure decide the outcome of the patient. All paediatric cases who underwent massive transfusion survived. The mean intra-operative blood product usage (PRBC: FFP: Platelet: Cryoprecipitate) ratio were found to be 2:2:1:1 among paediatric survivors and 7:4:2:2 among adult survivors and non- survivors. Similarly 24-hr post surgical blood usage among paediatric age group was 1:1:1:1 and 2:2:1:1 among adult survivors and 5:3:2:2 among non-survivors. Comparisons between pre and post surgical laboratory parameters were found to be statistically significant.

CONCLUSION:

A revised massive transfusion protocol is mandatory in every surgical speciality in order to have a safe and judicious use of blood products and to have a better outcome and reduced hospital stays.

OP 28

AUTOIMMUNE HEMOLYTIC ANEMIA - LABORATORY PREDICTORS OF CLINICAL OUTCOME, RESPONSE AND PROGNOSIS

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BACKGROUND

The diagnosis of autoimmune hemolytic anemia (AIHA) is based on the clinical presentation and the serological evaluation of the autoantibody. The degree of hemolysis depends on the quantity, specificity, thermal aptitude and ability to fix complement and bind macrophages.

AIMS

1. To find the association between DAT strength and characterization of autoantibodies to invivo hemolysis
2. To analyze the trends in pre transfusion testing of AIHA cases
3. To find the effect of PRBC transfusions in the patient outcome

METHODS

Prospective analysis of AIHA patients over 8 months. Patients with clinical and laboratory evidence of in vivo hemolysis and positive DAT were enrolled. Hemoglobin <9 g/dl, reticulocyte >2%, total serum Bilirubin >2mg/dl, LDH >500 IU/ml were the parameters taken to determine the severity of hemolysis. DAT positivity was proceeded to Auto control, monospecific characterization, Indirect Antiglobulin testing (IAT) following elution & adsorption if needed. Response, prognosis, hospital stay with best compatible transfusion were studied.

RESULTS

Out of 183 DAT positive cases, 26 were due to AIHA. DAT alone was positive in 34.6%, DAT and IAT was positive in 64.5%; 26% accompanied by alloantibodies. 15% showed autoantibody with specificity (auto anti ce, auto anti c). 43% had blood grouping discrepancy, 81% resolved with pre warming, 19% needed cold adsorption and elution. Out of the 43%, warm and mixed AIHA constituted 36% each and cold AIHA represents 28% ($p<0.032$). 70% & 30% of severe hemolysis showed 4+ and 3+ DAT reaction respectively. 19 patients required transfusion, 174 crossmatches, 35 best compatible units were transfused. (CT ratio: 4.94). Mean hemoglobin increment is 0.99g/dL following transfusion. All had partial response during discharge; one had complete remission in follow up.

CONCLUSION

With reference to our experience, Specific policy, timely decisions and proper laboratory investigations, plays a decisive role in the management of AIHA patients

OP 29

TO STUDY THE PREVALENCE OF EIGHTEEN CLINICALLY SIGNIFICANT BLOOD GROUP ANTIGENS IN BLOOD DONORS

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BACKGROUND:

International Society of Blood Transfusion (ISBT) recognizes more than 300 red cell antigens. Antibodies to 18 of these antigens are encountered frequently in laboratories, known to cause hemolysis on exposure to antigen positive red cells and hence are clinically significant. Data pertaining to prevalence of these antigens which helps in identifying rare phenotypes is limited for the Indian population. Being such a populous country, it is ironical that neither does India possess a national donor registry nor has it registered any rare donor with International rare donor registries.

AIM:

To motivate and create a database of accessible, volunteer donors to provide blood in emergencies and to identify and register rare donors with rare donor registries like International Rare Donor Panel (IRDP).

METHODS:

This was a cross-sectional, analytical study conducted in the department of Transfusion Medicine of a large tertiary healthcare hospital from October 2016 to May 2018 with a planned sample size of 4800. A random systematic sampling method was used for including blood donors of either gender coming for blood donation who gave consent to participate in the study. All Direct and Indirect Antiglobulin Test (DAT and IAT) positive samples and all Infectious Disease Marker (IDM) positive samples were excluded from the study. Extended red cell antigen typing was performed and results were recorded in study proforma. Antigen, phenotype and gene frequencies were calculated.

RESULTS:

Out of the 6678 donors phenotyped, 1430 (21.41%) were first time donors, 1056 (15.81%) were voluntary donors and 680 (10.18%) were female donors. Antigen, phenotype and gene frequencies were comparable with published Indian data. Three donors with rare antigenic profiles were identified, one of whom have been registered with IRDP.

CONCLUSION:

This study might help enhance the confidence of blood banks in finding appropriate units for patients with unexpected antibodies.00/

OP 30

RED CELL ALLO-ANTIBODIES IN HEALTHY BLOOD DONORS

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BACKGROUND:

Red cell alloantibodies in healthy blood donors is a rare observation. The prevalence of red cell allo- and autoantibodies has been reported among several populations including hospital-based patients, multi-transfused chronic haematological disorders patients, pregnant females and blood donors. In blood donors, red cell antibody screening test is still a less preferred practice in India.

AIMS:

Retrospective analysis of red cell alloantibodies in healthy blood donors at tertiary care hospital.

METHODS:

In this study we retrospectively analysed the red cell alloantibodies in healthy blood donors from October 2017 to July 2018. Antibody screening and identification test done by Bio-rad 3 cell and 11 cell red cell panels on gel column system.

RESULTS:

During study period from October 2017 to July 2018 total 18112 donors donated blood at our blood bank. Out of them we found a total of 17 (0.09%) alloantibodies and 1 (0.01%) auto antibody. In this both clinically significant (reacting at 37C) and clinically non-significant (cold antibodies) were detected. Out of 17 alloantibodies 7 were anti-M (3 warm reacting and 4 cold reacting), 3 anti-E, 3 anti-Lea and one each of anti- K, anti-N & Lea (combined), anti-Cw and one unidentified alloantibody detected . we also detected one autoantibody.

CONCLUSION:

We had detected 0.09% of alloantibodies in healthy donor plasma. Presence of alloantibody in donor plasma can cause haemolytic transfusion reaction in recipient's body if large amount is transfused to them. So, alloantibodies in donor plasma testing we recommended that every blood bank should be testing for.

OP 31

LEUKOCYTES FILTRATION FAILURE IN RED CELLS– UNUSUAL CAUSE

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BACKGROUND:

Leukocytes in the blood units play no therapeutic role in transfusion and are responsible mainly for adverse transfusion reactions. One of the effective methods for leukodepletion of the blood components is using prestorage blood filters. Leukodepletion has a number of potential benefits for transfusion recipients such as reduced risk of febrile non-hemolytic transfusion reactions (FNHTR); CMV transmission and platelet refractoriness. Leukodepletion filter failure is relatively rare. We tried to evaluate the causes of the filter failures including process failures such as filter priming failure and non-process failures such as presence of HbS. In sickle cell trait slow filtration and filter occlusion is commonly seen. Sickle cell gene is known to be wide spread among people of Deccan plateau along with Kerala, Tamilnadu and Assam and not prevalent in western Maharashtra.

AIM:

To evaluate the causes of leukocyte filtration failures in red cells.

METHOD:

Leukodepletion was carried out using Terumo Penpol, Fenwal and Macopharma inline filter blood bags. Sickling test (Sodium Metabisulfite) and chromatography technique (HPLC) were carried out for the leukocytes depletion filter failures.

RESULTS:

During 15 months period 11362 blood units were collected and filtered. There were 24 instances of filtration failures. Sickling test was positive in 18/24 cases. HPLC was carried out in 9 of these cases and it showed the presence of HbS (range of 30-38%). In 6 cases we could not determine the cause of filtration failure. Of the 18 donors which were sickling test positive, 11 were from Mumbai, 3 from eastern Maharashtra and 1 each from Gujarat, Odisha, Jharkhand and Chattisgarh.

CONCLUSION:

Currently, Leucodepletion using inline filters is not a common practice in India. Though sickling test is not mandatory for blood screening for donors but if there is filtration failure possibility of sickling should be considered.

OP 32

COAGULATION FACTOR LEVELS IN FRESH FROZEN PLASMA AFTER STORAGE AT 1-6°C FOR 5 DAYS: FEASIBILITY OF USE

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BACKGROUND:

Extending the shelf life of Thawed FFP beyond 24 hours enables us to manage inventory better, reduces the burden of demand Vs supply as well as minimizes wastage of Thawed FFP. It can also help in logistically supporting the transfusion services in making FFP readily available in mass casualty scenarios (war, natural calamity) in remote locations by reducing the time required for thawing FFP and the need for costly storage equipment.

AIM:

The aim of this study was to compare the levels of Factors V, VII, VIII, IX, X, Fibrinogen and also PT, APTT and TT on thawed Fresh Frozen Plasma after prolonged storage for 5 days at a temperature of 1-6°C.

METHODOLOGY:

The above mentioned Coagulation Factors were analysed in FFP at the time of product thaw and again after 120 hours of 1 to 6°C storage using fully automated coagulation analyser (STA Compact Max).

RESULTS:

All parameters were expressed as Mean ± Standard deviation and were analysed using paired t-test with level of significance, $p<0.05$. There was a significant decrease in activities of all measured coagulation factors with FV, VIII and IX showing the maximum decrease. However, all the FFP units retained factor activities above therapeutic range even after 5 days of storage at 1-6°C.

CONCLUSION:

Although the levels of plasma clotting factors are reduced during storage, they are still maintained above the therapeutic range. In scenarios where maintaining FFP inventory is a logistical challenge and emergency massive demands of FFP are foreseen, the use of thawed FFP can be considered as a viable option with a robust transport system.

OP 33

DETERMINATION OF OPTIMAL RED CELL INVENTORY LEVELS FOR A HOSPITAL BASED BLOOD TRANSFUSION SERVICE

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BACKGROUND:

Appropriate inventory levels are key to effective inventory management which necessitates policy formulation based on institution specific data.

AIMS:

1. To determine an institution specific optimal and minimum Packed Red Cell (PRC) inventory level for each ABO blood group
2. To analyze the relationship between inventory levels and time expiry wastage of Packed Red Cell (PRC) units across the different ABO blood groups

METHODS:

This is a retrospective study of 12 months duration in a tertiary care centre. By review of documents ,the total number of Packed Red Cell (PRC) units issued during 12 months (May 2017 –April 2018) was calculated .The total number of PRCs issued was divided with the total number of days in the study period ,to derive Average Packed Red Cell Use Per Day. The Average Daily Use Estimate of PRC for eight blood groups was determined. A minimal and optimal inventory was determined by multiplying the average daily use by three and seven respectively .Issuable Stock Index (ISI) and Time Expiry Wastage as a Percentage of Issues (TAPI) were used to present stock and wastage data for each blood group and were compared to see if there is a correlation between these two variables.

RESULTS:

Average Packed Red Cell Use Per Day was 71,with mean percentage of blood use by blood group and Average Packed Red Cell Use Per Day by blood type was: O positive (39.3%;28), O negative(3.9%;3) ,A positive(23.6%;17),A negative(2.8%;2),B positive(21.9%;16), B negative(2.6%;2), AB positive(5.6%;4),AB negative(0.4%;0.2) respectively. Minimum and optimum inventory was O positive (84;196), O negative(9;21), A positive(51;119), A negative(6;14),B positive(48;112), B negative(6;14), AB positive(12;28),AB negative(0.6;1.4) respectively. Pearson correlation analysis demonstrated a positive correlation between ISI and TAPI.

CONCLUSION:

Determination of optimum blood inventory levels through evidence based approach is imperative for effective and minimum-wastage inventory management.

OP 34

PERFORMANCE EVALUATION OF RAPID DIAGNOSTIC TEST AGAINST CHEMILUMINESCENCE IMMUNOASSAYS FOR THE SEROLOGICAL SCREENING OF HEPATITIS B SURFACE ANTIGEN AND ANTIBODY TO HEPATITIS C VIRUS AMONG BLOOD DONORS

Dr.BrindaKakkar, MeenuBajpai, Ekta Gupta, Guresh Kumar
Institute of Liver and Biliary Sciences

BACKGROUND:

Serological screening of blood borne viruses (BBV) in donated blood can be done by either rapid diagnostic tests (RDTs) and/or enzyme linked immunosorbent assay (ELISA) or any other available sensitive immunoassay such as chemiluminescence immunoassay (CLIA). RDTs are preferred in centres with resource constraints or limited donations and apheresis donors where short turnaround time is required. As per literature it is known that RDTs have higher specificity but varied sensitivity.

AIM:

To evaluate performance of two commercially available RDTs against CLIA (Architect i1000 SR, Abbott) for screening of HBsAg (RDT1 – MeriscreenHBsAg; RDT2 – ViruscheckHBsAg) and anti-HCV (RDT3 – Tredro HCV AB; RDT4 – Qualpro HCV).

METHODS:

In this cross-sectional study, 1000 consecutive blood donors were screened from September 2017 to March 2018. Results obtained by both RDTs and CLIA were compared. In a subset of samples, two types of molecular techniques: real time PCR and transcription mediated amplification (TMA) were compared.

RESULTS:

Of the 1000 samples tested by CLIA, prevalence of HBsAg and anti-HCV was 3.2% and 0.6%, respectively. Sensitivity of RDT1 for HBsAg detection was 28.13% with 100% specificity, while RDT2 showed 28.13% sensitivity with 99.9% specificity. Sensitivity of RDT3 and RDT4 for anti-HCV detection was 16.67% with 100% specificity each. Further confirmation of viremia was done on CLIA reactive samples, HBV DNA was detected in 31.3% (10/32) by PCR and 21.9% (7/32) by TMA, while HCV RNA was detected in 16.6% (1/6) by both PCR and TMA. The concordance between PCR and TMA for HBV DNA and HCV RNA detection was 90.6% (κ 0.762; p=<0.001) and 100% (κ 1.000; p=0.014), respectively.

CONCLUSION:

RDTs performed poorly for detection of HBsAg and anti-HCV among blood donors with low sensitivity and high specificity, thus, adding on to burden of transfusion services by compromising blood safety.

OP 35

RESIDUAL RISK ESTIMATION OF TRANSMISSION OF HBV, HCV AND HIV IN THE DONATED BLOOD IN AN INDIAN SETTING.

Dr. Hem Chandra Pandey, Mariam Verghese, ArvindRana, Rajkumar, Pankaj Jain

All India Institute of Medical Sciences, New Delhi

BACKGROUND:

Residual risk estimation of TTI helps in identifying the safety of blood transfusions, helping the clinicians to decide on allogenic transfusions versus alternative options as well as help policy makers in deciding to implement newer interventions to reduce the risk.

AIM:

The aim of current study was to estimate the incidence rate and residual risk of transmission of HBV, HCV & HIV at our institute.

METHODS:

A retrospective study done at a tertiary care referral centre of north India. Data related to blood donor demographics as well as TTI testing (Chemiluminescence and ID-NAT) was collected from January 2015 to June 2017. Viral screening was done via automated chemiluminescence immunoassay (CLIA) analyser (Abbott i1000SR) and ID-NAT testing was done using TMA (ProcelixUltrio plus). Data was entered in Microsoft excel 2016 and analysed. The incident rate and residual risk were calculated by the method described by Busch and co-workers in 2005.

RESULTS:

A total of 106119 donors donated during study period. A total of 1335, 833 & 255 donors were reactive for HBV, HCV & HIV respectively with the respective NAT yield being 74, 12 & 1. Incidence rates for HBV, HCV & HIV were approx. 1080, 127 and 40 per 105 donors respectively. Residual risk of HBV, HCV and HIV was approx. 307, 4.5 and 3.2 per million donors respectively.

CONCLUSION:

We found the residual risk and incident rate for HIV and HCV to be low whereas the same for HBV was found to be high despite testing by ID-NAT. Studies from other centres are needed to confirm our findings. There is need for country specific efforts to reduce this high risk of HBV transmission risk.

OP 36

CHANGING TRENDS OF SYPHILIS TESTING AMONG BLOOD DONORS: WHAT WE KNOW, WHAT WE DO NOT KNOW, AND WHAT WE NEED TO KNOW.

Dr. Trupti Barot, Harprit Singh

Prathama Blood Center, ATMRF

AIM :

To evaluate the impact of treponemal specific vs. non-specific serological tests for syphilis in the setting of low prevalence syphilis with 100% non remunerated regular voluntary blood donor.

METHODS:

The retrospective study was carried out in Prathama Blood Centre, Ahmedabad from 01/01/2013 to 31/01/2018. A total of 1,56,311 non remunerated voluntary blood donors sample were analysed by Treponemapallidumhemagglutination assay with sensitivity and specificity are 98.5 % & 99.6% respectively . All TPHA positive samples were again retested by non specific Rapid plasma reagin test for identifying False Negativity.

RESULTS:

Out of 1, 56,311 non remunerated voluntary blood donors (95.80% male & 4.20% female), 477 donors (0.32%) were seroreactive by TPHA. We also tested all TPHA (specific test) positive samples with RPR (non specific) test and we found out of 477 only 276 samples (57.8%) shows seroreactivity with RPR test (male 98.9 % vs. female 1.09 %) which is statistically significant ($p < 0.05$) with false negativity value of 201/477 (42.14%). We again tested TPHA positive & RPR negative samples 201 with same specific treponemapallidum tests (TPHA) and we found 177 samples show seroreactivity (88.1%; $p < 0.05$) with good reproducibility of result.

CONCLUSION:

This is the first study from Indian subcontinent showing Seroprevalence (via TPHA assay) of Syphilis in blood donors was 0.32%. Considering the limitations of RPR test which showed high rates of false negativity (as per our study) & high biological positivity (as per literature / WHO guidelines) which itself have adverse psychological effects (stress & anxiety) on donors. Hence more sensitive and treponemal specific tests like TPHA ; FTA – ABS should be used, as recommended by 'Screening Donated Blood for TTI – WHO Guidelines' which will have huge impact on the blood screening practices.

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POSTER Paper Presentation

PP 01
CLINICAL OUTCOME OF PLATELETS TRANSFUSIONS USING PRP PLATELETS AND BCR PLATELETS IN PATIENTS WITH THROMBOCYTOPENIA

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Jubilee Mission Medical College and Research Instituite

Background:

Platelet transfusions are widely used to treat thrombocytopenia of various etiology. There are two different methods of preparation of platelet concentrate from whole blood, one is Platelet-rich plasma method (PRP) and the Buffy Coat Removed (BCR) method. A large number of studies have compared in-vitro activation of platelets among BCR platelets and PRP platelets but their significant clinical effects in patients has not been evaluated in any of these studies.

Aim:

Aim of our study is to compare clinical outcome of patients transfused with platelets prepared by PRP method and BCR method.

Materials and methods:

This study was conducted in Dept of IHBT, JMMC Thrissur, over a period of two years. A total of 100 patients with thrombocytopenia were enrolled into the study with fifty patients in each group. Outcome of patients transfused with PRP derived platelets and Buffy coat removed platelets were compared on the basis of absolute and corrected count increment, percent platelet recovery and incidence of post transfusion reactions.

Results:

The mean absolute count increment in BCR group was 23,900/µl with a standard deviation of 7022.56/µl. The mean absolute count increment in PRP group was 18,910/µl with a standard deviation of 7482.42/µl. The difference is statistically significant with a p value of 0.001. The mean CCI of PRP group is 12847 with a standard deviation of 5146.76 and in BCR group it is 12897 with a standard deviation of 4266.82 and this difference was not statistically significant p value (0.957). None of the patient transfused with BCR platelets reported a transfusion reaction while one out of 50 (2%) patients transfused with PRP platelets had FNHTR

Conclusion:

On the basis of count increment, corrected count increment, percent platelet recovery and incidence of post transfusion reactions, BCR platelet transfusions showed a better outcome than PRP platelet transfusions

PP 02
THERAPEUTIC EFFICACY OF PLASMA EXCHANGE IN THE TREATMENT OF MYASTHENIA GRAVIS

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Dayanand Medical College And Hospital Ludhiana

Background:

Myasthenia gravis (MG) is a well known autoimmune disease characterized by antibodies against the acetylcholine receptor (anti-ACHR) on the post synaptic surface of the motor end plate. Plasma exchange is a therapeutic modality well established in MG with a positive recommendation based on strong consensus of class III evidence and in the category 1.

Aims:

The aim of this study was to analyze the retrospective experience related to the indication, complication and outcome of Therapeutic Plasma Exchange (TPE) in Myasthenia Gravis.

Methods:

A total of 35 patients of MG were submitted to a total of 41 cycles and 171 sessions of TPE. It was performed using a single volume plasma exchange with intermittent cell separator (Haemonetics MCS plus) by femoral or central line access and scheduled preferably on alternate-day intervals for eight to ten days. Both subjective and objective clinical response to TPE was estimated and final assessment of response was made at the time of the last TPE in the series and overall outcome at discharge.

Results:

Total of 110 patients of MG who were admitted to our hospital during the study period of 2 years. 35 (31.8%) patients had TPE performed with mean age of 32 years (M: F=2:1). The mean number of TPE session was 4.2 (SD±1.2), volume exchange was 2215 ml (SD±435), overall incidence of adverse reaction was 21.7%. All patients had immediate benefits of each TPE cycle. Good acceptance of procedure was observed in 78.3% of patients.

Conclusion:

TPE may be considered as one of the treatment options especially in developing countries like ours as it is relatively less costly but as effective for myasthenic crisis as other modalities. It may be more effective if initiated earlier in the hospital course and in patients who had previously failed to respond to other treatment.

PP 03
ROLE OF THERAPEUTIC PLASMA EXCHANGE (TPE) IN AUTOIMMUNE HAEMOLYTIC ANAEMIA (AIHA) - A CASE Report

Dr. Dolly Gohel,Dr. Nidhi Bhatnagar, Dr. M. D. Gajjar, Dr. Tarak Patel, Dr. Nihar Chaudhari

Background:

Autoimmune Haemolytic Anaemia (AIHA) represents a group of disorders in which autoantibodies mediate either intravascular haemolysis by the terminal lytic complex (C5b-C9) or, more often, extravascular destruction in the spleen by the macrophage-phagocytic system. AIHA can be classified into two major types, Warm Autoimmune Haemolytic Anaemia (WAIHA) and Cold Agglutinin Disease (CAD)/ Cold Autoimmune Haemolytic Anaemia (CAIHA). In WAIHA, the Direct Antiglobulin Test (DAT) is positive with Anti-IgG. In CAIHA, the DAT is positive with Anti C3b only.

Therapeutic Plasma Exchange (TPE) is typically utilized in patients with fulminant haemolysis who are unresponsive to Red Blood Cell (RBC) transfusion. TPE treatment may temper the disease course until immunosuppressive therapy takes effect, or if other treatments have failed.

Case Report:

We report two cases, one of WAIHA and other of CAIHA, in which TPE was done to manage the patient. In case of WAIHA, six daily cycles of TPE were performed and in case of CAIHA, one cycle of TPE was performed. In both cases, TPE was successful in removing autoantibodies and there was significant increase in haemoglobin level post transfusion.

PP 04
CYTOKINES IN INVESTIGATION OF BLOOD TRANSFUSION REACTIONS

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Surat Raktadan Kendra & Research Centre

Background:

Atleast 3% of all transfusions result in either a febrile non-hemolytic transfusion reaction (FNHTR) or allergic reaction. FNHTRs are seen in 1% to 3% of RBC transfusions. The mechanism of FNHTR involves antigen antibody complex, complement activation and release of cytokines like tumor necrosis factor Interleukin (IL)-1, IL- 6, IL-8 which have pyrogenic effect. Regulated upon activation, normal T cells expressed and secreted (RANTES) is mainly involved in allergic reactions.

Aims:

To investigate blood transfusion reactions for cytokine levels.

Methods:

Routine investigation protocol of the blood bank was carried out for reported blood transfusion reactions (BTR). When no root

cause of reactions was found nine cases were further investigated for cytokines The pre and post sample of the patient and the donor's sample from the residual bag were investigated for IL-6, IL-8, IL-1β and RANTES using ELISA.

Result:

The selected patients were of age group 18 to 58 years. Three were male and six female. Three patients were transfused with whole blood and six with red cell concentrate. In whole blood transfusion IL-6 doubled from 101 to 201pg/ml in post transfusion sample whereas it was absent in the bag, IL-8 increased from 54pg/ml to 894pg/ml and IL-1β was 60pg/ml which was absent in pre sample. In RCC transfusion RANTES was absent in the patient but it was 98ng/ml and 131 ng/ml in blood bag. IL-8 and RANTES was found in high levels in all the bags.

Conclusion:

RANTES accumulates in large amount in blood components. It may be possible that when these are transfused to patients it may be possible to cause allergic symptoms that are associated with NHTR. IL-6 and IL-8 also increased which may be the cause of febrile reactions due to cytokines released from leucocytes. Thus investigation of BTR can be extended from routine compatibility testing.

PP05

STUDY OF EXCHANGE TRANSFUSION BY RECONSTITUTED BLOOD IN HEMOLYTIC DISEASE OF NEWBORN.

Dr. Kruti Nathani,Dr. Kruti Raja, Dr. Amrish Pandya,Dr. Jitendra Patel Dr. Kamal Patel
Government Medical College, Surat

Background:

This study was aimed to review and establish the practice of exachange transfusion with reconstituted blood in neonates and to observe fall of bilirubin and its comparison with related studies.

Aims:

1.To find out fall of indirect bilirubin level after exchange transfusion in newborn.2.To establish the role of reconstituted blood for exchange transfusion in newborn.

Method:

31 Neonates diagnosed hemolytic disease of fetus & newborn were selected for this study, in which exchange transfusion was carried out as one of the treatments for hyperbilirubinemia. Out of the 31 cases, 20 were of resus(rh) hemolytic disease of fetus and newborn, while abo and other blood groups constituted 8 and 3 hemolytic disease of fetus and newborn cases respectively. First, the neonates' and mother's blood samples were subjected to relevant investigations. After that, for neonates having rh hemolytic disease of fetus and newborn, o rh negative cells suspended in ab plasma were given, o rh positive cells suspended in ab plasma were given to abo hemolytic disease of fetus and newborn because of other blood group antibodies. The exchange transfusion was carried out taking all aseptic precautions by continuous technique with double-volume exchange transfusion method.

Result:

The average post-exchange fall in serum indirect bilirubin was (53.70%) in all 31 cases, which was found to be more significant that the previous studies. Looking into the superiority of the exchange transfusion in hemolytic disease of fetus and newborn by reconstituted blood, the reconstituted blood can be modified and suppleid as per the requirement and conditions.

Conclusion:

From this study we concluded that reconstituted blood is immunologically safer&better than whole blood for purpose of exchange transfusion in hemolytic disease of fetus&newborn because of its superiority in minimizing transfusion reaction and in achieving all the therapeutic effects of exchange transfusion in better way.

PP 06

STUDY OF USAGE OF FRESH FROZEN PLASMA AND EFFECT OF FRESH FROZEN PLASMA ON PRE-TRANSFUSION INTERNATIONAL NORMALISED RATIO.

Dr.Pooja Modi,Dr.Gopi Dobariya,Dr.Amrish Pandya,Dr. Sangita Wadhwani ,Dr.Chirag Unagar
Government Medical College Surat

Background:

Fresh Frozen Plasma is frequently prescribed blood product used therapeutically in bleeding or prophylactically in non-bleeding patients prior to invasive procedures or surgery. High rate of inappropriate usage has been reported that leads to wastage of limited resources, depriving needy patients of their use.Also, there is a risk of transmission of infectious agents. This study was undertaken to audit the uses of FFP and to assess effect of FFP on pre transfusion INR.

Aim:

To study the effect of FFP on pre transfusion INR,To audit usage of FFP.

Method:

During the study 500 patients were prospectively observed who received FFP in our hospital. FFP usage was classified as appropriate or inappropriate based on guidelines by the National Health and Medical Research Council. Pre and Post transfusion INR were recorded and effect of FFP on pre transfusion INR was studied in patients who appropriately received FFP.

Result:

Total 2048 units were issued for the 500 patients of which 158 were females and 342 were males. (Range: 17-54 years). Total 1698 units in 415 patients were appropriately transfused and 350 units in 85 patients were inappropriately used. Mean improvement in pre-transfusion INR per unit of FFP was 0.26(median 0.25, range 0.02 to 1.1, SD 0.16). A significant improvement in the pre transfusion INR per unit of FFP was seen in 60.7% patients. A linear relationship was noted between pre-transfusion INR and improvement in INR per unit of FFP.

Conclusion:

Proportion of inappropriate FFP usage remains high. A significant improvement in INR is more likely with a high pre-transfusion INR. The improvement in INR per unit of FFP is also more with higher pre-transfusion INR. Awareness programs regarding blood component usage in various clinical conditions should be conducted for clinicians regularly.

PP07

SINGLE DOSE INTRA-ARTICULAR PLATELET-RICH PLASMA VERSUS CORTICOSTEROID INJECTIONS IN THE TREATMENT OF ADHESIVE CAPSULITIS OF THE SHOULDER: A COHORT STUDY

Dr. Somnath Mukherje,Apurba Barman, Dibyajyoti Sahoo, Bhaskar Rao, Rituparna Maitie
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BACKGROUND:

Adhesive capsulitis (AC) is one of the common causes of shoulder pain and disability. Intra-articular corticosteroid (IA-CS) injection still remains one of the most common procedures for treating AC. However, corticosteroid injection has been associated with hyperglycaemia, detrimental effects on articular cartilage, increased risk of tendon rupture, local skin depigmentation and atrophy of subcutaneous tissue. Recently, new evidences have emerged on the effectiveness of Platelet Rich Plasma (PRP) injection in the treatment of chronic tendon and muscle injuries, tendinopathies, osteoarthritis etc. However, its evidence of effectiveness in patients with AC is limited.

AIMS:

The objective of this study was to compare the effects of single IA-PRP injection with conventional single IA-CS injection on pain, active and passive shoulder range of motion (ROM) in patients with primary AC.

METHODS:

This was prospective observational, cohort study. Patients, contraindicated to standard CS injection, received IA-PRP injection (n=30), whereas patients, with no contraindication, received standard IA-CS injection (n=30). In IA-PRP group , we administered ultrasound guided single intra-articular injection (4mL) of PRP into the GH joint, whereas, in IA-CS group , we administered single injection of 2mL (40mg) of Methyl Prednisolone Acetate, mixed with 2mL 2% lignocaine (Total 4mL) into the GH joint. The PRP was prepared by the single centrifugation technique using bench top centrifuge System (Eppendorf AG Centrifuge 5702), in accordance with standard operating procedure.

RESULTS:

28 patients in IA-PRP group and 27 patients in IA-CS group finished the entire 12 week study period. The improvement in pain intensity, shoulder ROM and shoulder function score was significantly greater in the IA-PRP injection group than in IA-CS injection group ($p<0.05$).

CONCLUSION:

Single dose IA-PRP injection was found to be more effective than an IA-CS injection, in improving pain, disability, and shoulder ROM in patients with primary AC of the shoulder.

PP08
ROLE OF THERAPEUTIC PLASMA EXCHANGE IN THROMBOTIC THROMBOCYTOPENIC PURPURA

Dr. Saradha Prabakar, Dr.Krishnamoorthy Dr.V K Panicker ,Dr.Ravindra Prasad,Dr.Ashwin,
Sri Ramachandra medical college and research institute

Background:

Thrombotic thrombocytopenic purpura(TTP) is a rare and life-threatening thrombotic microangiopathy characterized by microangiopathic hemolytic anemia, severe thrombocytopenia, and organ ischemia linked to disseminated microvascular platelet rich-thrombi.This disorder has feature of antibody production resulting in endothelial damage and/or deficiency of ADAMTS-13.Therapeutic plasma exchange(TPE) comprises of withdrawing offending agent in patient's plasma causing clinical symptoms and replacing with either donor plasma or manufactured replacement solution such as 5% albumin and 0.9% normal saline.

Aim:

To observe the clinical benefits of TPE in a patient with thrombotic thrombocytopenic purpura.

Methodology:

This study was carried out in department of Immuno Hematology and Blood Transfusion, Ramachandra Medical College and Research Institute,Porur,Chennai. Continuous flow cell separator (COMTEC) was used for TPE. Effect of TPE was observed in a patient with TTP. Total 6 sessions of TPE was done for a female middle aged patient in 6 consequent days in the study period of May 2018 to June 2018. Patient had complaints of left hand numbness and slurring of speech ,deviation of angle of mouth and blurring of vision since 10 days. femoral catheter was inserted in that patient before procedure. At each procedure 1-1.5 plasma volume exchange was done and FFP in combination with 0.9% normal saline and 5% albumin were used as replacement fluid.

Result:

Total 6 sessions of TPE performed. She showed clinical improvement and her lab para-meters were reviewed daily. Her platelet count improved drastically from 15,000 to2,38,000 / mm3,LDH had fallen from 730 to 228U/L ,schiostocytes from 8% to 0.5% by the end of 6th cycle. Complications such as Hypocalcemia (perioral tingling), hypomagnesia (muscle cramps), chills and rigor and rash were recorded during procedure and were addressed periodically .No fatal complications were observed. patient recovered uneventfully and was discharged.

Conclusion:

TPE is an ideal and first line treatment(category I indication for TPE) option in patients suffering from TTP with minimal complications and better outcome.

PP09
TRANSFUSION SUPPORT IN TRAUMA INDUCED COAGULOPATHY

Ms. Divakarla Akshitha, Dr.A.Keerti Dr.S.Pandu Ranga Rao

Introduction Blood transfusion support is vital for patients of trauma with haemorrhagic shock.Bleeding remains the leading cause of preventable death after injury.Coagulopathy after traumatic injury is multifactorial and involves all components of hemostatic system.

Case Discussion A Case Of 28 Years Old Male Presented To The Casualty With Bluntinjury abdomen of heavy object on his abdomen

On examination –Patient was conscious, coherent, cooperative GCS-15/15

Vitals –pulse-130/min BP-80/60/mm Hg RR-24/min

On USG –haemoperitoneum ,splenic and hepatic contusions seen

Investigations-Hb-10gm/dl,TLC-21000/cumm,PLT-1.4lakshs/cumm

Patient taken for exploratory laparotomy

Transfusion support -1 pint PRBC and 1 unit FFP given prior to surgery

intra op -2 pints of whole blood and 1 unit FFP given with damage control surgery

Postoperative findingsPOD-1 - INR-2.14 PT-27 Seconds

In view of raised INR-2 FFP were given

POD-2-Hb-dropped to 7 gm/dl so 2 PRBc were given

POD-3 - Hb-8.3gm/dl PLT-50000cumm INR-1.8

Smear-microcytic hypochromic anemia with thrombocytopenia, one unit of single donor platelets and 1 FFP was given Next Day , reexploratory laparotomy was done for pack removal and no active bleed was found

On post operative findings Hb- 9.4 gm/dl –one unit of PRBC was given

Patient clinically improved and got discharged in a haemodynamically stable condition

Treatment –Iv Fluids ,Antibioticsand Analgesics - given during the st

DicscussionBlood administration during truncal surgery with uncontrolled bleeding includes infusion with compression devices,high volume rapid infusion pumps,blood salvage system provides rate of flow at even 100m/min

Conclusion-End goal of transfusion is to restore volume and oxygen carrying capacity

Standard coagulation tests and functional viscoelastic assays are used for diagnosis

Balanced resuscitation and optimal monitoring is the mainstay for trauma induced coagulopathy

PP10
PLATELET COUNT KINETICS IN DENGUE FEVER

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Sri Ramachandra Medical College & Research Institute, Chennai

INTRODUCTION:

Dengue fever ranges from asymptomatic infection to severe

dengue shock syndrome. Thrombocytopenia in Dengue has been an universal finding. Platelet count kinetic studies demonstrate a fall in platelet count from Day 3 of fever through day 7 and then rise to normal levels from day 8.

Aim:

To study the platelet count kinetics in Dengue patients.

Methods:

Case records of 110 patients admitted with Dengue were analyzed for clinical, laboratory parameters and transfusion requirements during hospitalization.

Results:

Ten pediatric patients and 100 adults were included in the study. The median age of the pediatric patients was 7 years. The mean platelet count at admission was 0.57 ±0.37 lakhs/µl. The lowest platelet count seen was on median day 5 of fever and the mean lowest platelet count was 0.16±0.06 lakhs /µl. Platelet count returned to > 50,000 on median day 9 and platelet count increased to >1,00,000 lakhs /µl on median day 10. Median Hospitalization days were 10. 7/10 pediatric cases were severe dengue and remaining were dengue with warning signs. Mortality was 30%.Adults: Patients were divided in to Non-Transfused (n=46) and Transfused Group (n=54). The mean platelet count at admission was 0.36 lakhs/ µl in transfused and 0.76 lakhs/µl in the non-transfused group. The lowest platelet count observed in the non-transfused group was 0.27 lakhs /µl and 0.13 lakhs/µl in transfused group on day 7. Platelet count recovered to >50,000/ µl on day 9 and to >1,00,000/µl on day 10 in both the groups.

Conclusion:

Platelet count recovery to hemostatic level was observed on day 8 to day 10 in majority of the cases. No difference in platelet count kinetics could be observed between transfused and non-transfused group. No significant difference in outcomes like complications and hospital stay was observed between transfused and non-transfused patients.

PP 11
AUTOLOGUS BLOOD TRANSFUSION : AN EXPERIENCE IN A TERTIARY CARE HOSPITAL OF NCT DELHI

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Introduction:

Autologus Blood Transfusion (ABT) is the safest mode of blood transfusion as it eliminates risk of transfusion transmitted infections, allo-immunisation and graft versus host disease. ABT includes replacement of blood loss during surgeryby patient's own blood donated before surgery or perioperatively. It is of immense help in case of rare blood group patients and in maintaining blood transfusionservices in remote areas.

Aims & Objective:

1. To assess the efficacy of ABT. 2 To study the effect of perioperative ANH on the haematological and coagulation parameters.

Materials & Method:

Study of autologous blood transfusion casesover a period of two years. The patients were selected for ABT as per national guidelines. Single unit of 350ml was collected from each patient in pre-surgical donations and approx. 10ml/kg of blood was withdrawn in perioperative hemodilution. The details of all the patients for autologous blood transfusion were recorded.

Results & Observations:

A total of102 (0.17%) cases reported for ABT out of 61000 of total donation in two years. The various surgical procedures which patients underwent included: Cholecystectomy (37),Hernial repair (25) , urolithotomy (12), non healing fractures (20) and vaginal hysterectomy (08). 55 units were issued asautologous BT for same patients, 40 units were cross over to main stock as transfusion in these patients were not required..Three units were expired due to inventory control failure and two were found reactive. Perioperative ANH was done in 25 cases. ANH showed dilutional effect on coagulation and haematological parameters but PT & PTTK returned to near baseline valueson the 2nd post op day, however values of haematological parameters did not revert back to baseline.

Conclusions:

ABT is used infrequently in developing countries despite the fact that it is free of risks associated with allogenic transfusion, helps in conserving blood stock and provision of blood to rare blood group patients.

PP12
NATURE AND CAUSES OF ERRORS IN THE BLOOD TRANSFUSION CHAIN- A STEP TOWARDS PATIENT SAFETY

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Background:

A wide range of errors (all deviations from Standard Operating Procedures) occur at various steps of the transfusion process.

Aim:

This study was conducted to identify the nature and cause of errors in the process of blood transfusion.

Materials And Methods:

A prospective study was conducted in the department of Transfusion Medicine at a tertiary care hospital in India over a period of 18 months. All the errors that occurred during the process of blood transfusion starting from the donor phlebotomy till the transfusion of blood component to the patient were reported and analyzed.

Results:

The rate of error occurrence was found to be 0.3%. The actual events which include near-harm and adverse events were 10% and 5%, respectively whereas near-miss events were 85% (ratio of actual to near-miss was 1:5.6). Laboratories were found to have the highest level of error occurrence (48% of all errors). Wrong blood in tube errors were found to be 1 per 3308 samples received. Frequency of haemolytic transfusion reactions due to ABO incompatibility was found to be 1 in 6770. Majority (74.4%) of the errors were recovered due to system check built within the departmental SOPs thus, recovery was planned. However, the remaining 25.6% events were discovered only after the product was issued.

Conclusion:

The data obtained through this study highlighted various critical steps where errors can occur in the long chain of blood transfusion

PP13
ANALYSIS OF DEMOGRAPHIC AND CLINICAL VARIABLES ON INFLUENCING BLOOD LOSS AND TRANSFUSION REQUIREMENT IN UNILATERAL TOTAL HIP ARTHROPLASTY

Dr. Dibyajyoti Sahoo , Somnath Mukherjee ,Sujit Tripathy ,Rituparana Maiti,
AIIMS Bhubaneswar

Background:

Many advances in surgical and anaesthetic techniques on total joint arthroplasty have taken place in last few decades, still there is associated with considerable peri-operative blood loss during this procedure especially in total hip arthroplasty (THR).

Aims:

The Main Purpose Of This Study Was To Identify The Influence Of Different Demographic and clinical variables on perioperative blood loss and transfusion requirement especially in terms of age, sex, BMI, aetiological factors of the disease conditions and pre-operative haemoglobin (HB) in patients undergoing THR.

Methods:

This was a retrograde observational study. Patients undergoing unilateral THR from January 2016 till July 2017 meeting inclusion criteria were included in our study. Peri-operative blood loss was calculated with use of validated formula. Blood transfusion requirement was also evaluated with respect to other variables.

Results:

Total 81 patients were included for retrospective analysis in our study. Mean patient age was 43.71± 15.03 years, mean BMI was 26.4±4.1, mean pre-op HB was 11.25±1.57 gm/dl, mean blood loss was 361.42±295.94 ml and median blood transfusion requirement was 01 (IQR:1-2). Patients were broadly categorised into three major groups [#Neck Of Femur (NOF), N=17, Inflammatory, N=35 and Avascular necrosis hip, N=29] on the basis of aetiology of the disease conditions. NOF group had highest and significant blood loss (271.17±71.92 ml, P<0.001) compared to the other two groups. Further regression analysis showed that etiological factors, sex, and pre-op HB had a significant influence on blood loss, whereas aetiological factors and sex had an influence on transfusion requirement (P<0.05). Patient with lower HB (HB<12 gm/dl) showed significant negative correlation with transfusion requirement (P<0.05).

Conclusion:

Our study identified three different significant variables which influence blood loss and transfusion requirement in patients undergoing THR which we believe can be used for implementing more effective blood conservation strategies.

PP14
PLASMAPHERESIS AS AN ADJUVANT IN THE TREATMENT OF ANTIBODY MEDIATED REJECTION

Dr. Sheetal Chandak, Hansa Goswami, Aruna Vanikar, Amit Prajapati

Introduction:

Antibodies are known to cause rejection of the transplanted organ. Plasmapheresis (TPE) offers therapeutic benefit by clearing these antibodies from circulation. We carried out retrospective analysis of antibody mediated rejections (AMR) in renal transplant recipients and evaluated the therapeutic efficacy of plasmapheresis.

Methods:

This is a study of set of patients. We reviewed case files of patients who underwent TPE in our department from January 2017 till December 2017. Patients with biopsy proven AMR were subjected to TPE (Group-1) were considered for study. Serum creatinine (SCr) levels before and after TPE were evaluated and compared with controls who did not undergo TPE (Group-2).On an average three cycles of plasmapheresis were carried out either on Spectra Optia and Fresenius Kabi Comtech apheresis system. Approximately 1 to 1.5 times plasma volume was removed per cycle and replacement was carried out with crystalloids and colloids in ratio of 3: 2 (0.9% saline and 20% human albumin).

Results:

Out of the 156 patients showing T+B cell or B cell rejection. 24 patients opted to undergo TPE (Group 1)and 132 patients refused to undergo TPE.The mean age of the patients in group 1 was 34.5 years M: F ratio was 6:1 and mean SCr before and after TPE was 3.40 mg/dL (S.D 1.68) & 2.34 mg/dl (S.D 1.20) respectively. The mean age of the patients in group 2 was 35 years, M: F 9.2:1 and mean SCr at the time of diagnosis and last follow up was 2.89 mg/dl (S.D 1.66) and 3.28 mg/dl (S.D 1.87) respectively.

Conclusion:

Plasmapheresis is a useful adjuvant of anti-rejection therapy for AMR

PP15
VASCULAR ACCESS AND ACCESS RELATED COMPLICATIONs IN THERAPEUTIC PLASMAPHERESIS AMONG PATIENTS OF NEUROLOGICAL DISORDERS: A TERTIARY CARE CENTRE EXPERIENCE

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Background:

Therapeutic plasma exchange (TPE) is an apheresis modality in which plasma is separated from the blood, discarded, and replaced with an isosmotic fluid. One of the critical aspects for the successful performance of TPE is appropriate vascular access to provide high blood flow for the collection and return phases of the procedure, because most patients undergoing TPE will require more than one treatment over days.

Aims:

To study access used for performing TPE in neurology patient and analyze access related complications

Methods

A prospective collection of data of TPE was done for 4 months. All consecutive patients who underwent TPE were included. The demographic information, diagnosis, access used, TPE procedure details and access related complications were recorded. All the TPE procedures were done on MCS+ cell separator

Results:

A total of 221 including 123 male and 99 female patients underwent TPE and 999 cycles were performed. The average age was 39 (range 11- 74) years. The majority of patients were of Guillain-barré syndrome (98/221,44.34%), Myesthenia Gravis (n=28,12.67%), Neuromyelitis Optica- Spectum disorder (n=27,12.22%) and autoimmune encephalitis ((n=27,12.22%). The access used were peripheral antecubital in 178(80.54%), Central venous catheter (CVCs) in 20(9.05%) and a combination of both peripheral and CVCs in 23(10.4%) patients. Among the last group initial cycles were performed by peripheral access and subsequently CVCs were used. The hematoma(n=20) and phlebotomy failure(n=20) for peripheral access related and blocked central line(n=4) for CVCs were most common complications.

Conclusion:

The peripheral venous access is preferred method of TPE access at our centre. This is contrary to international apheresis survey of 2010 which states marked shift to CVCs in Asian countries. This mainly may be due to non-participation of many Asian countries. It is preferred options for TPE in most of European countries but CVCs are preferred in American countries.

PP 16
ATYPICAL HUS :SINGLE CENTER EXPERIENCE OF TPE

Dr. Sheetal Chandak, Hansa Goswami ,Aruna Vanikar

Introduction:

Hemolytic uremic syndrome is a disease characterized by triad of hemolytic anemia, acute kidney failure and a low platelet count. HUS is usually categorized as typical, caused by Shiga toxin–producing Escherichia coli (STEC) infection, as atypical HUS (aHUS), usually caused by uncontrolled complement activation, or as secondary HUS with a coexisting disease. Plasma therapy is the mainstay of treatment as the drug Eculizumab is not available in India. We did a retrospective analysis of the patients who underwent Therapeutic plasma exchange as a treatment for atypical HUS.

Materials and methods:

A retrospective analysis of the patients who were referred to the department of Transfusion Medicine for Therapeutic plasma

exchange was done from the year January 2017 to June 2018. All patients with clinical diagnosis of atypical HUS referred by the department of Pediatric Nephrology for Therapeutic Plasma Exchange between 2017 to June 2018 were included in the study. Volume of plasma removed was decided according to the clinical condition of the patient by the consulting doctor .Fresh Frozen Plasma was used as a replacement fluid in all the cases.

Results:

Fifteen patients were referred for Therapeutic Plasma Exchange. Five patients were Females and 10 were males. Age of the patients was from 4 years to 11 years with a mean age of 6 years. A total of 119 plasma exchanges were performed for these 15 patients. Average pre procedure platelet count and Hemoglobin was 96533 per cubic millimeter and 6.76 gm% respectively. Average platelet count and Hemoglobin at the end of last procedure was 1,16,800 per cubic millimeter and 8.1%. None of the patients developed adverse reaction during the procedure.

Conclusion:

Therapeutic Plasma Exchange is a safe procedure and is an adjuvant in the treatment of atypical HUS.

PP 17
AN AUDIT OF USAGE OF PLATELETS IN DENGUE CASES IN A TERTIARY CARE HOSPITAL

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Breach Candy Hospital Trust, Mumbai INTRODUCTION:
Judicious use of platelets in dengue cases needs to be done to avoid unnecessary adverse transfusion complications and better management of platelet inventory.

Aim:

To audit if appropriate utilization of platelets is done in dengue patients.

Materials And Method:

The study was done from July 2015 to June 2018. Seropositive dengue cases were included in the study. BMC- EPID cell and DGHS guidelines were used as reference (Prophylactic platelets may be given in dengue at level of <10,000/cumm in absence of bleeding manifestation). A written notice was circulated to the clinicians/ wards /ICUs regarding the BMC- EPID cell protocol and a format was prepared for documenting the lab details of patient (platelet count, PT, APTT, HCT, Indication). If count of any patient was more than 10,000, history of bleeding manifestation was elicited and correlation with IPF (Immature platelet function) was also done. If no significant history was found, the platelets were reserved for the patient and the clinician was requested to further monitor the patient and platelet count and avoid platelet transfusion if possible. All the requests for platelets for dengue cases were analysed.

Results:

Among the total 832 cases of dengue positive patients, requests for platelets for 38(4.5%) patients had been received (7 had platelet count <10,000; 9 between 11000-20000 and 22 between 21,000 to 40,000).Out of the request received, 22(2.6%) patients required platelet transfusion - 7 had platelet count <10,000; 10 had some bleeding manifestation and 5 had count between 11,000 to 20,000/ cumm. These were transfused on the physician's clinical judgment. All the platelet transfusion were justified as per the guidelines.

Conclusion:

Every blood bank needs to implement guidelines and monitor appropriate use of platelets in dengue patients. Proper coordination between clinician and blood bank plays an important role in promoting rational use of platelets.

PP 18
HEMOVIGILANCE - AN ANALYSIS OF TRANSFUSION REACTIONS AMONG RECIPIENTS IN A TERTIARY-CARE CENTRE THROUGH AN ACTIVE SELF SURVEILLANCE SYSTEM

Dr. Anila Mani, Dr. Debasish Gupta

Introduction:

Hemovigilance is defined as a set of surveillance procedures covering the whole transfusion chain intended to collect and assess information on unexpected or undesirable effects resulting from the therapeutic use of labile blood products and to prevent occurrence or recurrence of such incidents. We as a tertiary care centre studied the entire blood transfusion reactions among the patients over a period of six months. Initial three months includes the period where clinicians reported all those transfusion reactions which they found as definite cases which can be attributed to transfusion. Last three months includes the period which we adopted an active self surveillance to trace back all blood components which are transfused and imparting awareness among the clinicians about necessity of transfusion reaction reporting.

Aims & objectives:

To analyze the incidence of adverse transfusion reactions, to improve the adverse reaction reporting system to maximize patient safety, to develop strategies to reduce incidence of transfusion reactions.

Results:

The Reporting rate for Transfusion reaction has significantly increased during the last 3 months (8 reactions out of 1637 transfusion) where self surveillance was adopted as a method of active hemovigilance compared to first 3 months (2 reactions out of 1536 transfusions).We could trace back all components which were transfused over a period of six months and reactions produced by the various components. Previously only definite reactions were reported by the clinicians. Now, since the clinicians are more aware about the hemovigilance reporting system due to the self surveillance, more number of cases are being reported. Now, we could classify all the reported cases into various imputability categories as described by the recipient vigilance system.

Conclusion:

Active hemovigilance will help us to improve the patient safety by adopting safe transfusion practice with improved quality of blood components and by increasing awareness among clinicians.

PP 19
PERIPARTAL BLOOD PRODUCTS TRANSFUSIONS IN ASSOCIATION WITH HELLP SYNDROME AND PREECLAMPSIA

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Aims:

1.To assess blood product requirement during peripartal period in preeclampsia and HELLP syndrome. 2. To assess the outcome of blood products transfusion in Preeclampsia and HELLP syndrome.

Methods:

Retrospective, descriptive study on 20 peripartal mothers with either Preeclampsia or HELLP syndrome , which were reviewed with special attention to laboratory data, details of transfusion therapy .

Results:

we reviewed 20 peripartal women from june 2017- august 2018 period, out of which 15 cases were preeclampsia and 5 were having HELLP syndrome. Among 15 cases of preeclampsia only 2 required blood products (13.3%) , whereas all 5 peripartal mothers with HELLP syndrome requried blood products(100%). Preeclampsia

mothers required blood products in form of PRBC and FFP , whereas in mothers with HELLP syndrome required additional SDP along with PRBC and FFP(3 in 5 reqired prbc and FFP , whereas all 5 requird SDP) . Post transfusion Hemoglobin in 2 cases of preeclampsia which were transfused with prbc was maintained in a range of 9 - 10 gm/dl(100%), whereas in HELLP syndrome out of 3 transfused with prbc , only one case maintained hemoglobin at a range of 9-10gm/dl (33.3%) , other two cases maintained hemoglobin at 7-9gm/dl (66.6%). Post transfusion PT , aPTT , INR were maintained in normal range in 2 cases of preeclampsia ,who were transfused with FFP , whereas in mothers with HELLP syndrome all 3 cases didnot maintain PT, aPTT , INR in normal range despite FFP transfusion. Post transfusion platelet count in 4 of 5 transfused with SDP in HELLP syndrome maintained >50000cells/cumm (80%), one maintained <50000cells/cumm(20%).

Conclusion:

Blood products requirement was more in HELLP syndrome compared to preeclampia . SDP requirement was seen in HELLP syndrome .Post transfusion levels of hemoglobin, PT, aPTT , INR were maintained in the normal range in preeclampsia

PP20
CLINICAL OUTCOME OF THERAPEUTIC PLASMA EXCHANGE IN TWO ONCOLOGY PATIENTS OF DIFFERENT AGE GROUPS WITH GUILLAIN BARRE SYNDROME

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Background:

Guillain Barre Syndrome(GBS) is anautoimmune condition characterized by progressive ascending paralysis and areflexia with or without abnormal sensory and autonomic functions that reaches maximum severity in four weeks of onset of symptoms. GBS is a category 1 indication for therapeutic plasma exchange according to the ASFA guidelines.

Aim:

To understand the clinical course, severity and outcomes in two different oncology cases with superadded GBS where plasma exchange was started within four weeks of onset of symptoms.

Methods:

Two different cases of GBS were followed, one pediatric patient with Pre B-ALL who was IVIG resistant and one adult patient with adenocarcinoma stomach as the primary diagnosis who was on ventilator support. Both the patients were started on IVIG at some point of their hospital stay, however because of below par clinical improvement, therapeutic plasma exchange(TPE) was considered. Five procedures of TPE were performed on both of these patients. Approximately 1 plasma volume was replaced in the pediatric patient in each sitting and 1.5 plasma volume in the adult patient.

Result:

The pediatric patient showed significant increase in power in the upper limbs by the end of the 3rd sitting of TPE but no significant improvement was seen in the lower limbs. The adult patient however showed greater response and jumped two points on the GBS disability score from 5 to 3 and he was able to walk with assistance within 2 weeks of the procedure.

Conclusion:

TPE should be considered early on, to arrest the disease progression as well as for quicker recovery. GBS is most responsive to plasma exchange early on, after the onset (<2-4 weeks). Disease progression and clinical outcomes of GBS are highly variable but most patients begin to recover around 28 days following onset.

PP 21
GRANULOCYTE TRANSFUSIONS IN HEMATO-ONCOLOGY PATIENTS: ONE-YEAR EXPERIENCE FROM A TERTIARY CARE ONCOLOGY CENTREP25

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Background:

Hemato-oncology patients, who have received intensive chemotherapy, may develop severe neutropenia and serious bacterial and/or fungal infections. It is still under debate whether granulocyte transfusions (GTs) increase survival in patients with febrile neutropenia.

Aim:

To evaluate clinical efficacy of granulocyte transfusions in Hemato-oncology patients with febrile neutropenia.

Material and Methods:

A retrospective analysis from January 2017 to December 2017 was done to evaluate clinical efficacy of nineteen granulocyte transfusions in fifteen hemato-oncology patients. Mobilization of the granulocyte donors was done with as per standard protocol.

Results:

Minimum granulocyte yield of 1 X1010 /bag was considered adequate for transfusion which was fulfilled in 90% of granulocyte harvest conducted. Over the entire study period, eligibility criteria for granulocyte transfusions were fever, an absolute neutrophil count (ANC) < 500/µL, evidence of bacterial and or fungal infections (i.e clinical signs of infection, positive cultures and radiological evidence) and unresponsiveness to appropriate antimicrobial therapy for atleast 48 hours. Patients were grouped according to doses of granulocyte transfusions during the infectious episode (standard dose: 1.5-3.0 X 108 cells/kg and high dose: >3.0 X 108 cells/kg). Effect of clinical, microbiological and GT-related variables on infection-related mortality (IRM) was investigated. The post transfusion absolute neutrophil count (within 24 hours) increased significantly (median value: 350/µL) as compared to baseline levels (median value: 40/µL) ($p<0.05$). IRM was 33% in standard dose group and 8% in high dose group.

Conclusion:

The absolute neutrophil count post transfusion showed significant increase as compared to baseline value. Granulocyte transfusions can be a valuable tool to improve outcome of infections in neutropenic patients provided adequate doses are transfused.

PP22
THE OTHER 'O': PARABOMBAY

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Background:

The Para-Bombay phenotype (also known as H-deficient secretor), is characterized by a lack of ABH antigens on the red blood cells, but presence of ABH substances in saliva. Bombay phenotype (H-deficient, non-secretor) is characterized by the absence of ABH blood group antigens both on the surface of red blood cells (RBCs) and in secretions. Both the Bombay and Para-Bombay phenotypes are the result of point mutations in the FUT1gene, which results in the formation of complete H-deficient (Bombay) or partial H-deficient (Para-Bombay) phenotype.

Aims:

To present a case of a 40 year old patient admitted to our hospital requiring two units of blood, diagnostic workup and clinical implications.

Methods:

Standard serologic techniques were used. Forward and Reverse grouping was done using Column Agglutination Technology (CAT), Testing with anti-H lectin, Indirect Antiglobulin Test (IAT), Compatibility testing by CAT done in our lab. Secretor studies, Adsorption and Elution were done in Reference Lab.

Results:

Forward and Reverse grouping revealed the group to be 'O' positive. Anti-H lectin testing was negative. Indirect Coomb's test was negative. Secretor studies positive for presence of H substances in saliva. Adsorption and elution failed to demonstrate the presence of weak antigens on the RBCs.

Conclusion:

Our serological tests were in line with the characteristics of para-Bombay phenotype. Problems may arise in finding compatible units for these patients because of anti-H or anti-IH, but most often these are not clinically significant. When Bombay or Parabombay blood is not available, whole blood units of normal ABO blood groups compatible by IAT are transfused, and the survival is expected to be almost normal. Two units of O positive blood were compatible for this patient, but unfortunately, our patient was discharged prior to transfusion and lost to follow up.

PP 23
GRAFT AND PATIENT OUTCOME IN ABO-INCOMPATIBLE SOLID ORGAN TRANSPLANTATION AFTER DESENSITIZATION WITH IMMUNO-ADSORPTION (IA) PLASMAPHERESIS

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Background/Aims:

Conventional and cascade plasmapheresis are commonly performed as part of desensitization protocol for ABO-incompatible solid organ transplants (SOT) and there are published reports from India. Recent introduction of isoagglutinin specific Immuno-Adsorption (IA) plasmapheresis offers certain advantages including processing of larger plasma volumes, quicker reduction of isoagglutinin titers and no requirement of replacement fluids. Since there is no published report on use of IA, authors' center aimed to evaluate success rate of desensitization protocol, graft and patient outcomes when IA procedures were performed for desensitization in ABO-incompatible SOT.

Methods:

The evaluation was done at large tertiary care center in north India. Patient records for preceding two-years were collated from hospital information system (HIS) and manual therapeutic apheresis procedure forms. Patients undergoing ABO-incompatible SOT with use of IA to decrease isoagglutinin titer were included in the study.

Results:

During study period, 16 IA procedures were performed in total six patients who underwent successful ABO-incompatible SOT (4 kidneys/2 livers). The pre-IA isoagglutinin IgG titer ranged from 32-512. Mean number of IA procedures performed to achieve the desired pre-transplant IgG titer ≤8 was 2.66 (1-4). New IA column was used for each patient (and re-used for the same patient, if needed, after sterilization with Ethylene Oxide). Mean plasma volume processed by each IA procedure was 4.3 (2-5.5) times. No adverse events were observed during any IA procedure. All patients achieved successful desensitization with no Antibody-Mediated Rejection (AMR) reported. All patients continue to do well clinically with mean follow-up period of 6.5 (1-17) months. Although IA was expensive, it offered multiple advantages like specificity, larger plasma volume processing with faster reduction in titer, no 'replacement fluid' requirements and no adverse events in present case series.

Conclusion:

IA plasmapheresis was universally successful in decreasing the ABO-isoagglutinin titers to desired level in all prospective SOT patients.

PP 24
PREVALENCE OF TRANSFUSION REACTIONS IN A TERTIARY CARE HOSPITAL OF NORTH-EAST INDIA.

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Background:

Transfusion of blood and components can be a double edged sword which should be used judiciously. It can save lives; nevertheless it is not free from hazards. A transfusion reaction is defined as any transfusion¬¬-related adverse event that occurs during or after the transfusion of whole blood, blood components, or human-derived plasma products.

Aims:

The present study aimed to find out the prevalence of acute transfusion reaction (TR) in patients of a tertiary care hospital of North-East India, who received blood and components in a two year period.

Methods:

This prospective, cross sectional study was conducted in the department of Transfusion Medicine of RIMS, Imphal for a period of 2 years from September 2015 to August 2017. All the TRs were evaluated and classified in the blood bank using a preformed work up form and were notified to the 'Haemovigilance programme of India' (HvPI).

Results:

A total of 30,936 blood component units were transfused during these 2 years, a total of 28 (0.09%) acute transfusion reactions were reported and evaluated as per departmental standard operating procedure, majority occurring in females and in 21-30 years age group. Among the types of TRs encountered, febrile non haemolytic transfusion reactions (FNHTRs) were most frequent (57.57%) followed by Allergic reactions (39.29%). Only one case each (3.57%) of sepsis and acute hemolytic reaction was encountered. TRs occurred most frequently with packed red blood cell transfusions.

Conclusion:

The prevalence of TRs may underestimate the reality because of under reporting. With the help of Hospital Transfusion Committee, the study will facilitate the blood bankers and clinicians to formulate policies in the transfusion practice to make it better. Since the most common TR is FNHTR, processes like 'universal leucoreduction' of blood units can be implemented in the blood bank.

PP 25
A PROSPECTIVE INTERVENTIONAL STUDY TO ASSESS THE IMPACT OF A 'STRUCTURED COMPACT TRAINING' ON KNOWLEDGE AND SKILLS OF SAFE BLOOD TRANSFUSION PRACTICES AMONG NURSES WORKING IN A TERTIARY CARE INSTITUTE

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Background:

Nursing officials have an important role in blood safety. It is highly essential to promote for improved quality and safety of transfusion practices in the nursing staff at the patient's bedside.

Aims and Objectives

To study the impact of training on administration of blood components after assessing the baseline knowledge in nursing staff.

Material and Methods

In this prospective, interventional, single blinded study,

participants were recruited from surgical wards-. Anonymity of the subjects was maintained throughout the study. After obtaining an informed consent, the nursing staff included in the study answered a validated questionnaire form which had 5 domains – A-Blood components, B- pre-transfusion checks, C- Transfusion process, D- post transfusion process and E-blood administration process. The nursing staff (intervention group) were given a training on the administration of blood components through a detailed lecture and a power point presentation. The influence of training on their knowledge, attitude and practices was evaluated through Kirkpatrick's four levels of training evaluation.

Results

Of the 84 subjects recruited, 54 completed the study. The mean age of the participants was 25.91±3.15 years (range 20-35 years). There were 30 females and 24 males. Of the 54 participants, 14 had less than one-year experience in service, 37 had 1-5 years' experience, and 3 had more than 5 years' experience. Before the intervention, the mean correct answers for domain A, B, C, D and E were 1.58±1.11 (range 0-4), 1.92±1.177 (range 0-5), 4.67±1.47 (range 2-8), 1.67±0.7 (range 0-3), and 3.87±1.92 respectively. Post the intervention, the scores improved significantly for domain A, B, C, D and E to 4.13±1.167 (range 0-5), 3.5±1.31 (range 1-7), 6.87± 1.48 (range 4-9), 2.7±0.47 (range 2-3), and 5.87±1.65 respectively.

Conclusions

Based on results of the study, we concluded that imparting information to the nursing staff significantly improved their knowledge about the transfusion services.

PP 26
PREOPERATIVE VARIABLES IN OVERALL BLOOD COMPONENT UTILISATION IN LIVER TRANSPLANTATION

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Background:

Patients with end-stage chronic liver disease have a wide range of hemostatic abnormalities usually require blood transfusion during the procedure due to hemorrhage.As transfusion services remain an essential part of Liver transplantation, the ability to predict the preoperative variables will help blood transfusion services in improving preparedness and decrease wastage of limited resources.

Aim:

To find out the preoperative factors that could predict the outcome of blood component utilization in end-stage chronic liver disease patients who had undergone liver transplantation.

Methods:

The study was conducted in the Department of Transfusion Medicine, The Tamil Nadu Dr.M.G.R Medical University, Chennai for a period of 2 years by collecting retrospectively the available data of 20 patients who had undergone liver transplantation at Stanley Medical College Hospital, Chennai from April-2016 to March-2018. MELD score and preoperative factors like age, etiology, hemoglobin, platelet count were analyzed to find out the predictive correlation of these factors on blood component utilization.

Result:

The total number of 68 units of PRBC, 55 units of FFP, 33 units of cryoprecipitate and 18 units of SDP were transfused intra-operatively during liver transplantation surgery.

The average numbers of PRBC, FFP, Cryoprecipitate and SDP units transfused respectively,

- MELD score 10-19 were 3.7,2.7,1.8&1, for the score 20-29 were 1.8,1.9,0.7&0.4,
- Age ≤40 years 2,1.7,1&0.7, >40 years 4.1,3.3,2&1,
- Etiology of ethanol related DCLD 4.7,3.2,2.1&1.1, Wilson Disease 2,1.6,1.2&0.6, Cryptogenic 3.2,3.5,1.8&0.7, HBV 2.5,2.5,1&1, HCC 2,2,1&1,
- HGB ≤10 gm% 3.1,3,1.8&0.7, >10gm% 3.6,2.6,1.5&1,
- Platelet count of ≤50,000/cmm 2.8,2.6,1&0.8, >50,000/cmm 3.6,2.8,1.8&0.93.

Conclusion:

In our study, the utilization of blood components during liver transplantation were more among patients above 40 years with ethanol related DCLD. It was observed that there was an inverse correlation between blood components utilization and MELD score/Platelet count. There were no significant difference between the blood component utilization and haemoglobin values above or below 10 gm%.

PP 27
PREGNANCY LOSS & FIBRINOGEN – A CASE REPORT ON ROLE OF CRYOPRECIPITATE

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Background:

Fibrinogen is a primary binding molecule, connecting platelets together via activated glycoprotein GPIIb/ IIIa. Hypofibrinogenemia is an autosomal recessive inherited bleeding diathesis, it is associated with poor wound healing and recurrent miscarriage. Absence or significant decrease of fibrinogen in maternal serum is sufficient to cause rupture of maternal vessels and impaired trophoblastic infiltration causing bleeding and recurrent abortion. The available treatment uses cryoprecipitate, fresh frozen plasma and fibrinogen concentrate. The treatment during pregnancy is suitable only for patients correctly diagnosed with recurrent abortion.

Patient Concern:

A case of 23 year old antenatal female married for 1 1/2 years with obstetric score of G2P1A1 with second trimester pregnancy loss and family history of recurrent abortions .

Diagnosis :

Hypofibrinogenemia was detected after first pregnancy loss.

Outcome:

During the entire pregnancy cryoprecipitate was transfused, twice a week 6 units of cryoprecipitate, the fibrinogen level was maintained above 70 mg/dl. Pregnancy was terminated at 36 weeks with emergency Cesarean Section in the view of maternal pyrexia, pre-operatively fibrinogen level was 97 mg/dl. Intraoperative 5 units of cryoprecipitate and Postoperative 4 units of cryoprecipitate were given, puerperal period was uneventful.Post-operative fibrinogen level was 139mg/dl. She delivered a healthy male baby with no obvious bleeding tendencies.

PP 28
APPLICATION OF AUTOLOGOUS PLATELET RICH PLASMA IN TREATMENT OF A CHRONIC NON HEALING ULCER

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Background:

Chronic non healing ulcers are the major cause of non traumatic lower limb amputations. Application of platelet rich plasma is a cost efficient alternative to conventional treatment which increases rate of healing by providing growth factors released from alpha granules.

Aim:

To evaluate the safety and efficacy of Autologous PRP for treatment of chronic non healing ulcer

Case discussion:

60 yr old female patient with history of diabetes mellitus type 2 presented to surgical OPD with an ulcer on right foot of 4 months duration. History of trauma to the right foot is present. Conventional treatment of wound debridement and dressing was done for 3 months but there was no improvement and planned for amputation.Informed consent was taken for topical application of Autologous PRP gel on the ulcer and is followed up.Autologous PRP

is prepared from whole blood by density gradient centrifugation with fivefold increase in platelet count. Calcium chloride (1:9ratio) and thrombin (500IU/ml) are added to activate platelets and initiate release of growth factors. Within 5-10 seconds, a gelatinous material is formed which releases 70-80% of growth factors upon activation. Ulcer was debrided, cleaned with betadine solution and irrigated with normal saline; PRP gel is placed on the ulcer and covered with non absorbent dressing at bedside. Twice a week dressing is done for 5 weeks. Reduction of ulcer size (length*breadth), presence of infectious tissue, presence of pain and discharge, formation of granulation tissue, platelet count in PRP are the factors checked on every dressing. 100% resolution was seen at the end of 5th week.

Conclusion:

This case report has demonstrated that Autologous PRP is a safe and effective way which enhances healing and prevents lower limb amputations. Further research and clinical trials on larger population are needed to validate the results.

PP 29
MAXIMUM SURGICAL BLOOD ORDERING SCHEDULE FOR CANCER SURGERIES- AN INSTITUTIONAL STUDY

Dr. Rima Kusumgar, Dr. Dhara Patel, The Gujarat Cancer & Research Institute

Over ordering blood is a common practice in surgeries. This can be corrected by a simple means of changing the blood ordering pattern. A retrospective study was carried out in the largest tertiary cancer care hospital of Gujarat for two years of period to study the blood ordering strategies in the hospital for surgical patients. The total units demanded and the corresponding units issued were studied for surgical patients. Thereafter, transfusion probability and ratio of units cross-matched to actual units transfused (C/T ratio) was calculated. Than transfusion guidelines for all surgeries requiring transfusions were proposed and implemented. Significant improvement was found in above three measures. The study also identifies the common cases where 'Type and Screen' (T&S) procedure could be introduced in cases where the transfusion probability is low. The implementation of this proposal will avoid over-ordering of blood which is beneficial to the institute.

PP 30
PROPHYLACTIC LOW DOSE PLATELETS MAY BE BENEFICIAL FOR THE HAEMATOPOIETIC STEM CELL TRANSPLANT PATIENTS.

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NSH Andul, Kolkata, MCH,Kolkata

Prophylactic transfusions of platelet are the standard therapy to prevent bleeding in the patients with transient thrombocytopenia were being treated with high-dose chemotherapy followed by autologous haematopoietic stem cell transplantation (HSCT). Low to moderate dose of prophylactic platelet transfusions (<20,000/µl) not only prevent clinically relevant haemorrhage but also decrease in donor exposure and cost benefit due to single dose of SDP may be divided in two bags.

Aims 1.

Decrease multiple donor exposure related complication2.Cost effective.

Methods As per our SOP of a single donor platelet (SDP) donor selection criteria , donor should be more than 60kg weight , having good visible ante cubital vein , more than 150/cu mm platelet count, > 12.5 Haemoglobin, TTI screening negativity , not taken any anti platelet drugs and fulfil other criteria of blood donation. All the procedures done by the Optia machine. Time taken 60 to 70 minutes and achievable yields 3 -4 X 1011 which were divided in two doses.

Results:

First Three (3) patients were MULTIPLE MYELOMA (2 male and 1 female) average age 54 years. Last two patients had refractory non Hodgkin's Lymphoma and Mantel cell lymphoma, and both were male, with their ages 21years and 65years respectively, cryopreserved HSC transfused after 1 month of peripheral autologous HSC collection. SDP platelets were approximately collected on the 5th and the10th day after HSC transfusion. Two bags were prepared from a single donor and average yields of platelets per bag were 1.5 to 2.2 X 1011 with volume 120 ml to 180 ml per bag. There was an average increment of platelets 40000/cu ml after single unit transfusion. None of the patients had any bleeding episode.

Remarks:

Prophylactic low dose SDP may prevent bleeding in thrombocytopenic post SCT patients and it is cost effective.

PP 31
ROLE OF A MULTIDISCIPLINARY TEAM AND MASSIVE TRANSFUSION PROTOCOL IN IMPROVING PATIENT OUTCOME –A CASE STUDY

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Swaroop Singh Department Of Transfusion Medicine

Background:

Management of a massive, life-threatening primary postpartum haemorrhage with DIC is a challenge for the clinical teams and hospital transfusion service as mortality is high and its etiology is multifactorial. The implementation of a standardized massive transfusion protocol with a multidisciplinary approach is necessary to prevent lethal triad of hypothermia acidosis, and coagulopathy.

Aims:

The main aim of this case study is to highlight the importance of a multidisciplinary team approach and MTP protocol in improving patient outcome.

Case Study:

The patient was brought to the emergency department of our hospital on 28th June in a very critical condition as a referred patient from another hospital. She had undergone a caesarean section for pregnancy with abruptio placentae with excessive bleeding on 27th June. Investigations showed her haemoglobin as 4.5 and a diagnosis of DIC (disseminated intravascular coagulation) was made. CT scan detected a massive haematoma inside her abdominal wall and a decision for surgery was taken. MTP was activated and 36 units of blood components 12 units PRBCs(packed red blood cells), 12 units of FFPs(fresh frozen plasmas) and 12 units of PCs(platelet concentrate) were transfused .

Result

Despite this massive blood transfusion, the patient recovered fully with overall 63 units of blood components transfusions and was discharged later with no complications. We followed standard blood transfusion protocol of our hospital with a ratio of 1:1:1 for PRBC, FFP and PC respectively. Each MTP pack included 4units of PRBCs ,4 units of FFPs and 4units of platelets.

Conclusions:

A damage control protocol should be prepared to manage patients who have significant acute blood loss. The rapid infusion of the correct ratio of blood products along with multidisciplinary team approach has been shown to improve patient survival and decrease overall usage of blood.

PP 32
CLINICAL DETERMINANTS AND PATTERN OF RED CELL TRANSFUSION IN A TERTIARY LEVEL NEONATAL UNIT

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Background

Red cell transfusions constitute a crucial tool for the care of preterm infants. Shorter RBC life span, insufficient erythropoiesis and iatrogenic blood loss contribute to physiologic anemia of prematurity.

Objective

To identify the neonatal clinical factors that influence red cell transfusion pattern in preterm infants with anemia

Methods

This retrospective study was conducted in neonatal ICU of SAT hospital, Trivandrum which is a tertiary care centre. Preterm neonates who received atleast one red cell transfusion were analysed. Data pertaining to antenatal and postnatal patient characteristics, indications for transfusions, number and volume transfused were obtained from the medical records.

Results

Out of 300 preterm neonates analysed 216(72%) received atleast one PRC transfusion at the end of their hospital stay. Majority(57.4%) of the transfused were males(p value 0.126). Mean gestational age of transfused group was 29.7 weeks (nontransfused 32.1 weeks).and Mean birth weight was 1.29 +/- 0.47 kg(nontransfused-2.07 +/-0.39 kg)(p value-0.001) .Mean haematocrit of the transfused group was 21. 4 +/- 4.2 % and non-transfused group was 49.5 +/- 3.8 %. Median number of RBC transfusions was 2 and mean volume of transfusion was 37.4 ml . Median postnatal day of transfusion was 15. Volume transfused was inversely related to birth weight and gestational age.Mean Iatrogenic blood loss was 9.7 +/-2.1 ml in the transfused group and 5.01 +/-1.3 ml in the non transfused. 50.5% and 45.4% of the transfusions were associated with administration of inotropes and significant mechanical ventilation, respectively.Prevalence of apnoea of prematurity was 43.5% in the transfused group vs 3.6% in nontransfused (p=0.0).

Conclusion

Clinical parameters like gestational age, birth weight, oxygen supplementation , pretransfusion haematocrit ,administration of inotropes, iatrogenic blood loss,apnea of prematurity are significant variables helpful in identifying babies that are likely to require transfusions during the later phase of their anemia of prematurity.

PP 33
RARE PHENOTYPES ARE HUGE CHALLENGE FOR BLOOD BANKS: A CASE OF RH D-- PHENOTYPE

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Dr Latha Jagannathan ,Rotary Bangalore TTK Blood Bank

Red blood cells that do not express RHCE protein at their plasma membrane lack the C,c,E and e antigens are known as a Rare Rh Phenotype D--. We describe a rare Rh phenotype D-- in this case study.

Case Report:

A 27 year female G4P3L1 admitted at 33 weeks with placental abruption with profuse bleeding PV and severe hypotension & tachycardia (Pallor +++ Pulse 136/min BP: 70/40 mmhg). Patient was managed by crystalloid infusion temporarily. Estimated blood loss around 1.5 liter. USG showed hydrops fetalis. She had lost two babies soon after delivery due to unknown cause.In emergency one O Negative unit was started for transfusion but had severe adverse reaction (hemolytic). Hb- 6.5 gm/dl Platelets- 74000 cells/mm3 WBC- 25400 Sr. Creat 1.9mg mg/dl Total Bilirubin 2.2 mg/dl (direct 1.08).Request of one Red cell unit was received at our blood bank. Blood group found O positive, antibody screen pan reactive, DAT Negative, autocontrol negative & cross match incompatible (+4) with all 15 O positive units. Antibody identification with 11 cells also pan reactive (+4). Rh Kell phenotyping found D+C-c-E-e-K- (Rh D--) by column agglutination. The tests were repeated by tube technique for confirmation & results were same.Being rare phenotype & multiple Rh antibodies patient didn't get any compatible blood but managed without transfusion.

Conclusion:

Rh D—is rare phenotype & transfusion for these patients is big challenge. There is need to develop Rare Donor Registry in our country to manage all Rare Phenotypes safely

PP 34
A CLINICAL AUDIT OF ADVERSE REACTIONS TO BLOOD TRANSFUSIONS REPORTED TO A STAND-ALONE BLOOD CENTRE

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Arpan Blood Bank

Background:

Establishing, monitoring & reporting protocols related to the process and outcome of transfusions can be very challenging to implement in a stand-alone blood centre. Our blood centre caters to more than 100 users for transfusion support.

Aim:

To evaluate the compliance related to reporting of transfusion episode and further evaluate the frequency of reported transfusion reactions in period of 1 year and 8 months.

Material & Method:

All transfusion reactions feedback forms received at blood centre during study period were evaluated for completeness of the information provided, type of transfusion reaction reported, type of blood component implicated, time of transfusion, location of blood transfusion in the hospital, pre & post transfusion monitoring and the staff who completed the form.

Results:

Total 29,316 blood components were issued and 35 (0.12%) transfusion reactions were reported. 23 were male (65.71%) and 12 were female (34.28%), 3 were from paediatric age group (8.57%) & 32(91.42%) were adults. 6 (17.14%) transfusions were done in night. 32 (91.42%) of transfusions were given in the in-patient sitting. 18 (51.42%) transfusion reactions were mild, 7 (20%) were moderate and 6 (17.14%) were severe. 22 (62.85%) transfusion reactions were associated with PRBC, 4(11.42%) with platelets and 8 (22.85%) with plasma transfusion. Pre & post Transfusion assessment was done in 34 (97.14%) cases. Febrile non-hemolytic transfusion reactions were the commonest (50%) reactions reported. Incomplete information was found in 7 (20%) cases.

Conclusion:

FNHTR was the commonest transfusion reaction reported and severe transfusion reactions were uncommon. Transfusion reactions were more associated with PRBC. Universal leucodepletion may result in significant reduction of transfusion reactions in our recipients. Education of personnel who fill up the transfusion reaction forms is important for better post-transfusion reaction work-up.

PP 35
EFFECT OF RED BLOOD CELL STORAGE AGE ON POST TRANSFUSION HAEMOGLOBIN INCREMENT

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Background:

Biochemical and structural changes that occurs in RBCs during the storage may have a potential clinical relevance, which is still

unclear. Also, there has been data that 15-25% of the old red cells are removed from the circulation within 24 hours after transfusion. So this study attempts to find the effect of storage age on efficacy of PRBC transfusion.

Aim:

To study the relation between RBC storage age and post transfusion Hemoglobin increment in recipient

Methods:

In this prospective study, data were obtained from consecutive patients admitted in the department of medicine who received single packed red cell transfusion in 24 hours period and were followed up for post transfusion hemoglobin. Patients with evidence of hemolysis, active bleeding and receiving concurrent IV fluid were excluded. Post transfusion hemoglobin increment was compared between fresh [Category I, <7 days] and older [category II, >7 days] PRBC units.

Results:

Data of 100 patients corresponding to 100 PRBC units were analyzed. In category I, Mean age of recipients was 58.27 years, mean pre-transfusion Hemoglobin was 5.17 g%, mean post-transfusion Hemoglobin was 6.75 g%. In category II, it was 57.10, 5.15 and 6.38 respectively. There was a negative correlation between storage age [M=4.21, SD= ±4.15] and Hemoglobin increment [M= 1.51,SD=±0.54] with r = .380, p = .000. Negative correlation between Pre-transfusion Hemoglobin and Hemoglobin increment [r= .398, p= .000] was also observed. No correlation found between age of donor and Hb increment in recipient. Both categories II and I showed an adequate increment [1.23 g%, 1.58 g% respectively] but there was a reduction in post-transfusion Hemoglobin increment in the category II [t=2.75, p= .007]

Conclusion:

Post transfusion Hemoglobin increment decreases with increase in storage age of PRBC units. Yet an adequate increment is obtained with transfusion of both fresher and older RBCs.

PP 36
INTRAUTERINE RED CELL TRANSFUSIONS- A LOOK BACK

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Introduction:

Intra-uterine transfusion(IUT) with red cells: Main-stay of treatment for fetal anemia.

Aim:

Retrospective analysis of red cell IUT over the period Jan 2014-June 2018

Material and Methods:

This is a retrospective study of 53 patients who received red cells for IUT at our centre. Leukoreduced, irradiated O Negative Red Cell Concentrates (RCC),antigen negative for the corresponding maternal antibody with a high Haematocrit(HCT) of over 80%(mean 83.4%, range 75-91%) , were transfused . Sickling test was performed on the units used. Volumes transfused varied depending on gestational age and fetal weight.

Results:

Of the 53 patients 34 (64%) received IUT for fetal anemia due to immune causes. Anti-D alone was implicated in 17cases, dual antibody D &C in 16 cases and anti-D, anti-C with anti-Jka was detected in 1 patient. Anti-D titres ranged from 16 to 2048 while anti-C titre ranged from1 to 16. Number of IUT's ranged from 1 to 4 per patient with interval ranging from 7 days to a month between transfusions. Antibody screening was negative in 7 patients (15 %) and could not be worked–up in the remaining.

Discussion:

This study reinforces that fetal anemia caused by anti-D continues to be the major indication for IUT, necessitating the need for better Rh(D) immunoprophylaxis. Further, significant fetal anemia was noted in 5 cases where anti-D titre was < 32 indicating need for correlation with fetal Middle-cerebal artery Peak systolic velocity (MCA-PSV) blood flow. Non-immune causes for IUT were G6PD deficiency and Parvo-virus infection. Other causes for IUT to be looked for are, red cell membrane defects, red cell enzyme defects and Haemoglobinopathies

Conclusion:

Red cell antibody screening in pregnancy, adequate immunoprophylaxis with anti-D followed by provision of antigen negative blood for IUT will go a long way in the management of Haemolytic disease of Newborn

PP 37
SOMETIMES THE BEST WAY FORWARD IS REVERSE- A CASE REPORT

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Background:

ABO discrepancies are not uncommon to Immunohaematologists. Any discrepancy should be carefully evaluated alongside a detailed clinical history as aetiology implicated in a discrepancy could aid the clinician. Here we describe a case where pursuing of clinical details of a patient with ABO discrepancy led to a possible clinical diagnosis.

Case Report:

A request was received for a unit of red cells at our centre for a 19-years old female with anaemia, being planned for bronchoscopy. The blood grouping results showed the forward typing to be suggestive of O Rh positive. However, reverse grouping showed completely negative reactivity with A, B and O cells.Reverse grouping was repeated with methods to enhance the sensitivity including variable temperatures and incubation times on both the tube and CAT technology but yielded identical results.The complete absence of isohaemagglutinins raised the possibility of an immunodeficiency syndrome. A detailed history was subsequently obtained which revealed recurrent pulmonary and gastrointestinal infections since childhood. With this combination of clinical and laboratory features, Ig levels were suggested and subsequently done, which revealed features consistent with Common Variable Immune Deficiency (All Ig isotypes <10mg/dL, no T-cell deficiency and absence of secondary hypogammaglobulinemia)

Conclusion:

Combining clinical features with laboratory findings is critical to optimal patient care. While documenting discrepancies in ABO grouping, it is critical to interface with clinicians to assess if there is any primary clinical aetiology which is driving the discrepancy identified. In this case, we highlight the role of reverse grouping in guiding further investigations which led to a definitive diagnosis and thus appropriate intervention.

PP 38
TRANSFUSION PRACTICE IN ACUTE PROMYELOCYTIC LEUKEMIA PATIENTS – EXPERIENCE FROM TERTIARY CARE CANCER CENTER

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Introduction

Acute promyelocytic leukemia (APML) is a myeloid leukemia subtype associated with a high mortality rate in newly diagnosed patients. Transfusion support is integral to patient care and substantial amounts of blood may be required per patient. Understanding the transfusion requirements of these patients is crucial for planning health care strategies, including blood component provision and donor recruitment.

Methodology

Retrospective study of six APML patients who underwent

induction chemotherapy was analyzed. Patients were stratified into low, intermediate and high risk categories on the basis of WBC and platelet count. Laboratory values and blood transfusion requirements till their hospital stay were collected.

Result

Five out of six patients presented with bleeding and coagulopathy at presentation. Liberal transfusion thresholds were followed for all three categories. The nadir platelet count for platelet transfusion was 16,000±4335cells/µl. We observed no significant differences in blood usage between the groups. The average blood consumption was PRBC (5.5±3.7 units), RDP (3.1±3.1 adult dose); SDP (6.3±5.0 adult dose), FFP (37±32 units), Cryo (51±49 units). The mean interval between the transfusions for PRBC was 5.5±2.1days and for Platelets 2.2±0.1 days. The average length of stay for these patients was 42±25 days.

Expected Conclusion We observed the most important predictor for transfusion may be disease burden and not risk stratification. By increased use of apheresis platelets, number of donors required for platelet support was minimized. Accurate assessment of transfusion requirements of this group will help in planning therapy and directing resources for new patients.

PP 39

A SURVEY FOR ASSESSING THE KNOWLEDGE OF TRANSFUSION MEDICINE AMONG RESIDENT DOCTORS, INTERNS AND STAFF NURSES IN A TERTIARY CARE CENTRE, KERALA

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Jubilee Mission Medical College and Research Institute

Background:

The knowledge of blood transfusion is essential for safe transfusion practices. Previously a few studies had investigated this topic which showed deficiencies in both knowledge and practices among the interns, resident doctors and nurses.

Aims and objectives:

To assess the knowledge and practices in blood transfusion among resident doctors, interns and nurses in JMMC & RI.

Methodology:

A descriptive cross sectional study using a self administrated questionnaire comprising of 45 questions from transfusion medicine. A sample size of 150 participants is being considered. Questions are divided into 5 sections which includes : Sec A- Awareness about blood donation, Sec B: Blood donation , Sec C- Components and blood processing, Sec D- Storage of blood, Sec E- Blood Transfusion practices.

Results:

Since the study is going on results cannot be produced now and will be sent later.

PP 40

INCIDENCE OF HYPERFIBRINOLYSIS IN LIVER TRANSPLANTATION AND ITS REVERSAL BY TRANEXAMIC ACID

Dr. Anitha Thayanithi, Dr.S.Geethalakshmi, Dr. P. Arumugam, Dr.Swathandran hamsavardhini

Liver transplantation has been accepted as an effective treatment for patients suffering from end stage liver disease due to various etiologies.Major blood losses is a known complication in liver resection and liver transplantation. Hyper-fibrinolysis plays a significant role in blood loss requiring massive transfusion during anhepatic phase. The use of Tranexamic acid (TXA) prevents traumatic and perioperative bleeding by its antifibrinolytic action. However, a large dose of TXA may increase the risk of thrombosis.

Aim:

To find out the incidence of of hyperfibrinolysis in liver transplantation and its reversal by Tranexamic acid To find out the incidence of small vessel thrombosis associated with Tranexamic acid treatment in liver transplantation patients.

Materials And Methods:

The study was conducted in the Department of Transfusion Medicine, The T.N. Dr.M.G.R Medical University,Guindy,Chennai for a period of 2 years by collecting retrospectively the available data of 20 patients who had undergone liver transplantation at stnley medical college,Chennai. The factors included in the study were the etiology of End stage liver disease, ,the effect of Tranexemic acid on reversal of Hyperfibrinolysis and incidence of small vessel thrombosis.

Results:

The incidence of Hyperfibrinolysis was observed in 16 cases (80%) by thromboelastogram. The tranexemic acid used for all the 16 patients showed complete reversal by TEG. Two of these patients treated by tranexemic acid developed portal vein thrombosis, however with effective intervention the patients survived. The primary etiology for these 2 cases respectively was etahalol related DCLD and Wilson disease.

Conclusion:

In our study, we observed the use of tranexamic acid in hyperfibrinolysis is very effective. However, timely recognition and effective intervention is always necessary to manage small vessel thrombosis, one of the dreaded anticipated complications of its use.

PP 41

CHARACTERISATION OF VENOM INDUCED CONSUMPTION COAGULOPATHY (VICC) IN PATIENTS WITH HAEMOTOXIC SNAKE BITE AND THE EFFECTS OF BLOOD PRODUCTS ON COAGULATION PARAMETERS

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Introduction

Snakebite is one of the most important "Neglected Tropical Diseases" in terms of both incidence and severity, and its clinical characteristics.Venom-induced consumption coagulopathy (VICC) is the core pathogenic mechanism in haemotoxic snakebites. The common derangements seen are prolonged Prothrombin time (PT), prolonged Activated Partial Thromboplastin Time (APTT), low/undetectable fibrinogen. VICC is characterized by reduction of coagulation factors and the absence of systemic microthrombi and end-organ damage. The time course in VICC is rapid- occurring within a few hours of envenomation and resolution within 24-48 hours, if treated appropriately.

Aim

This study focuses on characterizing the effects of snake bite on the haemostatic system, transfusion requirements and effect of transfusion on haemostatic parameters

Methods and Materials

This was a retrospective study conducted between January 2012 to December 2016 at Christian Medical College, Vellore.

Results

Data from 576 potential snake bite victims were analysed, out of which 280(48.6%) patients had a haemotoxic snake bite. Among these 47(16.8%) patients were transfused blood and plasma products. There was a male preponderance among patients (70.2%). Isolated haemotoxic features and local reaction were seen in 8.5%. Coexisting neurological and/or renal manifestations were seen in more than 90% patients. The average dose of ASV received per patient was 18.9 ±7.75 vials. Baseline INR more than 1.5 was seen in 87.2% and an elevated APTT ratio was seen in 55.3%. All components were transfused: platelet concentrates (30%), FFP (66%), cryoprecipitate (32%) and cryosupernatant (11%). Mortality was 10.6% among this patient group with transfusions.

Discussion and conclusion

Snakebite was and still remains a problem that can easily be tackled, if diagnosis and treatment is given in a timely manner. The role of a good haemostasis laboratory in detecting VICC and management of the patient is emphasized by this study.

PP 42

TO EVALUATE THE ROLE OF THERAPEUTIC PHLEBOTOMY IN DECREASING HB AND PREVENTING COMPLICATIONS/RELIEVING SYMPTOMS IN PRIMARY AND SECONDARY POLYCYTHEMIA PATIENTS

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Background

Therapeutic phlebotomy is the preferred treatment for blood disorders in which the removal of RBCs or serum iron is the most efficient method for managing the symptoms and complications. It is Currently indicated for treatment of primary and secondary polycythemia, hemochromatosis, sickle cell diseas,etc..

Aim

The main aim is to evaluate the role of therapeutic phlebotomy in decreasing Hb and preventing complications /relieving symptoms in primary and secondary polycythemia patients.

Method

A retrospective analysis of patients who underwent therapeutic phlebotomy from January to August 2018 was done. The data regarding patients diagnosis,desired Hb,amount of blood withdrawn and decrease in Hb, whether replacement fluid given or not were obtained from patient's records.

Result

A total of 15 patients underwent therapeutic phlebotomy during this study period. Out of which 7 patients (46.66%)had primary polycythemia due to myeloproliferative disorder with Jak 2 mutation positive in 6 patients and negative in 1 patient . Remaining 8 patients(53.33%) had secondary polycythemia due to chronic obstructive lung disease, cyanotic heart disease, chronic kidney disease. 4 patients with primary polycythemia underwent the procedure 4 or more times and 3 patients underwent less than 2 times . Following the procedure, Hb level decreased and thrombotic complications were not reported in any of these patients. Whereas out of 8 patients with secondary polycythemia, 6 patients underwent the procedure only once and patients relieved of symptoms post procedure along with decrease in Hb level.

Conclusion

Our data supports that the therapeutic phlebotomy plays a major role in treatment of primary polycythemia than in secondary polycythemia

PP 43

ROLE OF THERAPEUTIC PLASMA EXCHANGE IN VARIOUS CLINICAL CONDITIONS AND EVALUATING THE OUTCOME-A SINGLE CENTER STUDY

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Background:

Therapeutic Plasma exchange (TPE) removes the offending substance like autoantibodies from plasma and has shown significant benefits in autoimmune conditions like Gullian Barre syndrome, Myasthenia gravis ,Thrombotic thrombocytopenic purpura etc.

Aim:

To evaluate the efficacy of Therapeutic plasma exchange (TPE) in various clinical conditions.

Method:

Prospective Observational Study. Patients with various clinical condition who required and underwent TPE for various indications from June 2014 to July 2018 were analyzed for efficacy of TPE

Results:

42 patients were studied, of which 10 patients were diagnosed with GBS ,9 patients showed significant improvement in muscle power, mobilized and discharged after 5 cycles of TPE ,1 underwent more than 10 cycles and showed minimal improvement. Out of 9 patients with myasthenic crisis, 7 patients improved after mean 4 cycles of TPE, 2 patients died of respiratory failure. Of 6 patients with rapidly progressive glomerulonephritis who were on TPE along with dialysis, 4 patients showed significant improvement and 2 didn't improve. Of 5 cases of antibody mediated rejection- post renal transplant, 4 showed improvement in renal function and 1 went into complete rejection. Out of 4 cases of CIDP, 3 showed improvements and 1 died. Out of 3 patients with severe sepsis 2 improved after 4 cycles of TPE and 1 died. 2 patients with Hemolytic uremic syndrome who underwent TPE showed significant improvement. One patient with lupus nephritis underwent TPE and without any significant improvement. 1 Patient with Neuromyelitis optica and 1 patient with Wegener's granulomatosus improved signicantly after 4 cycles of TPE

Conclusion:

Therapeutic plasma exchange can be applied in variety of clinical conditions and can be used as primary or second line therapy. Correct patients should be identified and timely TPE can bring definite improvement in patient clinical condition and can reduce mortality significantly.

PP 44

WHOLE BLOOD EXCHANGE-AN EFFECTIVE TREATMENT MODALITY FOR NAPHTHALENE BALL INGESTION INDUCED METHEMOGLOBINEMIA : A CASE REPORT

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Background and Objectives :

Naphthalene is a widely used chemical in domestic and commercial applications in the form of mothballs.However, intentional mothball poisoning has been rarely reported in the medical literature despite its widespread use in Indian households.Naphthalene poisoning results in haemolytic anemia and methemoglobinemia,intravascular hemolysis being marked particularly in those with G6PD deficiency who have low tolerance to oxidative stress.

Methods:

A 21 year old male with alleged history of 1 mothball intake with suicidal intention 2 days back was referred to our department for whole blood exchange transfusion from department of Internal Medicine of our institute.His chief complaints were pain abdomen and reddish-black urine for 2 days,Jaundice and shortness of breath for 1 day.Investigations showed a low Hb of 8.3g/dL,markedly raised level of MetHb:19.6% and Total Serum Bilirubin :19.8mg/dL.Whole Blood Exchange Transfusion(WBET) was performed with Cobe Spectra® (TerumoBCT,LakewoodColorado,USA) by using TPE kit. Plasma was collected in plasma bag while RBCs were collected in a wastebag attached to return line of the disposable kit for discard.A separate peripheral return line was secured for transfusion of reconstituted whole blood units.A total of 6 pRBCs and 12 FFP units were used to replace one blood volume of the patient.

Results:

After a single procedure of WBET,MetHb levels dropped from 19.6% to 4.6%,SpO2 rose from 66% to 90%.Patient became symptomatically better.No adverse event related to procedure was observed.He was given supportive management with IV Ascorbic acid and N-acetyl cysteine and advised hemodialysis in view of acute

kidney injury (B.Urea:183mg/dl,S.Creatinine:5.2mg/dl).Patient was discharged following clinical improvement on Day 10 with advice for follow up at 3 months for G6PD levels.

Conclusion:

WBET is an effective and safe treatment modality in patients with acquired methemoglobinemia secondary to mothball ingestion.

PP 45
TRANSFUSION REACTION OR NOT? AN UNUSUAL PRESENTATION

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Background:

Anaphylactic reactions in the context of transfusion is an extremely rare phenomenon. However, it's most characteristic presentation is an extremely severe reaction with the transfusion of a few ml of the implicated unit. Severe reactions, when they occur outside the previously observed and defined grids pose a challenge in assigning etiology to that reaction. We describe here such a challenging scenario.

Case Report:

A 57-year old male admitted under ENT department was posted for nasal surgery. A request for two units of blood for the procedure was received by the blood bank. There was no history of prior transfusion nor any atopic symptoms.The patient received two units of whole blood and after the transfusion of 350ml of the second unit, the patient developed an anaphylactic reaction.The patient required reintubation and was managed aggressively with antihistamines, steroids and ionotropes and recovered subsequently. As a follow-upm, serum IgE levels, IgA levels and tryptase levels were done. IgA levels in the pre-transfusion sample was found to be slightly reduced (108.2 mg%)[Normal: 140-420 mg%] and IgE and serum tryptase levels in the post-transfusion sample were elevated.

Discussion And Conclusion:

What is clear is that the patient had an anaphylactic reaction. However, the fact that the patient tolerated more than 1 unit of blood without clinical events, again raises the question about it being related to transfusion. Given the documented levels of IgA, it is unlikely to be related to an IgA deficiency though ideally levels of IgA subclass and anti IgAantibodies should have been measured. It is critical that patient be evaluated for other etiologies that could trigger an anaphylactic reaction. However, it is advisable that if repeat transfusion is required, that it be limited to washed cellular products with extremely close clinical monitoring.

PP 46
A STUDY ON ASSESSING RELATIONSHIP BETWEEN NEONATAL GESTATIONAL AGE AND PACKED RED BLOOD CELL REQUIREMENTS

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Introduction

Neonatal physiology varies with the maturity, age, weight and the presence of morbidities, it is difficult to formulate one parameter to guide all transfusion decisions. The increased risk of transfusion transmitted infections including unidentified infectious agents is a major concern in multiply transfused neonates. Moreover, neonates are the longest survivor of blood transfusion and can manifest adverse events with multiple donor exposure. So, the present study was conducted to assess the relationship between Gestational Age (GA) with Packed Red Blood Cells (PRBC) requirements along with number of donor exposure due to PRBC transfusions.

Materials Methods

Retrospective study conducted for one year (September 2016 - August 2017). To assess the relationship between GA and PRBC transfusion, GA was categorised into 4 groups according to WHO & ACOG criteria viz Extreme preterm (<28 weeks), Very preterm (28 to <32 weeks), Preterm (32 to <37 weeks) and Term (>37 weeks). Number of donor exposure for each neonate due to PRBC was also noted.

Results

66 neonates received 129 packed red cell units. The mean (±SD) PRBC requirement of 4 groups were Extreme preterm (2.16 ± 1.47), Very preterm (2.45 ± 1.43), Preterm (1.65 ± 1.52) and Term (0.80 ± 0.97), p= 0.00. PRBC requirement was inversely proportional to the gestational age of the neonate. The mean donor exposure was 1.29 per neonate (range 1-5).

Conclusion

Very low birth weight premature neonates bear the brunt of multiple donor exposures due to frequent PRBC transfusions. Preterm infants of very low birth weight have very little iron stores and a small circulating volume of RBCs when they exit the uterine stage. Recently, BCSH illustrated an example algorithm for pedipack allocation for neonates according to gestational age for reducing donor exposure.

PP 47
AN AUDIT ON SINGLE-UNIT TRANSFUSIONS AND HEMOGLOBIN TRIGGER

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Introduction

The NICE guidelines for blood transfusion and the PBM recommendations state that a single PRBC unit should be the standard dose for patients with stable anaemia who are nonbleeding. The BCSH guidelines recommends that PRBC transfusion should be used to maintain Hb level of 7–9g/dl which is supported by AABB guidelines which recommends against transfusion for stable non-bleeding patients with Hb >7–8g/dl. Studies have shown that changing clinical transfusion practice can be difficult.

Aim

To audit the single unit transfusions in non-bleeding stable patients admitted in the Department of General Medicine.

Methodology

The study is conducted in the Department of IHBT and General Medicine in a medical college over a period of 2 months. Data collection includes All PRBC transfusions given to general medical in patients. A single unit transfusion definition was single PRBC unit transfused followed by a measurement of a post-transfusion Hb and patient assessment.

Results

A total of 2012 patients were admitted during the period. Only 204 of them required PRBC transfusion of which 43.13% females and 56.86 % males. The median age was 55years(17–89). A total of 280 PRBC units (1.37U/patient) were transfused.164 patients were given single unit PRBC transfusions. The most common indication was anemia. Length of stay when compared with those receiving multiple transfusion was less in the ones receiving single unit. The mean Hb trigger for those receiving single unit transfusions was 7.36g/dl(3-8.8).Further evaluation is under going.

Conclusion

This study shows that transfusion rates are already lower compared to othere studies , which in turn reduces the potential risk to patients from allogeneic transfusion and cost/time associated with transfusion by adopting the key red cell recommendations from 2015 NICE Guidelines in blood transfusion. Further health economics analysis on the implementation of this single unit transfusion policy is being completed.

PP 48

A CASE OF AUTONOMIC AUTOIMMUNE GANGLIONOPATHY TREATED WITH THERAPEUTIC PLASMA EXCHANGE

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Background

Autoimmune autonomic ganglionopathy (AAG) is a rare, acquired, immunoglobulin mediated disorder of autonomic failure due to autoantibodies to the nicotinic acetylcholine receptor of the autonomic ganglia (nAChR). The clinical picture manifests as pandysautonomia including orthostatic hypotension, recurrent syncope, anhidrosis, sicca syndrome (xerostomia and xerophthalmia), bowel and bladder hypomotility, and papillary dysfunction, although all manifestations are not present in all patients. We present a case report of a 40 year old male patient who presented with features of AAG and was successfully treated using plasma exchange (PLEX) followed by immunosuppressive therapy.

Aim

To report response to therapeutic plasma exchange in a patient with Autoimmune autonomic ganglionopathy.

Methods

Patient presented with features of autonomic dysfunction since one year Autonomic testing revealed severe sympathetic as well as cholinergic dysfunction. Patient was managed with five alternate day cycles of therapeutic plasma exchange under strict clinical monitoring.

Results

atient tolerated the procedure well. Patient's orthostatic symptoms improved along with bladder, bowel and other symptoms. Following plasma exchange patient was started on steroids. Compression stockings and orthostatic precaution was advised.

Summary

The optimal therapy for AAG remains uncertain. No randomized controlled trials are available (to the best of our knowledge), and there are only limited case reports of successful treatment of AAG. Standard treatments for orthostatic hypotension including volume expansion, vasoconstrictors, compression stockings and abdominal binders, rarely provide adequate symptomatic relief in AAG. PLEXfollowed by immunosuppressive therapy resulted in sustained clinical improvement in this patient

PP 49

ROLE OF THERAPEUTIC PLASMA EXCHANGE IN MULTIPLE MYELOMA PATIENTS WITH CAST NEPHROPATHY

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BACKGROUND:

Cast nephropathy develops in 30-80% of patients with renal disease due to multiple myeloma. Progressive obstruction in distal renal tubules accounts for irreversible decline in renal function. Therapeutic plasma exchange (TPE) has supportive role in oliguric patients who excretes >10gm light chains in a day and whose creatinine become >6mg/dl. Recently guideline in American society for apheresis 2016 had mentioned TPE as category III indication for patient with cast nephropathy due to multiple myeloma.

AIM:

To assess efficacy of TPE therapy in patients having cast nephropathy.

METHODS:

A retrospective analysis of all TPE procedures was done over a period of 10 years (2006-2016). Procedures were done on different apheretic devices (CS-3000 Plus, Baxter, USA and Cobe spectra, Terumo BCT, Lakewood Co.USA). Patients' pre and post procedural renal function parameters were analyzed by applying paired T test to assess the efficacy of TPE.

RESULTS:

A total of 11 patients with myeloma kidney having cast nephropathy were undergone therapeutic plasma exchange procedure with the aim to remove excess free light chains. The mean age of these patient was 51.54 year with a range of 33 to 77 years in a male to female ratio of 8:3. Rise in creatinine was presenting complaint in all these patients despite on chemotherapy. There was significant decline (p value of 0.043) in mean serum urea concentration post procedure from 133.45±49.59 to 99±45.07 mg/dl. Similarly significant decline in mean serum creatinine was observed post TPE from 4.85±2.83mg/dl to 3.71±2.12mg/dl with a p value of 0.013.

CONCLUSION:

This retrospective study suggests that TPE has its supportive role in preventing irreversible renal dysfunction in patient with multiple myeloma.

PP 50

CRYOPRESERVATION OF PERIPHERAL BLOOD STEM CELLS AT A TERTIARY CARE HOSPITAL

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BACKGROUND:

Peripheral Blood Stem Cell (PBSC) transplant is used for treatment of many malignant and non-malignant conditions. Cryopreservation is the technique used to preserve stem cells viable for longer duration , if the transplant/transfer of stem cells from donor to recipient is not done within 72hrs. Dimethylsulfoxide (DMSO) and Hydroxyethylstarch(HES) are the most commonly used cryoprotectants. Cryopreservation is done either by using liquid nitrogen or controlled-rate mechanical freezers. This is proven safe and not associated with significant adverse effects like failure to engraft or GVHD.

AIM:

To enumerate the role of Transfusion medicine in cryopreservation of stem cells.

METHODS:

This study has been carried out in the Department of Transfusion Medicine from April 2016 to April 2018 at Sri Ramachandra Medical College & Research Institute,Chennai.

RESULTS:

In the 2 years period from April 2016 to April 2018,total of 19 (Autologous:11, Allogenic:6 & Matched unrelated donor (MUD):2) PBSC were harvested among which for 6 cases, cryopreservation was performed. Among the 6 cryopreserved indications were (Autologous:1-Neuroblastoma), (Allogeneic[3] Beta-Thalassemia 2 cases & SCID 1 case) , (MUD: 2 – AML, Infantile ALL). DMSO (Dimethyl Sulfoxide) was used as cryopreservative agent, and stem cells are mixed with cryoprotective agent in 1:1 ratio. After processing ,cryopreserved stem cells were stored at -800C in mechanical freezer. Just before infusion the cryopreserved stem cells were thawed at 370 C in a water bath.

CONCLUSION:

Cryopreservation is the use of very low temperatures to preserve structurally intact living cells and tissues. In our study all patients received myeloablative chemotherapy before PBSC transplant. All patients demonstrated early engraftment and good recovery rates. Preservation of PBSC in mechanical freezers at <-800C is an easy and robust cryopreservation method which allows for a viable storage period of upto 3 months.

PP 51

A SIGNIFICANT IMPROVEMENT IN AUTONOMIC SENSORY AND MOTOR FUNCTION DUE TO STEM CELL APPLICATION IN OLD SPINAL INJURY

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BACKGROUND:

A 21 years female post graduate student had a fall from a three storeyed building three years before with unconsciousness. She was admitted immediately in local hospital. Her vertebral X ray revealed multiple fracture of D11 to L2. She was operated on 4th day of injury for decompression and internal fixation and released after 3month of hospital stay. Her paraplegia, bilateral muscles wasting of lower limb with loss of voluntary control urinary bladder were persisting throughout. Her sensory, motor and cognitive function were satisfactory above the umbilical region. She was evaluated on Feb 2018 at our Institute of Regenerative Medicine and advised for autologous stem cell therapy injected subcutaneously on the site of injury after counselling and consent.

AIM:

Autologus stem cell and platelet rich plasma (PRP) injection at the site of injury may help motor, sensory, cognitive function below the site of injury.

METHODS:

Autologous 15 ml of bone marrow aspirated after local anaesthesia by 2% lidocaine from posterior iliac crest in aseptic condition in a sterile EDTA containing vacutainer at 24ºC. The Vacutainer centrifuge at 3000 rpm for 5 minutes to collect buffy coat settlement. An autologous PRP was prepared from 10 ml of blood collected from antecubital vein in aseptic condition and 5 ml of suspension (3 ml buffy coat and 2 ml PRP) prepared. The suspension was drawn in 10 ml syringe and inject subcutaneously at 4 weeks interval in 5 times along with advised for regular physiotherapy, using ankle splint and walker for standing with support.

RESULTS:

No obvious visible changes of improvement noted until 4th procedure. After regular physiotherapies and autologous buffy coat with PRP injection, it was noted that she gained some muscle power in the lower limb and was able to stand up with the support of walker after 4th cycle.

PP 52

EVALUATION OF REASONS AFFECTING THE FACTOR VIII LEVELS IN HEMOPHILIA PATIENTS AFTER THERAPY

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BACKGROUND:

Hemophilia is an X-linked congenital bleeding disorder caused by a deficiency of coagulation Factor VIII (FVIII)(in hemophilia A) or factor IX(in hemophilia B). Replacement of a deficient clotting factor is a basic treatment. Inhibitor development is a significant treatment complication which decreases the effectiveness of replacement therapy and affects the quality of life.

AIMS:

Aims of this study were to evaluate the reasons affecting the FVIII level in hemophilia patients after treatment. Prevalence of FVIII inhibitor and effects of type of clotting factor used for treatment, severity of the disease and other causes in development of inhibitor were also evaluated.

METHODS:

With prior consent and history, blood samples collected from hemophilia patients were tested for PT, APTT, FVIII activity and FVIII inhibitor screening. FVIII inhibitor assay was performed on samples with positive FVIII inhibitor screening. All plasma based coagulation tests were performed using sodium citrate anticoagulated platelet poor plasma on automated coagulation analyzer with commercially supplied reagents. The test results and clinical history were statistically evaluated.

RESULTS:

FVIII inhibitor was developed in 24 patients(16.78%) out of 143 patients in this study. Out of 65 patients diagnosed of hemophilia A before 6 months of age, 18 patients(p value-0.001) had developed inhibitor against FVIII. Out of 79 patients taking "on demand" treatment, 18 patients(p value-0.032) developed inhibitor against FVIII. Out of 111 patients with severe hemophilia A, 24 patients(p value-0.003) developed inhibitor against FVIII.

CONCLUSION:

Development of FVIII inhibitor is the most important factor affecting treatment of hemophiliaA patients. Patients with severe hemophilia, exposed to FVIII concentrates during first 6 months of life and patients taking "on demand" treatment are at more risk for inhibitor formation. Type of FVIII (cryopreciptate/recombinant FVIII concentrates) used for treatment has no significant effect on inhibitor development.

PP 53

BLOOD BANKING TO BONE BANKING: EIGHT YEARS EXPERIENCE OF GAMMA IRRADIATED BONE ALLOGRAFTS

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BACKGROUND:

Tissue banks serve as procurement and distribution centers of human tissues. These are provided as non-viable allografts, preserved by freeze-drying and sterilized by gamma irradiation. Many Blood Centres across the world provide services not only related to blood & components but also various tissue allografts. At our blood centre we started Tissue Bank in 2010 & process various bone allografts.

METHODS:

Bone tissues are collected after knee & hip replacement surgeries with the consent of patient & blood specimen with cold chain. The donor is evaluated and blood sample is tested for HIV, HBsAg, HCV & syphilis. Three levels of processing: 1. Wet 2. Dry 3. Termial Gamma Irradiation. Wet processing includes heat & chemical treatment including pasteurization at 60C for 3 hours & ethyl alcohol treatment. Dry processing includes lyophillization at -52C for 72 hour and Terminal Sterilization is done by Industrial Gamma Irradiation for the dose of 25000 Gy. The quality control tests are Bio Burden & moisture content test.

RESULTS:

From June 2010 to June 2018, we have collected 3481 bone allografts from various hospitals in & around Bangalore. Total 252 samples were rejected due to sero positivity, 31 rejected due to other reasons. We have issued 3022 freeze dried & 64 frozen bone allografts. Out of 3022, femoral heads were 874 &tibial slices were 2148. We have not received any adverse incidence due to allograft implantation.

CONCLUSION:

The Gamma Irradiated Bone allografts effective, facilitating the formation of new bone and used for joint revision surgery & various reconstruction surgeries. The availability of safe, clinically useful and cost effective grafts have resulted in changes in surgical treatment. Like developed countries Blood Centres in our country can fulfil the increasing demand of tissues by aquiring adequate infrastructure & technical expertise.

PP 54

IN-HOUSE CRYOPRESERVATION OF PERIPHERAL BLOOD STEM CELL: INITIAL EXPERIENCE FROM A TERTIARY CARE HOSPITAL

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BACKGROUND

Cell therapies based on hematopoietic stem cells (HSCs) have become the standard of care for a large number of clinical indications, and the number of patients and disorders being treated using HSCs continue to grow. Here, we report an analysis of first 10 cryopreservation of peripheral-blood stem-cell (PBSC) at our center in terms of CD 34+ viability and cell engraftments in those patients.

METHODS

Peripheral blood stem cells (PBSCs) were collected from auotologus donors using P1YA kits on Com.tec (Fresenius kabi). A solution made up of 10% DMSO, 20% human serum albumin (HSA) with 6% HES was used for cryopreservation of cells. Whole procedure was done under fully aseptic technique using laminar air flow. A mechanical freezer (Thermo Scientific) was used to store stem cells at -800 Celsius.

RESULTS

All 10 patients were posted for re-transplant (2nd /3rd) and heavily pre treated with chemotherapy. Average time duration of storage for cryopreserved stem cells was 27 days (range 10 to 56 days). The initial yield of the products before cryopreservation ranged from 3 X 106 to 10.2 X 106 per Kg of the patient (mean dose 7.85 X 106 per Kg) which decrease to a mean of 5.85 X 106 per Kg post thawing of frozen stem cells. Stem cells viability after thawing ranged from 77 percent to 90 percent of total CD 34+ cells.

All the patients had neutrophil and platelet engraftment before they were discharged. Days taken for engraftment of neutrophil ranged from 10 to 15 days (mean 11.5 days) whereas for platelets, it ranged from 14 to 43 days (mean 23.5 days)

CONCLUSION

Peripheral blood stem cells can be cryopreserved using a solution of 10% DMSO, 20% albumin with 6% HES up till 8 weeks without significant decrease in number and viability of CD34+ cells.

PP 55

VIABILITY OF PERIPHERAL BLOOD STEM CELLS AFTER STORAGE AT 4 DEGREE CELSIUS IN LIQUID STATE FOR 72 HOURS

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BACKGROUND:

Optimum storage condition with reference to storage medium and temperature has not been clearly defined for non-frozen storage of peripheral blood stem cells (PBSCs). Liquid storage of PBSCs may be indicated in both autologous and allogenic transplantation setting and hence evidence base for the permissible time limit for such storage is need of the hour.

AIMS:

To study the viability of PBSC during storage in the liquid form at 4 degree celcius for 72 hours post- collection.

METHODS:

16 PBSC products harvested for hematopoietic stem cell transplant (5 in Autologous and 11 in Allogenic transplants) were specifically tested for viability by flowcytometry using the 7- AAD protocol within 2 hours of the collection and after 24 hours, 48 hours and 72 hours of the PBSC collection. The viability data was analyzed statistically using paired 't' test.

RESULTS:

The mean PBSC viability immediately after the harvest was 97.65%. Viability decreased to a mean value of 96.2% at 24 hours, 93.75% at 48 hours and 88.5% at 72 hours. This reduction in the viability was statistically significant when the baseline viability and 72 hours viability of the PBSC samples were compared. The average reduction in viability over 72 hour's storage was 9.15%. The adequacy of the total PBSC dose was not affected significantly by this reduction in viability. All patients had a satisfactory WBC and platelet engraftment after infusion of the PBSCs in above cases.

CONCLUSION:

PBSC integrity was optimally maintained when they were stored in liquid state at 4 degree Celsius for upto 72 hours after harvest. This can be useful to limit the use of DMSO for cryopreservation and assist in decision making to harvest PBSC's in a donor on Day 3 or Day 4 of G-CSF and further storage till day "0" of patient is attained.

PP 56

ELUCIDATING NEURONAL REGULATION OF EPITHELIAL STEM CELLS AND REGENERATION IN THE ADULT SALIVARY GLAND: PILOT CELL CULTURE STUDY TOWARDS DEVELOPMENT OF REGENERATIVE THERAPIES FOR DAMAGED SALIVARY GLANDS.

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BACKGROUND:

Stem cell therapy can restore salivary function by regenerating acinar cells that are destroyed by radiation for cancers. Parasympathetic innervation and acetylcholine mediated signaling is essential for acinar cell regeneration, via regulation of SOX2+ progenitor cell population in fetal models. Studies in adult models are lacking. This project aimed to study effect of same in regeneration of adult murine salivary glands.

AIM:

To demonstrate that parasympathetic nerves and the neurotransmitter acetylcholine/mimetics can support acinar cell proliferation, differentiation and regeneration in adult murine salivary gland.

METHODS:

A series of experiments involved tissue explant co-culture assay and an organoid assay using neuronal factor carbachol and embryonic parasympathetic ganglia. The explant was prepared from 6 weeks old adult mice and the ganglia were harvested from embryonic mice. The complex interaction between epithelia, parasympathetic nerves and neuronal factors was studied in tissue culture model at different time points (day 2, 3, 6, 9). The immunostaining markers E-Cadherin (epithelial), SOX-2 (progenitor cell), β3 Tubulin (neural tubulin), Caspase 3 (apoptosis), dapi (DNA) were used. Assessment of qualitative/semi-quantitative changes representing acinar cells and progenitor cells was done using confocal microscopy and ImageJ software. The data was analyzed using statistical analysis software (SPSS, IBM corp.). Key parameters were the mean, standard deviation and range for data on cell counts, nuclear size, organoid size and numbers.

RESULTS:

Carbachol promotes cell survival and tissue integrity in explant ex vivo culture. Co- culture with embryonic ganglia promotes growth of nerves (β3 Tubulin) and progenitor cell(SOX2) survival. Neuronal factors cause growth, repair and regeneration of acinar epithelia. Carbachol promotes cell survival, adhesion and growth of individual cells in suspension to produce implantable organoids.

CONCLUSION:

Acetylcholine mimetics may be a viable therapeutic to promote SOX2+ mediated acinar cell replacement following injury or disease, thus restoring salivary function to patients.

PP 57
EVALUATING THE ROLE OF MONONUCLEAR CELL COUNT IN PREDICTING THE CELL DOSE OF APHERESIS DERIVED PERIPHERAL BLOOD STEM CELLS BY CORRELATING WITH FLOW CYTOMETRY BASED CD 34 ENUMERATION

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BACKGROUND:

The engraftment of transplanted PBSCs is predicted by the enumeration of CD34+ cells, which may have to be carried out multiple times before, during and after the PBSC harvest procedure. Mono-Nuclear Cell(MNC) count of hematopoietic stem cells may be employed for estimation of the yield during mid-cycle of PBSC harvest and provides a low-cost alternative to CD 34 enumeration in such situations.

AIMS:

To examine the robustness of the correlation between CD34+ cell yields and the MNC counts in PBSC product in autologous and allogenic stem cell transplants.

METHODS:

The study included 107 consecutive apheresis procedures performed on donors from August 2015 to July 2018. The study group was divided into two categories, comprising of allogenic and autologous harvests. Correlations between the number of CD34+ cells and MNC in the apheresis products were assessed using Karl Pearson's Coefficient of Correlation with Significance levels (p value) set at 0.05, using SPSS-24 Software.

RESULTS:

In allogenic donors, the average cell dose of PBSC product in terms of CD 34 + cells was 7.6 X 10e6/Kg recipient body weight and MNC count was 6.14 X 10e8 MNCs/Kg. In autologous donors, the average cell dose of PBSC product in terms of CD 34 + cells was 2.3 X 10e6/Kg and MNC count was 3.9 X 10e8 MNCs/Kg. The correlation between the stem cell product yield calculated using MNC count and CD34 count was found to be moderately significant (0.673) in case of allogenic donors with p value = 0.001, but no statistically significant coefficient of correlation could be observed in case of autologous donors.

CONCLUSION:

The findings of this study suggest that the MNC count can be employed as a useful and cost effective method of predicting the yield during the mid-cycle of the PBSC harvest procedure in allogenic donors.

PP 58
ANALYSIS ON COMPOSITION OF LEUKAPHERESIS PRODUCT - A COMPARISON BETWEEN INTERMITTENT AND CONTINUOUS FLOW APHERESIS EQUIPMENTS.

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BACKGROUND

CD34+ cells possess lymphocyte like morphology and the apheresis equipment ideally harvest in the zone between the platelet layer and granulocyte layer. As the interface between the buffy coat zone and red cell zone is narrow, red cells and platelets are being collected during the leukapheresis procedure. CD34+ cells represent a small proportion of the leukapheresis bag content. The present study aims to analyse the cellular content of leukapheresis product collected by both intermittent and continuous flow apheresis equipment.

METHODS

Retrospective analysis involving 111 leukapheresis procedure for 85 patients. Procedures were performed in both intermittent flow (MCS+, n=62) and continuous flow (Spectra Optia, n=49) apheresis equipment. The procedure end point was 2 times the total blood volume processed. The bag sample was aliquoted and tested using LH750 cell counter and FC500 Flow cytometer. The difference between intermittent and continuous flow equipment was compared through't' test. Linear regression analysis was performed to evaluate the impact of product composition in association between the equipments.

RESULTS

The procedure settings like weight, complete blood count, preCD34 count, %TBV processed was similar between the equipments. There was no significant differences observed in terms of product volume (p=0.67), CD34 count (p=0.7), CD34 dose/kg (p=0.6), MNC dose/kg (0.08) between two equipments. Continuous flow equipment had minimal red cell (Hct 2.5% vs 9.6%, p<0.05), and platelet (1124 vs 1423*10e3/µl; p=0.03) contamination. However, the intermittent flow had better WBC content (255 vs 215*10e3/µl, p=0.04) and thereby increased TNC dose/kg (10.1 vs 7.9 x10e8, p=0.01). The mobilization regimen used did not affect the bag content between the equipments.

CONCLUSION:

The mean red cell and platelet content were 3.8 and 1.3 times higher using intermittent flow apheresis device. Hence patients with relatively low Hb or risk of 2nd procedure, leukapheresis using continuous flow device would be better.

PP 59
COST EFFECTIVENESS OF HEMATOPOIETIC STEM CELL TRANSPLANTATION COMPARED TO TRANSFUSION CHELATION FOR TREATMENT OF THALASSEMIA MAJOR

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Abstract

BACKGROUND

Hematopoietic stem cell transplantation (HSCT) is the only cure for thalassemia major (TM), which inflicts a significant 1-time cost. Hence, it is important to explore the cost effectiveness of HSCT versus lifelong regular transfusion-chelation (TC) therapy.

AIMS

This study was undertaken to estimate incremental cost per quality-adjusted life-year (QALY) gained with the intervention group HSCT, and the comparator group TC, in TM patients.

METHODS

A combination of decision tree and Markov model was used for analysis. A hospital database, supplemented with a review of published literature, was used to derive input parameters for the model. A lifetime study horizon was used and future costs and consequences were discounted at 3%.

RESULTS

Results are presented using societal perspective. Incremental cost per QALY gained with use of HSCT as compared with TC was Image 17 64,096 (US$986) in case of matched related donor (MRD) and Image 18 1,67,657 (US$2579) in case of a matched unrelated donor transplantation. The probability of MRD transplant to be cost effective at the willingness to pay threshold of Indian per capita gross domestic product is 94%.

CONCLUSION

HSCT is a long-term value for money intervention that is highly cost effective and its long-term clinical and economic benefits outweigh those of TC.

PP 60
TECHNICAL CHALLENGES IN EX VIVO CULTURE OF RED CELLS

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BACKGROUD:

Since there is a consistently rising demand for red cells throughout the world, it is imperative to explore safe and reliable alternatives to donor blood. Ex-vivo culture of red cells from haematopoietic stem cells (HSC) has the potential to revolutionize transfusion medicine. However, culture of red cells is not only costly, but fraught with technical challenges.

AIM:

To grow ex vivo reticulocytes from HSC (as part of a larger project) and document the challenges in erythroid cell cultures

METHODS:

Peripheral blood mononuclear cells were retrieved from 2 platelet apheresis cones of anonymous healthy human platelet donors after informed consent. 95% pure population of CD34+ were obtained using magnetic cell sorting isolation (Milteny Biotech GmbH). Cells were seeded in primary erythroid culture medium (Iscove's Modified Dulbecco's Media, Biochrom) at a concentration of 1 x 105 cells/ml. The cultures were maintained in stationary plastic tissue culture flasks (not followed by mechanical stirring) at a low density of 1-5× 105 cells/mL at 37°C in a humid atmosphere of 5% CO2 in air as per Griffiths et al's(2012) 3-stage protocol. Daily cell counts in duplicate were carried out to study proliferation. Cytospinswere prepared to study cell morphology. On day-21, erythroidcultures(3.5ml) were filtered to obtain a pure population of reticulocytes.

RESULTS:

The cells followed a normal growth pattern until day-7. After that, the cultures entered a premature plateau phase due to low cell density caused by experimental error. Although cells remained viable, proliferation was negatively affected. The doubling time in the exponential stage was around 13 hours.Cytospins prepared from erythroid cultures revealed normal erythroiddifferentiation.

CONCLUSION:

Our cultures had no contamination issues, but sterile and accurate technique are paramount to obtain a good yield of reticulocytes for research and therapeutic purposes. It would be challenging to establish a cost-effective process for large-scale production.

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PP 61
ANAPHYLAXIS TO SINGLE DONOR PLATELET (SDP) TRANSFUSION- A CASE REPORT WITH DEFINITE IMPUTABILITY &GRADE IV SEVERITY

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BACKGROUND

Platelet transfusions play a decisive role in therapeutic regimens for patients with hematologic/oncologic diseases who develops severe thrombocytopenia. Allergic transfusion reactions are reported to complicate approximately 1-3% of all blood transfusions especially to plasma containing products. These reactions are usually mild and often accompanies cutaneous manifestations. Anaphylactic shock following blood transfusion though rare, but life threatening occurs with a frequency of 1:20000 to 47000. Here we report a case of transfusion reaction to SDP which lead to the death of the patient.

CASE REPORT

A 42 year old female, a known case of Hodgkin's lymphoma, had completed her 6 cycles of chemotherapy was posted for autologous stem cell transplantation (ASCT). She was started on to GCSF on a twice daily basis for 4 days. First collection of stem cell was uneventful with a CD 34 count of 3.13*106 cells/kg. This prompted to perform a second collection for the patient. With regards to the low platelet count 1 SDP transfusion was initiated but afte 3 minutes patient developed severe breathing difficulty, flushing, frothing from the mouth and later went to cardiac arrest. She was resuscitated and intubated. Next day, she was declared death. All transfusion reaction workup in the blood bank was normal. Blood culture reports were sterile, Chest X ray findings and supporting evidences ruled out TRALI and hypotensive reactions. There was no IgA deficiency reported. Patients clinical symptoms, Serum tryptase levels (>200micrg/dl) suggested the features of mast cell degranulation and hence pointed towards anaphylaxis to platelet transfusion.

CONCLUSION

Anaphylaxis reactions are mainly caused by the antibodies produced in recipients who have been transfused repeatedly. Though the etiopathology often suggested IgE or anti IgA, release of both preformed granule-associated mediators and newly generated lipid-derived mediators from the platelets contributes to the amplification and prolongation of the reaction

PP 62
ASSESS THE SERUM FERRITIN IN NONREMUNERATED VOLUNTARY BLOOD DONORS AND TO CORRELATE IRON STORES WITH OTHER HEMATOLOGICAL PARAMETERS

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Prathama Blood Center, ATMRF

AIMS:

This Study was planned to assess the iron stores in voluntary blood donors and see the effects of frequent blood donation in the development of iron deficiency anaemia.

METHODS:

A total of eight 84 blood donors participated and informed written consent was taken from all donors. These were categorized into regular blood donors who were further classified on the basis of number of donation in the preceding years and first time donors.

RESULTS:

Mean values of first time donors vs. regular donors for Hb (gm/dl), MCHC (%), Serum Ferritin (ng/ml) and Serum Iron (µg/dl) were 15.42 vs. 14.20 (p – 0.23) ; 35.19 vs. 34.45 (p – 0.455) ; 58.94 vs. 32.72 (p – 0.03) ; 87.00 vs. 85.71 (p – 0.19) respectively. It was seen that serum ferritin concentrations were significantly different when comparing first-time donors with regular voluntary blood donors especially groups II & III (58.94 vs. 31.38, p = 0.002 and 58.94 vs. 21.80, p=0.0001). In our study, we also compared ferritin levels in different age groups of first time vs regular blood donors and there were statistically significant variations in 18 - 20 years (57.68 vs. 17.40, p = 0.02) and 31- 40 years (89.36 vs. 35.03, p = 0.001) age groups.

CONCLUSION:

This study shows in comparison to the first time donors, regular blood donors especially in group II & III (donation frequency > 2/yr) have more negative iron balance (<30 mg/l) which lead to iron deficient erythropoiesis (MCV<80 fl) followed by iron deficiency anemia. Since with this high frequency of blood donors with iron deficiency suggests a need for a more accurate laboratory trial, since Hb measurement alone is not sufficient for detecting and excluding voluntary blood donors with iron deficiency without anemia.

PP 63

ROLE OF PREDONATION WATER INTAKE IN DONOR ADVERSE REACTIONS

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Government Medical College, Baroda

BACKGROUND:

Blood donors especially first time donors are more prone for blood donation related adverse reaction and the experience of such symptoms can contribute to a loss in the retention of blood donor. Many studies of water ingestion has shown to increase tolerance for an upright posture , due to sympathetic activation , increase in peripheral resistance and more efficient regulation of cerebral blood flow approximately 30 minutes after ingesting about 500ml of water. Thus, Water ingestion may be sufficient to reduce the risk of syncope related reactions during blood donation by changing hemodynamic responses.

AIM:

The aim of the study is to analyze whether pre donation of 500ml water intake will reduce the syncope related donor adverse reaction among voluntary non remunerated blood donors (VBDs) in the outdoor blood donation camp.

MATERIALS AND METHOD:

Among 600 donors 570 Male and 30 Female voluntary blood donors were randomly assigned into two groups- 300 donors without water intake and 300 donors with 500 ml water intake approximately 30 minutes before donation. Participants have been assessed for syncope related donor adverse reactions during and after blood donation.

RESULT :

In our study total 26 donors reported syncope related adverse reactions. Out of 26 donors with syncopal attack eighteen of them were male and eight were female.

Among them twenty two donors(22/300) who haven't taken water before donation have experienced syncope related adverse reactions and four donors (4/300) who had taken 500ml water 30 minutes before blood donation reported syncope related adverse reactions.

CONCLUSION:

Result of the present study suggest that predonation water intake of 500ml water approximately 30 minutes before blood donation may be a simple and cost effective strategy to enhance the blood donation experience and decrease the donor syncope related adverse reactions.

PP 64

VITAMIN B12 LEVEL IN BLOOD DONORS

Abhay Jhaveri,K. Ghosh
Surat Raktadan Kendra and Research Center

BACKGROUND:

Vitamin B12 deficiency is common in our country as majority of our population is vegetarian or cannot afford regular non-vegetarian diet. We tried to check vitamin B12 level in blood donors who came to donate at our center or outdoor camp

AIMS:

To check vitamin B12 deficiency in voluntary blood donors at our center and guide the donors who are deficient

METHODS:

We divided the donors into two categories viz. donors rejected due to low hemoglobin and donors accepted (taken as control). We did CBC and carried out peripheral blood smear examination. Depending on the results, we got vitamin B12 assayed (by CLIA) of those donors in whom we suspected vitamin B12 deficiency – either MCV more than 100 fl or peripheral smear examination showed macrocytes and/or hypersegmented neutrophils (≥ 6 lobes) or 5% neutrophils having 5 lobes

RESULTS:

490 donors were rejected due to low hemoglobin (<12.5 g/dL) in our study. Vitamin B12 was done on 46/490 samples suspected to have deficiency of the same. Only 4 out of 46 had MCV >100 fl (maximum 125 fl). 37/46 (80.43%) or 37/490 (7.55%) had vitamin B12 deficiency. We got vitamin B12 done on 28/425 accepted donors' samples (hemoglobin ≥ 12.5 g/dL). 24/28 (85.71%) had normal values while 4/28 (14.29%) had deficiency, overall ratio for deficiency being 0.9%. When this data is applied to whole donor population, 100/490 rejected donors (20%) and 61/425 accepted donors (14.4%) had vitamin B12 deficiency. All the identified vitamin B12 deficient persons were appropriately treated

CONCLUSION:

Vitamin B12 deficiency is common in the donor population of South Gujarat, however it is significantly higher in rejected donors (X2=5.3 with Yates' correction, P=0.02). MCV is a poor indicator for B12 deficiency in this voluntary donor population probably because of concomitant iron deficiency from repeated donation

PP 65

SDP DONATION: PLEASURE OR PAIN? - DONOR'S PERSPECTIVE

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Sri Ramachandra Medical College and Research Institute, Porur, Chennai

BACKGROUND:

Apheresis is a procedure in which whole blood is removed from the body and passed through the equipment that separates out one or more particular blood constituent. In a plateletpheresis procedure, platelets along with a portion of plasma are removed and the remaining constituents are returned to the donor. A plateletpheresis procedure typically takes 45 to 90 minutes.

AIM:

To evaluate the subjective perception about single donor platelet donation by apheresis among voluntary blood donors.

METHODS:

This observational study was carried out in June,2018 at the Department of Immunohaematology and Blood Transfusion, Sri Ramachandra Medical College and Research Institute. Continuous flow cell separator (COM.TEC) was used for plateletpheresis procedure. Donors who had donated platelets (by apheresis) were asked to fill a post-donation questionnaire and the responses were evaluated (n=20).

RESULTS:

All 20 participants were males. Mean age of the participants was 28.6 years (Range: 20-49 years). All participants had donated whole blood earlier. Four out of 20 participants felt anxious/scared after the medical officer described the plateletpheresis procedure/ looking at the cell separator. Three out of 20 participants weren't comfortable during the procedure. All participants considered (a) the separation of particular blood constituent, (b) increased blood donation frequency and (c) decreased donor exposure rate in the recipient as the desirable factors of apheresis donation. The participants considered the effects of citrate toxicity like tingling sensation/twitching (9 out of 20) and the longer time duration (9 out of 20) compared to whole blood donation as the undesirable features of the plateletpheresis procedure. All participants except one had expressed their willingness to undergo this procedure again.

CONCLUSION:

From the donor's perspective, apheresis technology is complex and a donor might be facing some logistical difficulties like increased procedural time. Yet the donor plateletpheresis procedure is accepted well among the blood donors.

PP 66

ANALYSIS OF DONOR DEFERRAL DUE TO LOW HEMOGLOBIN: A 3 YEARS RETROSPECTIVE STUDY

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IMS&SUM Hospital

BACKGROUND:

Low hemoglobin is a significant cause of temporary deferral all over the world. All donors are subjected to hemoglobin estimation which should not be less than 12.5 gm/dl. This study identifies the prevalence of donor deferral due to low hemoglobin in a tertiary care hospital in eastern India.

AIMS:

To analyze and find out prevalence of anemia in prospective blood donors, access the grade of anemia in relation to age and sex and suggest strategy for management of donors deferred due to low hemoglobin.

METHODS:

This retrospective study was conducted in SUM Hospital Blood Bank, Bhubaneswar Odisha from May 2015 to June 2018. A total of 31,680 donors were screened. Hemoglobin estimation was done by HEMOCUE HB 201+ ANALYSER (Sweden).

RESULTS:

A total of 2882(9.09%) were deferred [Total donor =31,680] due to various reasons. Low hemoglobin accounted for 1245(43.19%) [males742(59.59%) and females 503(40.41%)] of all deferrals. Donors deferred due to low hemoglobin in age group of less than 20years were 46(3.6%), 20-40years were 939(75.4%)[males-486 and females 452]and more than 40years were 260(20.88%). A total of 585(78.8%) males had mild anemia in contrast to females 362(71.96%) while moderate anemia was seen in 157(21%) males and 141(28.03%) females. In female donors, 12(0.96%) had hemoglobin in the range of 12-12.5gm/dl which doesn't constitute anemia according to WHO criteria.

CONCLUSION:

Deferral due to low hemoglobin leads to non retention of donors. To avoid non-anemic female donor (according to WHO criteria) deferral, present deferral criteria may be revisited. Prolonging the inter-donation interval and limiting donation to 350ml to allow recovery of iron stores can be considered in this group of female donors. Focussed counselling and their referral for further investigation and appropriate treatment will help their return to voluntary donor pool.

PP 67

PHYSIOLOGICAL AND METHODOLOGICAL FACTORS AFFECTING HEMOGLOBIN ESTIMATION IN BLOOD DONORS

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BACKGROUND:

Blood donor hemoglobin estimation is an important test that is performed prior to blood donation. It serves the dual purpose of protecting the donors' health against anemia and ensuring good quality of blood components. Besides the technique, the anatomical source of blood sample, posture of the donor, timing of sample and other biological factors affect the accuracy and reliability of hemoglobin estimation.

AIMS:

To study the effect of various methodological and physiological factors on the hemoglobin levels of blood donors.

METHODS:

In this prospective study, 200 voluntary non remunerated blood donors were recruited after obtaining consent. All the demographic details were recorded after obtaining a detailed history and medical examination. 100 samples were obtained in winter months (December and January) and 100 in summer months (May and June). Capillary blood samples were obtained from finger prick and pre-donation venous blood samples were obtained from ante-cubital vein. In 100 donors samples were obtained in sitting position and from other 100 in recumbent position. All the samples were tested with hemoglobinometer (Hemocue 301).

RESULTS:

The mean hemoglobin of capillary blood was found to be significantly higher than venous blood. The mean hemoglobin was significantly higher in male donors, donors who were residents of hilly areas and donors with history of chronic smoking. The mean hemoglobin was lower in recumbent position as compared to standing but the difference was not significant.

CONCLUSION:

The source of the blood sample is the most important variable for the accuracy of a technique and critical determinant of donor eligibility in borderline cases. Each blood centre should develop its own policy for borderline hemoglobin results, keeping in view the physiological factors which influence the result of hemoglobin testing.

PP 68

COMPARATIVE EVALUATION OF PREDONATION HEMOGLOBIN SCREENING METHODS

Chandrika Rao,Jayaprakash Shetty
K s Hegde Medical Academy

BACKGROUND:

The predonation hemoglobin (Hb) estimation is the only laboratory test done on blood donors to determine an individual's eligibility to donate blood with an intention to prevent bleeding an anaemic donor. With availability of wide range of screening methods, no single technique has emerged as the most appropriate and ideal for screening blood donors. Objective: The primary objective of the study was to compare results of copper sulphate method and haemoglobin meter with the gold standard Cyanmethhemoglobin (CyanHb) method.

METHODS:

Prospective observational study done in 238 blood donors. Sample analyses were done using Copper sulphate solution, haemoglobin meter and Cyanmethhemoglobin method.

RESULTS:

The mean hemoglobin values obtained by Cyanmeth and, Hemoglobin meter were 15.20g/dl, and13.27g/dl respectively. Hemoglobin values obtained by haemoglobin meter and copper sulphate methods were comparable, with sensitivity of 94.25% and 94.36 % respectively.

CONCLUSION:

CuSo4 method and haemoglobin meter can be used alternatively based on resources available. The higher values obtained by CyanHb method could be due to turbidity factor of the lipids in the blood sample.

PP 69

A STUDY OF BLOOD DONOR DEFERRAL DUE TO ANEMIA IN THE BLOOD BANK OF A TERTIARY CARE CENTRE

Kirana Pailoor,Murali Keshava.S.
Father Muller Medical College, Mangaluru.

BACKGROUND:

Blood donors are deferred from donating blood for several reasons, either permanently or temporarily. Anemia is a major cause for temporary deferral among donors. The aim of our study was to find the incidence of deferred donors due to anemia and to analyse the most common blood group deferred due to it.

METHODS:

A retrospective study was done from January 2017 to April 2017 in Father Muller Medical College Hospital Blood Bank. Data was collected by reviewing the deferred donor records over four months period. It was analysed by frequency and percentage.

RESULTS:

Out of 3354 donors over four months period, 559 were deferred(203 females,356 males). Of these, 144 were deferred due to anemia(137 females, 7 males). The most common cause of deferral in women was due to anemia, accounting for about 67.48% . It was seen that donors with A Rh positive blood group were mostly deferred.

CONCLUSION:

Donor deferral can be reduced by creating awareness, health education and also by administration of Iron-Folic acid supplementation.

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PP 70
PLATELET APHERESIS AND DONOR SAFETY

Mayura Phulpagar, Rehman Mujabir, Rakesh Shedge, Ashwini Shinde

BACKGROUND :

Apheresis is generally considered as safe procedure, although limited studies have addressed the issue of donors safety .with regards to the effect of the procedure on hematological indices in these healthy donors .

AIM:

Purpose was to study the influence and to identify potential hematologic changes occurring post procedure in first time platelet apheresis donors .

METHODS:

In this pilot study 35 apparently healthy voluntary adult donors were evaluated. Apheresis procedure was performed on the donors recruited for the first time for platelet donation , using automated cell separator machine. Hematologic measurements (hemoglobin, hematocrit, white blood cells counts and platelet count) were analyzed before and after platelet apheresis in these donors. In addition we also compared the pre and post donation values of Total Serum proteins levels.

RESULTS:

We observed a significant drop in hematological parameters following platelet apheresis but without any clinical manifestations of anemia, leukopenia, thrombocytopenia or hypoproteinemia. Decrease found in haemoglobin ($p < 0.0001$), haematocrit ($p < 0.0001$), leukocytes ($p < 0.0001$), and platelets ($p < 0.0001$). On the other hand, we found no significant changes in total serum proteins and also no change in differential granulocytes.

CONCLUSION:

Despite of significant drop in the haematological parameters in both red and white cells, none of our donors manifested symptoms of either thrombocytopenia , leukopenia, anemia or even hypoproteinemia. This study does demonstrate hematological changes post-donation but recommends longterm followup of these donors to ensure complete well being. Larger Multicenter studies are recommended , to help establish actors for donors' safety in apheresis; This will also bring a major leap in remotivating and repeat recruitment of platelet donors thereby maintaining the safety of the products too; especially given the present trend of double product apheresis collections.

PP 71
DONOR DEFERRAL PATTERN IN A TERTIARY CARE HOSPITAL, JAMNAGAR, GUJARAT, INDIA

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BACKGROUND:

Donor selection is must and one of the most crucial step, useful in providing TTI safe blood to the needy patients for transfusion purpose without ignoring the donor's safety.

AIM:

To recruit a healthy donor pool for the purpose of safe blood transfusion.

To study the incidence and pattern of donor deferral.

To implement better recruitment & retention strategy which help in reducing the incidence of the same in the institute.

METHODS:

A retrospective study over 18 months has been done from January '2017 to June'2018 on causes of donor deferral in the IHBT department of Shri M P Shah Govt. Medical College, Jamnagar, Gujarat, India.

RESULT:

A total of 35545 donors were reported between January '2017 to June'2018. Total 838 (2.36%) donors were deferred for different reasons which included temporarily deferred 818(97.61%) & permanently deferred 20 (2.38%) as per the guidelines given by NABH. Out of 35322 registered male donors 743 (2.10%) & out of 223 registered female donors 95 (42.6%) donors were deferred respectively. Major cause of temporary deferral in both the sexes was anemia (62.24%).Other causes included like antibiotic therapy (4.27%), tattoo(5.50%) ,menstruation (1.83%), alcohol abuse (1.83%) etc. In permanent deferral causes were heart attack (15%), hypo/hyper thyroid (15%), history of convulsion(10%) etc.

CONCLUSION:

1) From 509 Anemic, otherwise healthy deferral donors 28.09% had low Hb between 12.0 to 12.04 gm/dl which indicates to pay attention on the deferral criteria for the same. 2) Creating awareness on nutritional therapy, alcohol abuse, unreasonable antibiotic use & special awareness in females regarding blood donation.

PP 72
EVALUATION OF VARIOUS METHODS FOR HEMOGLOBIN SCREENING OF BLOOD DONORS

Dr. Jasmeet Singh, Dr. Gurpreet Kaur, Dr. Rajesh Kumar, Dr. Amarjit Kaur
Dayanand Medical College and Hospital

BACKGROUND:

Despite the wide range of methods available for measurement of hemoglobin, no single technique has emerged as the most appropriate and ideal for a blood donation setup.

AIM:

To compare the various methods of hemoglobin screening for their utility and cost effectiveness.

METHODS:

A prospective study utilizing 200 blood samples was carried out in a blood donation setting for quality evaluation of four methods of hemoglobin estimation: Hematology cell analyzer, Beckman Coulter LH 750 (reference), HCS, HemoCue 201+ and Compolab TS.

RESULTS:

Mean value of HemoCue (mean ± SD = 14.05 ± 2.20 g/dl) was higher by 0.4 compared to reference (mean ± SD = 13.65 ± 2.14 g/dl) but not statistically significant ($P > 0.05$). HemoCue proved to be the best technique (sensitivity 99.2%) whereas HCS was most subjective with 25.2% incorrect estimations. Compolab was almost as sensitive as Hemoque w.r.t Hematology Analyzer.

CONCLUSION:

HCS method gives accurate results, if strict quality control is applied. HemoCue and compolab are more accurate but expensive.

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PP 73

ADVERSE DONOR REACTIONS TO WHOLE BLOOD DONATION: A RETROSPECTIVE STUDY OF 56726 BLOOD DONORS AT SMS MEDICAL COLLEGE JAIPUR

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SMS Medical College, Jaipur

BACKGROUND:

Blood is the most precious gift that one human being can give to another. Blood donation is a safe procedure. Most donors tolerate giving blood very well but occasionally adverse reaction may occur during and at the completion of blood donation.

AIM:

To study and analyze the spectrum and prevalence of adverse reactions in whole blood donors.

METHODS:

This is a retrospective observational type study conducted from 1 June 2017 to 31 May 2018 at Dept. of IHTM, SMS Medical College Jaipur.

RESULTS:

The prevalence of adverse donor reactions was (635/56726) 1.12 %. This occurred more frequently in female donors as compared to male donors. The spectrum of adverse donor reactions included mild vasovagal (82.68%), moderate vasovagal (13.07%), Hematoma (2.519 %) and Numbness/ Tingling/ soreness of arm is 1.732 %.

CONCLUSION:

Vasovagal reactions were the most frequent adverse phenomenon in this study. This study reinforces that blood donation is a very safe procedure which could be made even more adverse reaction free with friendly and tactful practices.

PP74

ASSOCIATION OF REACTIVE THROMBOCYTOSIS WITH MICROCYTIC HYPOCHROMIC ANEMIA- A CASE CONTROL STUDY

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Government Medical College Trivandrum

BACKGROUND:

Safety of blood donors is the prime priority in blood banking and risk of iron depletion in repeat donors is a challenge encountered. Iron deficiency (ferritin< 12ng/ml) is detected in a few repeat blood donors especially females. Currently donor haemoglobin estimation is the only method used by blood bank to protect the donors from ill effects of iron depletion.

An association between thrombocytosis and ID has been studied by various authors considering it as a surrogate marker for IDA. Elevated platelet count in ID may also carry the risk of thrombosis as higher aggregable platelets are produced .There are case reports linking ID-related thrombocytosis and thrombosis, and higher incidence of ID in patients with cerebrovascular insult. We attempted to compare the platelet count (PLC) in patients with hypochromic microcytic anaemia (HMA) and without HMA

AIM:

To compare the platelet count between individuals with HMA and without HMA

METHODS:

Case control study from 01/04/2018 to 30/06/2018.Cases (n=200) were those diagnosed in clinical pathology laboratory as HMA using peripheral smear, CBC and controls (n=200) with no evidence of HMA in smear and normal haemoglobin.PLC was compared using independent t test.

RESULTS:

Mean age of cases were 44.61 years,SD22.07 and that of controls were 31.42 years,SD23.72 ,28% of cases and 46.5% of controls were males, Hb values of cases ranges from 2-12.3g/dL(mean7.94g/dL) and that of controls ranges from 10.6-21.6g/dL(mean-13.9g/dL). PLC of cases ranged from15000to2,48,000(mean3.08x106/µL)and that of controls ranged from2600to150000(mean -2.68x106/µL). PLC was significantly higher in subjects with HMA(t-2.36,p-0.01). On chi square test, significant association was found with elevated PLC(PLC>4.5x106/µL) and HMA, Odds ratio- 5.448,CI 2.46 -12.03,p-0.000

CONCLUSION:

An association between IDA and reactive thrombocytosis is detected in the study. While screening donors for whole blood and plateletpheresis procedures, coexistence of these two conditions should be borne in mind.

PP 75

PLATELETPHERESIS DONOR DEFERRAL CHARACTERISTICS AT A TERTIARY CARE HOSPITAL OF EASTERN INDIA

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Medical College Kolkata

BACKGROUND:

SDP is utilized as a major transfusion support in critically ill thrombocytopenic patients having bone marrow transplantation, hemato-oncological disorders, critical care patients and in some emergency situations like dengue hemorrhagic fever, active bleeding etc.

AIM:

The aim of this study was:

1. To have a background profile of SDP donors and identify some common reasons of deferral.
2. To encourage and retain a pool of voluntary SDP donors.

METHODS:

This prospective observational study was carried out in the department of IHBT, Medical College Kolkata over a period of one year (jan'17- dec'17).

A detailed history was taken and the donors were selected as per the departmental SOP for plateletpheresis donor's selection: weight> 55kg, age 18-60 years, atleast 3 months from last WB donation or 48 hrs from last SDP donation, ABO identical donor., adequate venous access, hemoglobin >12.5 g/dl, platelet count > 150*103 / µl., no consumption of NSAIDs for the last three days, non-reactive for TTI markers

RESULTS:

A total of 849 donors were screened for 145 procedures. 91.72% (133) of these were planned procedures and the rest 8.28% (12) were emergencies.Among 849 donors, 449 donors (i.e. 52.88%) were deferred due to various reasons. The commonest cause of donor deferral included poor venous access (n=186; 41.42%), followed by low platelet count (n=119; 26.5%), low body weight (n=59; 13.14%), non-identical blood group with recipient (n=48; 10.69%), low hemoglobin (n=6; 1.34%), others like H/O drug intake, illness etc. (n=28; 6.23%), the least common being TTI reactivity (n=3; 0.67%). A total of 42% (189) were deferred permanently.

CONCLUSION:

SOP modification related to ABO compatibility in donor selection may reduce donor deferral rate. Donor deferred due to temporary causes must be adequately counseled to encourage them for future donations.

PP 76
ATTITUDE OF VOLUNTARY BLOOD DONOR TOWARDS REPEAT AND REGULAR BLOOD DONATION – A PROSPECTIVE STUDY

Dr. Deepak Jothy,Dr.P.Arumugam,Dr.S.Geetha Lakshmi,Dr.R.Raj Bharath

BACKGROUND:

Self sufficiency and safety in blood is essential to strengthen the health system. The NACO goal is to obtain all blood supplies from voluntary unpaid donor. Continuous efforts are needed for successful motivation and retention strategies.

AIM :

To ascertain the attitude of Voluntary Blood Donors towards repeat and regular blood donation

METHODS:

During the study period between May and July 2018 the first-time voluntary blood donors who had donated blood in the blood donation camps were given a structured questionnaire to find out the attitude towards repeat and regular voluntary blood donation. These camps were organized following predonation motivation and education about voluntary blood donation by utilizing Information, Education and Communication materials such as projection of documentary film, posters, pamphlets and lecture followed by interactive sessions.

RESULTS:

In this study, out of 1003 donors screened, 983(98.11%) were males and 19(1.89%) were females. Of the total,713(71.3%) donations came from voluntary blood donors and the remaining 290(28.7%) from replacement blood donors.Overall ,47.8%(478) of donors came from the age group 18-29 years,32.8%(328) from 30-39 years age group,16.2%(162) from 40-49years age group,and 3.4%(35) from those between 50-59 years of age group.Among them,76%(762) are first time donors and remaining24%(241) are repeat donors.

After knowing the importance of blood donation and the experience gained during the time of first time blood donation, 85%(648) of the first time donors showed their willingness for repeat and regular donation.

CONCLUSION:

Since our voluntary blood donation camps are well-organized according to the scheduled protocol starting from predonation motivation and, education about voluntary blood donation, 85% of the first time donors expressed their willingness for repeat and regular blood donation. Donor education, motivation and experience during first time donation play a vital role in donor retention.

PP 77
NOTIFICATION, DONOR RESPONSE AND COUNSELLING OF SEROREACTIVE VOLUNTARY BLOOD DONORS – A RETROSPECTIVE STUDY

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Dr .M.G.R. Medical University, Tamil Nadu

BACKGROUND:

Unsafe blood remains a major threat for the spread of transfusion-transmitted infection (TTI). As per the NACO guidelines, all initial seroreactive donors who had given consent shall be recalled, offered post donation counselling and referred to appropriate facility. Results shall not be informed over phone. Initial response of the donors is unpredictable. However, it is the responsibility of blood transfusion service providers to inform such donors for appropriate counselling and direct them for further management.

AIM:

To evaluate notification, response and counselling rate of seroreactive donors.

METHODS:

This study is an retrospective study performed in The Tamil Nadu Dr .M.G.R. Medical University, Department of Transfusion Medicine over a period of 3 years from 2015 to 2017.

RESULTS :

During the study period, out of 5741 blood units collected, 62 donors were seroreactive for HIV, HBsAg, HCV and VDRL respectively were two (2 /62), forty three (43/62), fifteen (15 / 62) and two (2/62).The trained blood bank counsellors could able to notify 52 (83.9%) seroreactive donors over telephone, and the response rate was 92.3%(48/52). For the remaining 10 (16.1%) donors, notifications were sent by post. None of them responded for counselling. Among the 48 responded seroreactive donors for HIV, HBsAg, HCV, and VDRL respectively were two(2/48), thirty three (33/48), eleven (11/48) and two (2/48). They were counselled and referred to integrated counselling and testing centre, Medical Gastroenterology and Venereology departments respectively.The fourteen non-responders were HBsAg (10/14) or HCV (4/14) seroreactive.

CONCLUSION:

In our study, around 16% of seroreactive donors could not be traced. The plausible reason could be due to a migratory population in metropolitan cities. If complete demographic details such as unique identification number (Aadhar Card), Voter's Identification Number, Driving Licence Number, etc., are included, it would increase the chances of donor traceability further.

PP 78
EFFECT OF PREDONATION INTAKE OF WATER AND ORAL REHYDRATION SOLUTION (ORS) ON DONOR ADVERSE REACTIONS – A COMPARATIVE STUDY

Dr. Kishore Kumar, Dr.R.Rajbharath, Dr.Swathandran Hamsavardhini, Dr.P.Arumugam
The TN Dr.MGR Medical University

BACKGROUND:

The first time donors are susceptible for donation related adverse reactions (dizziness, syncope) and it can affect donor retention. Physiologic strategies may reduce an individual blood donor's risk of a reaction, such as predonation intake of water.

AIM:

The aim of our study is to compare the effects of pre-donation intake of water and ORS in reducing syncope related adverse reactions among first timevoluntary blood donors.

METHODS:

The study was undertaken in the Department of Transfusion Medicine, The TN Dr.MGR Medical University during the period from June to August 2018.300 donors (240 Male and 60 female) were randomly assigned into 3 groups: Group A - 100 donors without fluid intake,Group B - 100 donors with 200ml water intake and Group C – 100 donors with 200ml ORS intake approximately 30 minutes before donation.Donors were assessed for adverse reactions (dizziness, syncope).Post-donation instructions were given. Results were recorded in donor questionnaire form.

RESULTS:

Our analysis revealed that incidence of syncope related adverse reactions in Group A is more than in group B and group C. Among group A six (6%) donors experienced syncope related adverse reaction when compared to two (2%) donors in group B and two (2%) donors in group C. Out of 10 donors with syncopal attack, 8 were male and 2 were female. Group B and Group C donors who experienced adverse reactions had taken food more than 4 hours before donation. Donors with syncope were managed with minimal resuscitation.

CONCLUSION:

We conclude that predonation oral fluid intake (water or ORS) reduces vasovagal reactions. Results of present study suggests ORS

improves donor experience and there is no significant difference in role of water and ORS in reducing VVR.

PP 79

AWARENESS OF BLOOD DONATION AMONG FIRST YEAR UNDERGRADUATE COLLEGE STUDENTS IN CHENNAI

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The Tamilnadu Dr.MGR medical university Chennai.

BACKGROUND:

Blood is a major vital component of human beings. Unfortunately we dont have any chemical equivalent to blood. So blood donation has become essential for the survival of the society

AIM:

Objective of the study is to analyse the knowledge of voluntary blood donation among first year college students

METHODS:

A questionnaire prepared by The Tamil Nadu Dr.M.G.R. Medical University was given to the 500 first year college students during voluntary blood donation camps, from the period of June to August 2018. A briefing was given to participants about the objective of the study and assured confidentiality.

RESULTS:

In our study among 500 1st year college students who had voluntarily come to donate blood in camps, 86% were aware of eligibility criteria of blood donation, 72% were aware of screening of HIV before transmission, 61% aware of various contraindications for blood donation, 45% aware about duration of blood donation, 40% had misconceptions about blood donation.

CONCLUSION:

Our study reiterates the importance of educating the potential donors who enters in to the eligible age of voluntary blood donation, to maintain and expand the donor pool; thereby countrys blood need is consistently maintained.

PP 80

DONOR HEMOVIGILANCE: A RETROSPECTIVE STUDY

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BACKGROUND:

A safe and adequate blood supply depends on healthy, altruistic volunteers who are willing to donate blood without expecting personal gain despite the risk of discomfort or adverse reaction. Donor "hemovigilance" includes all activities that contribute to improve the healthy outcome for blood donors as well as safety and effectiveness of blood donation process. Usually, blood donation is a safe procedure. However, a small percentage of donors may experience an Adverse Event.

AIM:

A Retrospective study was carried out among the voluntary blood donors (VBDs) to estimate the incidence, risk factor, the type of adverse events in whole blood donation process and to provide evidence based support for improving the same.

METHODS:

This study was done from April 2014 to march 2017 among the VBDs in camps conducted by DTM, TNMGRMU, who fulfilled the eligibility criteria as per the guidelines of DGHS. All the adverse events were investigated.

RESULTS:

During the period 117 camps were conducted and 6566 donors were bled. Out of these, 67(1%) donors had Vaso-Vagal Reaction (VVR) and 25(0.38%) donors had hematoma. Out of 67 donors with VVR, 19(28.3%) were females and 48(71.7%) were males. Incidence of adverse events in our study was 1.38%.

Donation-related VVR is a multi-factorial response primarily determined in first-time donors. Among the females Anxiety 9/19(47%), low body weight 7/19(37%), painful phlebotomy2/19(11%) and increased environmental temperature 1/19(5%). In males Anxiety 32/48(67%), low body weight 8/48(17%), painful phlebotomy3/48(6%) and increased environmental temperature 5/48(10%). The cause for hematoma in 5/25(0.08%) donors was due to inexperienced phlebotomist and others 20/25(0.30%) the most probable reason would be due to noncompliance of appropriate instructions of arm movements during the procedure.

CONCLUSION:

The knowledge of donor adverse events and the probable risk factors would make blood donation process a pleasant experience leading on to better donor retention.

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PP 81

ASSESSMENT OF SOCIO DEMOGRAPHIC PROFILE AND RISK FACTORS IN HIV SERO REACTIVE BLOOD DONORS IN A TERTIARY CARE CENTRE OF NORTHERN INDIA

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BACKGROUND:

The rate of transfusion transmitted Human immunodeficiency virus infection (HIV) has shown a declining trend, but it still remains a major public health issue. This study examined socio-demographic characteristics and risk factors of HIV seroreactive blood donor.

METHODS:

This retrospective study was conducted in a tertiary care hospital over a period of 18 months. Blood donor samples were screened for HIV using fourth generation enzyme linked immunosorbent assay. The seroreactive donors were notified telephonically and through letters. Responders were counseled and referred to ICTC. Reactive donors not responding to three telephonic calls and letter were labeled as defaulters. Data regarding socio-demographic characteristics, and other relevant history was obtained from donor record

RESULT:

Of total 32852 blood donations, twenty (0.061%) donations were seroreactive for HIV, nineteen were male and one was female. Eleven of these twenty donors donated first time and nineteen were voluntary.Written correspondence could be sent to nineteen donors (95%) whereas one donor (5%) could not be informed due to incomplete address on donor record card. Telephonic calls could be made to seventeen donors (85%) while three donors (15%) did not respond to calls.Of the fourteen donors referred to Integrated Counseling and Testing Centre (ICTC), nine male donors (47%) revealed history of high risk behavior and one donor (5.2%) was aware of his reactive status on post donation counseling. Three donors (15.7%) gave history of prolonged hospitalization and history of blood transfusion was present in one case. Four donors (21%) had history of tattooing and ear piercing.

CONCLUSION:

The present study stresses the need to strengthen pre donation screening, counseling and to repeatedly track these seroreactive donors so as to eliminate them from the safe donor pool.

PP 82

STUDY OF ADVERSE EVENTS IN WHOLE BLOOD DONORS AND ITS IMPACT ON BLOOD DONOR RETURN RATE

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BACKGROUND:

Adverse Event (AE) is defined as the symptoms/signs of donor discomfort of sufficient severity, that either the donor called for attention or noticed by the staff. These AE can negatively impact the Blood Donor Return Rates (BDRR) and decrease donor retention.

AIM:

1. Assess the frequency and type of AE, and analyse its relationship with the BDRR.
2. Identify measures to increase the Donor Return Rate.

METHODS:

A Retrospective single centre study, conducted from January 2015 to August 2018, in the Transfusion Medicine department of a tertiary care hospital. All Whole Blood donations received at the centre and at its outdoor camps were analysed. All AE(systemic and local) occurring during /end of the donations were noted. All donors were followed up and interviewed at 1 month after donation for any delayed complications.Collected data was analysed to determine the frequency of various reactions.Also, a cohort of first time donors in 2015 was created and followed up to see if they return for further donations and the BDRR were calculated.

RESULTS:

Total of 93,594 voluntary whole blood donations were received during the study period.5.19% (4866/93,594) of total donations were complicated by Adverse Events during the study period. Vasovagal reactions accounted for 74.5% of all AE affecting 2.9% of the donors. (2714/93,594).Donations made by first time donors were 56% in 2015 of which 78% donors returned during the study period following an uncomplicated first donation, but only 35% returned following an AE.Of the total donors that did not return during the study period, 91.2% had suffered from some AE.

CONCLUSION:

Vasovagal reactions were the most common AE recorded. Reduced BDRR seen following AE during donation. A robust hemovigilance programme and measures to decrease AE eventually helps increase donor retention.

PP 83

FREQUENCY OF RH D VARIANTS IN HEALTHY BLOOD DONORS AND PATIENT POPULATION AT A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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BACKGROUND:

The Rh blood group discrepancies may arise when an individual is a variant of D antigen. They are reported as RhD negative or positive depending on the type of reagents and techniques used. RhD variants (weak D, partial D and DEL) should be identified as they may produce anti-D when transfused with normal D positive red cells. Thus, knowing the correct RhD status is essential in antenatal patients, donors, and recipients of blood transfusion.

AIMS:

The main objective of the study is to find the prevalence of RhD variants and to characterize them by molecular methods in a tertiary care hospital in south India.

METHODS:

Blood grouping was performed on 9279 blood samples collected from donors and patients of tertiary care hospital in South India. All the Rh negatives and the RhD discrepant samples were then tested with various anti-D reagents by different techniques. Adsorption elution technique was performed to identify DEL variants. RhD variants thus identified were characterized by multiplex PCR, QMPSF, and sequencing.

RESULTS:

Among blood samples tested, 6.3% individuals had RhD negative phenotype whereas thirteen samples showed discrepant RhD typing result. Rh phenotype of these samples was CcDee (10), ccDEe (2) and ccDee (1). DEL variant was not identified. Molecular characterization of RhD variants showed Exon 3 duplication responsible for the formation of RhD variant phenotype in approx. 60% cases. Mutations causing Weak D type 25, type 15 and RHD (T201R)-CE(5)-D(1342T) were also identified. No exonic mutation could be detected in two RhD variant samples.

CONCLUSION:

Prevalence of RhD variants in South Indian population is 0.14%. Exon 3 duplication is the most common cause of RhD variant phenotype. Due to high immunogenic nature of RhD antigen, it is important to give correct RhD status to an individual in order to avoid future risk of alloimmunization.

PP 84

SUSPECTED ANTI-G ANTIBODY IN A PREGNANT WOMEN: REPORT OF TWO CASES

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BACKGROUND:

Anti-G is one of the cause of Hemolytic Disease of the Fetus and Newborn (HDFN), either alone or in association with anti-C, anti-D or both. The antibody mimics a pattern of anti-C and anti-D reactivity in identification panel and is often present with one or both these antibodies. Differentiation amongst all three antibodies in routine pretransfusion workup is essential in antenatal cases.

CASE REPORT:

We report 2 cases where either anti-G or combination of anti-C & anti-D is suspected on advanced immunohematology workup. The HDFN can be largely attributed to the probable presence of anti-G in both the cases. Confirmation of the antibody can be done by adsorption and elution methods.

PP 85

DISTRIBUTION OF RH AND KELL (K) BLOOD GROUP ANTIGENS AMONG BLOOD DONORS IN A TERTIARY CARE HOSPITAL

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BACKGROUND:

Red cell antigen phenotyping is very important for minimizing the risk of alloimmunization and haemolytic transfusion reactions.

AIM:

To study the pattern of Rh (D,C,E,c,e) and Kell (K) blood group antigen distribution among blood donors of different ethnic groups in our tertiary care hospital.

METHODS:

This was a prospective observational study carried out over a period of 01 year in SMGS Hospital Jammu.It comprised of voluntary and replacement donors belonging to different ethnic groups i.e Dogras,Gujar Muslims, Non-Gujar Muslims, Kashmiri Pandits (KPs), Sikhs and Christians.

RESULTS:

500 blood samples were collected. Out of these, 420 samples were antigen typed by conventional tube technique and 80 samples were antigen typed by column agglutination technology. As per ethnicity,maximum donors were Dogras (74%) followed by Non-

Gujar Muslims (9.4%), Gujar Muslims (9%), Sikhs (5.6%), KPs (1.4%) and Christians (0.6%). RhD positive was found among(94.4%) donors and RhD negative among (5.6%) donors. Among other antigens of Rh system 'e' antigen was highest (97.2%) followed by 'C' (85.2%), 'c'(64.0%) and 'E' (20.6%). Frequency of 'D' antigen was highest among Sikhs, Christians and KPs (100%) followed by Dogras (95.1%). 'C' antigen was highest among Dogras (87.29%) followed by Sikhs (85.71%). 'E' antigen was highest among Christians (33.33%). 'c' antigen was also highest among Christians (100%) and 'e' antigen was highest among Dogras (98.1%). 08 Rh phenotypes were found R1R1 (DCe/DCe) has the highest frequency of (36.0%) and least common phenotype found was r'r (dCe/dce) 0.6% in our study. Frequency of 'K' antigen positive donors were 2.6% and was highest among Gujar Muslims and Non-Gujar Muslims (4.25%) followed by Sikhs (3.57%) and Dogras (2.16%).

CONCLUSION:

Distribution of blood group antigens among different ethnic groups can help in creation of donor data bank, for preparing in house cell panels and providing compatible blood for patients with multiple alloantibodies.

PP 86
ANTI - E ALLOANTIBODY: ITS SIGNIFICANCE IN A CASE OF ANEMIA

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BACKGROUND:

Rh antigens highly immunogenic .Majority of Rh antibodies of IgG type. Alloantibody induced hemolytic anaemia due to anti E IgG antibody binding to red blood cell surface antigens characterized by extreme hemolysis, typically extravascular. Anti-E hemolytic disease also be strongly considered in differential diagnosis as among most common causes of severe neonatal hemolytic disease.

AIM:

To diagnose and treat cause of sudden severe anemia in female aged 35 years.

METHODS:

35-year-old female patient started developing fever, generalized weakness, loss of appetite, nausea, vomiting, jaundice, anemia progressing to pancytopenia, splenomegaly. Continuous fall in hemoglobin. Also continuous evidence of extravascular hemolysis in spleen, since last 15 days. Hematuria noted after blood transfusion. Peripheral smear showed anisopoikilocytosis, spherocytosis and pancytopenic picture. Reticulocyte count on lower side (0.5%).

Forward reverse blood grouping showed no group discrepancy. Direct antiglobulin test DCT performed on patients blood sample revealed positive (1+) agglutination with polyspecific antihuman globulin (anti-IgG and anti-C3d) . ICT, Indirect Coombs Test, positive 2 +(Antisera make Tulip Diagnostics).Patient's serum tested against cell panel with screening red cells using gel technology (LISS-Coombs Card, Ortho Biovue System, Ortho Clinical Diagnostics) , reacted against cells containing E antigen and behaved as an incomplete antibody. Identification panel (Ortho Biovue System, Ortho Clinical Diagnostics) confirmed presence of anti-E antibody with titer of 1:8 (tube method). Auto-control negative.

Eluate tested using commercial acid elution kit (Ortho Clinical Diagnostics), confirmed specificity to be anti-E. Extended red cell typing of patient cells negative for E antigen. Di-thiothreitol treatment of serum confirmed presence of IgG type of antibody . Enzyme treatment showed increased reactivity.

RESULTS:

Patient diagnosed as a case with alloantibody anti E.

CONCLUSION:

Detecting blood antibodies: auto, allo, cold or warm, important. Role of Transfusion Medicine laboratory in diagnosis of patient with hemolysis and anemia emphasised.

PP 87
CUTTING EDGE TECHNOLOGY IN IMMUNOHAEMATOLOGY – RESPONSIVE AUTOMATION

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BACKGROUND:

In the field of Transfusion Medicine as elsewhere, there is a constant demand for maximum efficiency with optimal turnaround times and minimum staff. Fully automated immunohematology analysers are now being used by many transfusion services to optimize laboratory efficiency. Some of these analysers have what is known as "Responsive Automation" that brings with it a "transformational" approach to immunohaematology testing.

AIM:

Evaluation of the various applications of responsive automation in avoiding errors, standardising techniques and improving turnaround times in the blood bank.

METHODS:

Samples, run in the analyser over a period of five months were analysed using real time alert remote connectivity. Tests included patient and donor groupings, antibody screens, cross matches and titrations. Some of the parameters analysed were the average turnaround time, first pass yields, reagent usage and top error codes.

RESULTS:

The use of responsive automation gave us an insight into the day to day operations of the blood bank, including the turnaround times and pass yields. This function of the analyser has helped us resolve diagnostic checks throughout sample processing since the remote connectivity technology monitors every critical step in the automation process. The level of automation provided permitted remote logins and the ability to review results using the advanced image verification system. Time spent by the technical staff on other jobs like planned maintenance could be audited with the above facility and reasons for delays in this process could be analysed and corrected. This, in turn, also contributed to the optimisation of the turnaround times in our blood bank.

CONCLUSIONS:

Responsive automation and remote connectivity provide solutions for better laboratory efficiency.

PP 88
"A END" SUBGROUP: A CASE REPORT OF A RARE SUBGROUP OF A

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BACKGROUND:

A end is a weak subgroup of Blood group "A", found rarely in general population. It is not detected by routine forward and reverse blood grouping but detected by Adsorption/ Elution technique along with saliva testing for A, B and H antigens. Although it is subgroup of "A" but it lacks "A" antigen in saliva and contains only "H" antigen.

CASE HISTORY:

A 46 years male patient with fracture right femur was admitted in the Department of Orthopedics, AIIMS Raipur (C.G.). He had no significant past history including any previous blood transfusion or any alloantibody identification. He had no significant family history. The Department of Transfusion Medicine & Blood Bank received the blood sample of the patient for cross matching. On blood grouping, the patient's sample showed 1w+ agglutination & turbidity on forward grouping with anti-A, which came to be mixed field reaction on microscopy.

METHODS:

The sample was further tested by Adsorption and Elution procedure for confirming weak subgroup of A or B, which showed

it to be a weak subgroup of A. It showed a strong positive reaction with anti-H. Further saliva testing was done to which determined presence of only H substance.

RESULTS:

Only H substance was detected in saliva sample. Adsorption/ Elution confirmed it to be a weak subgroup of A, and Saliva testing confirmed it to be the weak subgroup of A having only H substance in saliva. Also, a mixed field reaction was seen with anti-A & anti-AB antisera.

CONCLUSION:

As the best possible subgroup showing this reaction pattern could be A end, so it was concluded to be A end subgroup. Identification of the rare subgroups is important because this may be mistyped as group O, if transfused with O group unit can show decreased red cell survival or delayed hemolytic transfusion reaction.

PP 89
PREVALENCE OF A1 AND A2 ALONG WITH ANTI-A1 IN DONOR AND PATIENTS IN A TERTIARY CARE CENTRE

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BACKGROUND:

Among A and AB blood groups, A1 & A2 are major subgroups. A1 subgroups are major subgroups which constitutes around 80% and 20% are A2 approximately. Sometimes anti-A1 present in A2 serum becomes clinically significant when they react at 370 C and causes hemolysis of donor red cells.

METHODS:

Blood grouping was done with standard Test Tube technique using antisera of Tulip Diagnostics and in-house pooled suspension. A1 and A2 were distinguished on basis of agglutination reaction with anti-A1 lectin (Tulip Diagnostics). A2 serum was tested with A1 red cells at room temperature, 370 C for presence and clinically significance of anti-A1.

RESULTS:

A total 1058 blood samples of both patients and donor were analyzed with A and AB blood group 76.37% and 23.63% respectively. Among A blood group ,96.78% were A1 where as 3.22% were A2. While among AB blood group prevalence of A1B and A2B were 90.8% & 9.2% respectively. Out of 547 patients A1 and A2 were 97.3% and 2.7% , while A1B, A2B sub types were 90.65% and 9.35% respectively. Of 533 donors prevalence of A1, A2 and A1B , A2B were 96.38%, 3.62%, 91.6% & 8.4% respectively. Out of 13 A2B patients 3 (23.07%) showed presence of anti-A1 antibody.

CONCLUSION:

Although the presence of clinicaly significant anti-A1 antibody is rare which causes hemolysis of donor A1 red cell but we suggest testing for anti-A1 in all patients of A1 subgroup before transfusion of blood.

PP 90
PREVALENCE OF DAT POSITIVITY IN ONCOLOGY PATIENTS AT THE TERTIARY CANCER CARE CENTER

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BACKGROUND:

The DIRECT ANTIGLOBULIN test (DAT) is a simple test used to determine if red cells have been coated in vivo with immunoglobulin, complement, or both. A high prevalence of DAT positivity in patients with mainly hematological malignancies has been reported.

AIM:

To study the prevalence of DAT positivity in oncology patients.

METHODS:

In this retrospective study the DAT test requests from June 2016 to June 2018 were studied. The DAT testing was done using EDTA samples, done immediately on receipt of the samples by Column Agglutination Technology.

RESULTS:

Total of 154 oncology patients were tested for DAT. Out of this 30 (19.5%) were positive for DAT and 124 (80.5%) were Negative for DAT. Total male patients were 82(53.2%) of whom 11 (13.4%) were positive and female patients were 72(46.8%) of whom 19(26.4%) were positive. Blood group wise prevalence showed 49(31.8%) of O Positive, 7(4.5%) of O Negative, 48(31.2%) of B Positive, 4(2.6%) of B Negative, 27(17.5%) of A Positive, 4(2.6%) of A Negative, 14(9.1%) of AB Positive and 1(0.6%) of AB Negative. Distribution of patients based on age group between 1-10 were 4, between 11-20 were 12 (25% positive) , between 21-30 were 13, between 31-40 were 23 (26% positive), between 41-50 were 32(18.6% positive), between 51-60 were 27 (18.5% positive), between 61-70 were 32 (21.9% positive), between 71-80 were 11 (27.3% positive). The patient with hematological malignancy were 116 (17.2% were positive) and solid organ tumors were 38 (26.3% were positive).

CONCLUSION:

Clinical considerations together with laboratory data should dictate the extent to which a positive DAT result is evaluated. These autoantibodies can be of IgG, IgM, or IgA isotypes. The pathologic and clinical features of AIHA relate to the autoantibody class, thermal amplitude, and their efficiency of inactivating complement.

PP 91
OPTIMIZATION OF BLOOD SAFETY THROUGH ESSENTIAL CHARACTERIZATION OF NATURALLY OCCURRING LEWIS ANTIBODY

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BACKGROUND:

Lewis antibodies are usually naturally occurring however they may have clinically significant, IgG type and may cause haemolytic transfusion reaction. The present study depicts the clinical significance and detailed characterization of Lewis antibodies in blood donors and patient populations and their implication in safe blood transfusion.

AIMS:

Aims of our study was to observe the clinically significant Lewis antibodies in Eastern India populations.

METHODS:

The prospective study included 7 individuals who were detected with Lewis antibodies. Further investigations were performed for detailed characterization of these antibodies with regards to antibody type, thermal amplitude, titre and enzyme study and secretor status of the individuals.

RESULTS:

Of the 69354 donors and patients subjected to antibody screening , Anti-Lea was detected in 7 with none having anti-Leb. All showed the Le(a-b-) phenotype with 4 presenting with IgG anti-Lea optimally reacting at 37□C with a highest titre of 32. Where all 7 were ABH secretors however none revealed any Lewis substances. For patients requiring transfusion compatible Lea antigen negative red cell units were issued without any adverse events.

CONCLUSIONS:

As naturally occurring Lewis antibodies may be clinically significant and cause haemolytic transfusion reaction therefore identification and detailed characterization of antibody in blood donor or recipient is very crucial to blood safety.

PP 92

SEROLOGICAL EVALUATION OF SUBGROUPS OF 'A' AND 'AB' IN BLOOD DONOR POPULATION IN EASTERN INDIA

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BACKGROUND:

Subgroup of 'A' was first described by von Dungern in 1911. Broadly such subgroup includes A1, A2 and weak A subgroup. Similarly AB subgroup includes A1B and A2B. Detection of weak A subgroup such as A3, Am,Aend,Ay and Ael are routinely not performed in the blood bank. Such serological investigations are complex, time consuming and require technical skill.Ours being a referral immunohematology laboratory we perform serological evaluation of 'A' and 'AB' subgroups

AIMS:

The aim of this study was to observe the frequency of A and AB subgroups in the blood donor population of Eastern India.

METHODS:

Over a period of five years donor blood group was typed using column agglutination technique and standard tube technique. Anti A1 lectin study was done for all donors with group A and AB. Subgroup of A and AB was confirmed by serological reactions defined by previous authors. Weak subgroups were determined by adsorption elution technique and saliva inhibition test.

RESULTS:

A total of 36789 donors were typed for ABO and Rh group. Among 8941 group 'A' donors A1, A2 and weak subgroups were 7358 (82.3%), 1534 (17.2%) and 4 (0.05%) respectively. The weak subgroups serologically investigated were Ay (n=2), Ax (n=1) and Am (n-1). Among 3935 'AB' donors A1B, A2B and weak AB subgroup were 3340 (84.9%), 594 (15.1%) and 1 (0.025%, AmB)) respectively. Anti-A1 (4oC>22oC) with titre ranging from 1 to 8 was found in 127 (21.4%) A2B donors.

CONCLUSION:

Detailed serological characterization of subgroups of 'A' and 'AB' helps to estimate their frequency in a particular demography. Often weak subgroups may be mistyped as 'O' group which may lead to wrong blood transfusion. Often such serological evaluation is needed in solid organ transplantation. Multi-centric studies with large sample sizes are required to estimate the correct frequency of weak subgroups.

PP 93

A CASE OF PASSENGER LYMPHOCYTE SYNDROME FOLLOWING MINOR ABO INCOMPATIBLE RENAL TRANSPLANTATION

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BACKGROUND

Passenger Lymphocyte Syndrome is a rare but important disease in which donor lymphocytes produce antibodies to red blood cell antigens of the recipient causing alloimmune haemolysis. It occurs in ABO blood group mismatched solid organ and/or bone marrow transplant.

CASE PRESENTATION

We report a case of passenger lymphocyte syndrome occurring after ABO incompatible kidney transplant. A 45-year-old lady (A +ve) underwent a renal with her husband (O +ve) as donor. The patient was transfused with 5 units of A +ve packed cells (3units during surgery and 2 units postoperative. The postoperative course was uneventful. However, 15 days postop showed a declining haemoglobin level from 8.6 to 6.1 gm/dl. The patient's sample was sent to blood bank for 1unit of PRBC. The patient antibody screen & DCT were negative. The patient was transfused with 1unit of crossmatch compatible A +ve packed. The patient was discharged following the transfusion. The patient was readmitted 2 days later with a steep fall of Hb to 3.2 gm/dl over 48 hours. There was no identifiable bleeding source. Reticulocyte count ↑ LDH ↑. No shistocytes were observed on the peripheral smear.

A request for 2 units of packed cells was again sent to blood bank. However, this time crossmatch with A +ve packed cells showed incompatibility in AHG phase. The antibody screen was negative and DCT was positive (2+). The patient's serum showed presence of anti A. a diagnosis of probable PLS was made. The patient was managed with methylprednisolone & group O PRBC. Gradually her condition improved and was discharged in stable condition.

CONCLUSION

PLS is an important complication that occurs in patient receiving ABO mismatched transplant. Early diagnosis & appropriate treatment are important in at risk individuals.

PP 94

PREVALENCE OF ABNORMAL RED CELL ANTIBODY IN BLOOD DONORS: EXPERIENCE OF A NORTH INDIAN BLOOD BANK

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BACKGROUND

The prevalence of antibody screening against the donor's red cell antigen varies from 0.32 to 2.4 % in the literature. The potential hazard of this antibody includes red cell hemolysis of the patients while transfusing plasma and platelets unit. However, red cells are not unaffected in this situation, if SAGM blood bags are used.

AIM

The aim of the study was to evaluate the prevalence of irregular red cell antibody in blood donors at our centre.

METHODS

This was retrospective collected data of blood donors at our centre from January 2013 to May 2018. The data of the donors tested for red cell antibody by Indirect Antiglobulin Test (IAT) by erythrocyte magnetic technology was evaluated.

RESULTS

Out of the 56024 blood donation, only 83 samples came as IAT positive. Total positivity was 0.17%. Out of 83 donors, male donors were 67 (80.7%) and female were 16 (19.3%). The percentage positivity in female donors (0.44%) was higher than male donors (0.15%). The majority of IAT positive donors belong to the age group 18-30 years (57 %). Out of the 83 blood donors, 5 were Rh D negative blood group and all of them were female donors. The replacement donors showed higher positivity (0.40%) as compared to voluntary donors (0.12%).

CONCLUSION

The data showed that out of 674 blood donation, only 1 donor came as IAT positive that showed lesser positivity at our centre as compared to other studies. Higher positivity of IAT in case of female donors and replacement donors has been observed in this study. Minor cross-matching in selected cases like pediatric cases while transfusing FFP and Platelets may be more cost-effective measure as well as less labour intensive in place of donor antibody screening seeing the lesser positivity and risk of transfusion reaction.

PP 95

SIGNIFICANCE OF ANTI-M ANTIBODY IN PATIENTS AND DONORS

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BACKGROUND:

Anti-M is a naturally occurring IgM antibody presenting as cold agglutinin. Its conversion to IgG is rare and is associated with hemolytic transfusion reactions and hemolytic disease of fetus and newborn.

AIM:

To study the frequency and serological characteristics of Anti-M antibody in patient and donor population.

METHODS:

It was a retrospective study over for a period of two years (April 2016 to March 2018). Blood grouping was done using conventional tube technique using commercial antisera (anti-A, anti-B, anti-AB and anti-D) and pooled reagent red cells, whereasin case of incompatible crossmatch, antibody screening and identificationwere performed using LISS Coombs'anti-human globulin (AHG) gel cards (Bio-rad, Switzerland). Di-thiothreitol(DTT) treatment was also performed.

RESULTS:

The frequency of anti-M antibody was 0.05% in patients (51 out of 101364 requisitions). DTT treatment could be done in 12 patients which showed it was IgM type in 11 (91.7%) and mixture of IgM and IgG type in 1(8.3%) case. Transfusion history was present in 21 (41.2%), absent in 13 (25.5%) and not known in 17 (33.3%) patients. M antigen phenotyping in 42 patients showed that 35 (83.3%) were M-, while 6 (14.3%) gave a 'mixed field' and 1 was M+ as they had a history of recent transfusion. In blood donors, the frequency of anti-M was 0.012% (15 out of 117185 donors) which is lower than the patient population and the difference is statistically significant ($p<0.001$). This difference shows that the anti-M is not only naturally occurring but may also develop as a clinically significant alloantibody also. On DTT treatment of 9 samples, 4 (44.4%) each were IgM and IgM plus IgG type and 1 (11.1%) was IgG type.

CONCLUSION:

Most of the Anti-M antibodies are IgM type, however, serological characterization reveals the IgG type also which are reactive in AHG phase and thus clinically significant.

PP 96

DEFINING SEROLOGICAL SPECIFICITIES OF MULTIPLE ANTIBODIES VIA MOLECULAR MEANS: A CASE STUDY

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BACKGROUND:

Allo-immunized patients with multiple blood transfusions pose enormous challenges not only in finding compatible blood but also in antibody identification.

AIM:

This study documents our approach in identification of the complex antibodies formed in a multi-transfused patient with sickle cell disease and an adverse obstetric outcome.

METHODS:

Reagents used for serology work were from local and commercial sources. DNA for molecular typing was extracted from a buffy coat specimen and used for genotyping by Precise type HEA BeadChip (BioArray Solutions, Immucor).

RESULTS:

32 year old 3rd gravida with SCD was admitted to hospital for delivery with Hb of 6.8 g/dL and blood transfusion was planned. She had history of transfusions with episodes of transfusion reactions. Blood group was A1 positive with discrepant reverse typing. Auto-control and the DAT were negative. Three and 11 cell panels showed variable strength of reactivity with her serum which indicated the presence of multiple antibodies to the antigens E, c, S, Fya or Fyb, K, M. Four sequential absorptions with papain treated E-c+ RBCs removed anti-c from the serum leaving other antibodies to identify. Her specimen (plasma) was referred to reference laboratory abroad where her predicted phenotype was determined by molecular testing. Her plasma was tested with selected cell panels as guided by the results by molecular typing. Her predicted phenotype was E-, c-, K-, Fy(a-), S-. Based on testing with phenotypically similar cells, the serology confirmed the antibodies present in her plasma. Only available example of E+, e-, c-, Cw-, Fy(a-) and S- RBCs was reactive with the serum.

CONCLUSION:

Anti-c, anti-Cw, anti-K, anti-Fya, anti-S and possibly anti-E were identified in the patient guided by extensive red cell genotyping data.

PP 97

RH-D BLOCKING PHENOMENON IN A CASE OF RH-D HAEMOLYTIC DISEASE OF NEWBORN

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BACKGROUND

Rh-D blood group system is the most important blood group system other than ABO. Coating of red cells with IgG anti-D antibodies, commonly termed as blocked D, makes the accurate Rh testing difficult.

CASE REPORT

Here we present a case report of Rh-D blocking phenomenon where the blood group of a newborn baby born to a multigravida 32 years old female showed B negataive with the mother's blood group being B negative. The antibody identification of the mother confirmed the presence of allo anti-D along with anti-C. The DCT performed with baby sample showed strong positive (3+) reaction. Antibody identification performed with baby's sample detected the presence of anti-D along with anti-C. Comparison of the results of grouping and antibody detection between the mother and newborn baby led to the elution study performed with baby's DAT positive red cells using cold acid elution method. After elution, baby's red cells were typed as B positive by gel card method.

CONCLUSION

DAT usually gives strong positive results in HDN due to anti-D alloantibodies. The blocking phenomenon should be suspected if the infant's red cells show strong positive DCT but do not give positive results with anti-D. Before reporting the Negative grouping of a newborn baby of an alloimmunised mother having a good titre of antibodies, especially anti-D antibodies, the Blocking phenomenon should always be suspected and accordingly steps like elution should be done to confirm the grouping.

PP 98

EVALUATION OF DAT NEGATIVE AUTOIMMUNE HAEMOLYTIC ANAEMIA: AN INSIGHT BEYOND CONVENTIONAL TEST

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BACKGROUND:

A negative DAT does not rule out AIHA. The incidence of this clinical entity known as DAT negative AIHA has been reported to be 2 - 4%. Sensitive techniques like enzyme linked antiglobulin

test (ELAT), flow cytometry (FC), complement-fixation antibody consumption test etc. have been described for diagnosis of DAT negative AIHA. Majority of blood bank laboratories lack these advanced methods. Here we share our experience of diagnosing DAT negative AIHA using simple but sensitive methods which are otherwise less practised.

METHODS:

The prospective study included 377 anemic patients clinically suspected of AIHA. Blood samples received in blood bank were subjected to polyspecific DAT using both conventional tube test (CTT) and column agglutination technique (CAT). Polyspecific DAT negative results were further evaluated using sensitive but simple methods. Hematological and biochemical parameters of all patients were obtained from hospital information system. In vivo hemolysis was categorized as per the criteria established by previous workers. SPSS statistical software (version 13, USA) was used for all statistical evaluation.

RESULTS:

Of the final 353 clinical AIHA patients evidence of autoimmunization by CTT was observed in 335. Where DAT negative AIHA was observed in 18 (5.1%) patients, 14 showed evidences of autoimmunization by extended sensitive methods. Four patients responded well to AIHA therapy despite DAT negativity by available methods. Severe hemolysis was observed in 4 (22.2%) DAT negative AIHA patients.

CONCLUSION:

We conclude that DAT negative patients with clinical suspicion of AIHA and positive laboratory evidences should be evaluated for the presence of autoantibody by alternate sensitive methods which are otherwise less practiced. Blood banks may establish these useful simple techniques and stick to the defined protocols to diagnose DAT negative AIHA.

PP 99
CASE REPORT ON LEWIS ANTIBODIES DETECTED DURING ROUTINE SCREENING IN A TERTIARY CARE CENTER

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BACKGROUND:

Anti-Lewis antibodies, which are usually not reactive at 37°C, are mostly clinically insignificant. Reports of clinically significant anti-Lewis antibodies causing hemolytic transfusion reactions (HTR) are available.

METHODS:

Among 6 cases, two individuals were healthy voluntary blood donors, two were patients admitted in our Institute for surgical procedures and two referred cases from local hospital for antibody identification. Routine irregular antibody screening in donated blood units are mandatory as per DGHS guidelines and followed in our Institute.

RESULTS:

We report 6 cases of anti-Lewis antibodies reactive at room temperature (RT) and at 37°C. These were found in patients of varied age groups and gender (21 to 65 years) with varied clinical diagnosis. Two pregnant female patients in their second trimester had anti-Le(a) and anti-Le(b) respectively with wide thermal amplitude. Two male healthy voluntary blood donors also were found to be Le (a−b−) with anti-Le(ab) also had wide thermal amplitude. Two male patients with anti-Le(ab) as well as anti-Le(b) respectively with wide thermal amplitude were found during antibody identification after evidence of crossmatch incompatibility. Antigen negative RBC units were transfused in this situation.

CONCLUSION:

Hemodynamic changes in pregnancy may affect certain red cell antigen expression leading to production of naturally occurring antibodies. In case of Lewis the chances of HDFN is extremely rare since Lewis antigens are poorly expressed by fetal cells. Lewis antibodies are usually naturally occurring antibodies present in normal human sera and routine irregular antibody screening in blood donors helps in avoiding untoward events among recipients. Provision of red blood cell antigen phenotyped donor registry shall ensure quick provision of antigen-negative blood for transfusion in emergency situations.

PP 100
ESTIMATION OF ANTI-A AND ANTI-B ANTIBODIES TITRES IN 'O' BLOOD GROUP DONORS FOR SAFE TRANSFUSION PRACTICES.

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BACKGROUND:

High titres of anti A, anti B antibodies in O blood group donors can lead to potential agglutination of erythrocytes of non-O recipients.

AIM:

To estimate risk of dangerous universal donors in blood bank of our state by determining their anti-A - anti-B titres and to evaluate any association with dietary pattern.

METHODS:

It was a prospective study, conducted during period of December 2017 to May 2018 in SMGS hospital, Government medical college Jammu and consisted of 135 'O' blood group donors. Donors were grouped according to their gender, age and dietary habits. All titration were conducted using tube titration technique. Dangerous donors were those, whose Anti-A or Anti-B IgM titres were greater than or equal to 64.

RESULTS:

Among 135 donors (118)87.8% were male and (17)12.2% were female. Out of (104)77% donors who were consuming Mixed diet, (28)26.9% were dangerous and in remaining (31)23% donors who were consuming strict vegetarian diet(8) 25.8% were dangerous.

In aggregate one third 28.1%(38) of the O blood group donors were universal dangerous.There was no significant association between dangerous universal donors and their dietary habits (p value = 0.932) (non significant<0.05)

CONCLUSION:

Substantial portion of universal donor group, not related to their dietary preferences carry a indigenous risk of dangerous titres against A and B antigen. We recommend prior titration of Anti A and Anti B antibodies of O blood group donors in case of transfusion to recipients of non-isogroup so as to avoid Anti A/B related transfusion reaction.

PP 101
MANAGEMENT OF PLATELET REFRECTORINESS IN A PATIENT OF APLASTIC ANEMIA.

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BACKGROUND

Platelet transfusion refractoriness is the failure to achieve the desired level of blood platelets in a patient following a platelet transfusion. The cause of refractoriness may be either immune or nonimmune. Among immune-related refractoriness, antibodies against HLA antigens are the primary cause.Non-immune causes include splenomegaly, fever, and recent chemotherapy.

Immune-mediated refractoriness usually shows little or no increment in the immediate post-transfusion platelet count. Non-immune refractoriness may show an initial rise in platelet count, but a subsequent 8 or 12 hour post-transfusion sample shows a return

to the baseline platelet count.

AIM

Management of platelet refractoriness in a patient of aplastic anemia.

METHODS

The patient, M/26Y, having aplastic anemia got admitted. Hb 6 gm%, platelet count 4000/cumm on admission. Had been transfused more than 100 units of different blood components in last 6 years. He had to undergo major surgery. Received the request of 4 RCC and 8 SDP.After transfusion of 2 RCC, Hb improved but even after transfusion of 6 SDP, platelet count remained static 4000/cumm, without showing a bump up at any point of time. Two more SDP, but no improvement.

As there was no bump up in platelet count for a brief period even, we suspected immune-mediated platelet refractoriness. To overcome this, we had the only option of PLATELET CROSS-MATCH. It was carried out by SPRCA (CAPTURE-P), NEO, IMMUCOR.

RESULTS

Blood group "A" Positive. DAT, IAT and AUTOCONTROL negative. Total 12 potential SDP donor's samples were cross-matched with patient sample. 4 of those gave best compatibility. After 1st SDP transfusion, platelet count increased from 4000 to 20000/cumm. Then 2nd SDP given and platelet count reached to 50000/cumm. This way patient not only came out of impending bleeding crisis but was operated successfully.

CONCLUSION

Platelet crossmatch is a boon to manage platelet refractoriness in a speedy and effective way.

PP 102
OCCURRENCE OF CLINICALLY SIGNIFICANT LEWIS ANTIBODIES (Anti-Lea) IN VOLUNTARY BLOOD DONORS- TWO CASE REPORTS

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BACKGROUND:

Lewis antibodies are usually naturally occurring and of the IgM class. Unless acquired by sensitization from previous transfusion, they are not clinically significant. It is even rare to find idiopathic presence of anti-Lea and anti-Leb which can cause adverse reactions. Sensitive assays are required to detect these IgG type of Lewis antibodies. Aims: To share our experience from two cases with presence of clinically significant IgG class of Lewis antibodies among voluntary whole blood donors for a tertiary care oncology centre in Mumbai.

METHODS:

The blood samples of consenting blood donors were tested routinely as per institutional Standard Operating Procedures (SOPs). Blood grouping and antibody screening were done using commercially available antisera by column agglutination technique (CAT) and 'O' cells. Reactivity in both samples necessitated further analysis by 3-cell and 11-cell antibody screening panel. The samples were tested at room temperature (RT), 370C and Indirect Antiglobin test (IAT) phases.

RESULTS:

The respective blood groups being 'O' Rh positive and 'B' Rh positive in routine blood typing, both samples showed reactivity at 370C and Indirect Antiglobin test (IAT) phase on 3-cell panel and 11-cell panel which delineated Anti-Lea in both. This indicated that the antibodies were probably of IgG type. There was no significant history of sensitizing factors in both donors.

CONCLUSION:

These two cases serve to highlight the presence of Lewis antibodies among donor population which are generally of IgM type. Anti-Lea is the most commonly encountered of the Lewis antibodies and is often detected at RT, 37°C and in IAT phases. Incorporation of testing with potent commercially available antibody specific antisera and extended blood group phenotyping should thus be considered

PP 103
ADVANCES IN TRANSFUSION TECHNICS IS A BOON FOR INTRAUTERINE TRANSFUSION - A CASE STUDY

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Sahyadri Speciality Hospital Blood Bank, Umarji Mother & Child Care Hospital

BACKGROUND:

Foetal anaemia has many causes .Haemolytic disease secondary to maternal (Rh) isoimmunisation is the commonest cause, despite prophylaxis of anti-Rh imunoglobin. Approximately 10% of isoimmunised women have a child affected in the uterus by haemolytic anaemia. Proper pregnancy monitoring enables correct time for the treatment of anaemia and foetal hydrops. Hence new methods of diagnosing and treating this disease are necessary.Before ultrasound technology, the foetal effects of Rh isoimmunisation were detected only at birth. Sensitised Rh-negative pregnant women are monitored using signs of foetal haemolysis & anaemia corrected through intrauterine transfusions (IUT) .

METHODS

A 29 yrs Fifth gravida with bad obstetric history is being treated by Obstetrician for antenatal check up .Considering her history blood group, Anti D titer, Cell panel study was done at 20th wk. Blood group discrepancy was found (Cell A & serum O Rh negative), Anti D titer – 1: 1024, Anti D & anti C antibodies were found.Meanwhile foetal anaemia was noted by assessing the peak systolic velocity in the foetal middle cerebral artery (PSV-MCA). The first IUT was performed when hemoglobin concentration was less than 5 g/dL & haematocrit <30%.O Rh Negative fresh PCV (40 ml),with log 4 leuco- reduction ,NAT tested & Irradiated unit was transfused ..Baby's Hb transiently raised & again dropped .So second IUT was given with same specifications after 48hrs. Baby's Hb had raised & baby is active in womb.

RESULTS

With expert hands of Obstetric team & supply of required blood components with required specifications, baby showed normal intrauterine activities on ultrasound examination, monitering wkly upto 34 wks .

CONCLUSION

For patients with bad obstetric history one need to have prompt team efforts & transfusion support in time for a birth of healthy baby, indicates the authenticity of advanced transfusion technologies .

PP 104
A RARE COMBINATION: X-RAY IRRADIATION AND BOMBAY BLOOD GROUP

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Life Blood Centre, Rajkot

BACKGROUND:

Irradiated blood products are required to prevent TA-GVHD. Patients who are immune-compromised and receiving transfusion from a relative (directed donation) are at increased risk of it. Typically it occurs 10-14 days of post transfusion and is fatal in more than 90% of cases.

Bombay blood group is a rare group with the incidence of about 4 in 10,00,000 in India, in which there is absence of H antigen and presence of anti-H antibodies. So, at time of blood grouping, it looks like O group due to absence of H antigen. Thus, they can donate blood to anybody but can receive blood only from same group people.

AIM:

To transfuse a rare group from a relative (directed donation) in

the safest possible manner.

METHODS:

We at LBC, received blood samples of M/45 Yrs, requesting for 2 RCC for transfusion, admitted for surgical procedure. As routine practice, both forward and reverse blood grouping was carried out using Tube Technique. Simultaneously, antibody screening was done using Gel Technology. We found a discrepancy in blood grouping so patient's RBC was tested against anti-H lectin, which confirmed O Bombay. Patient's siblings were screened. X-ray Irradiation came into picture to prevent TA-GVHD.

RESULTS:

Forward group was O positive while in reverse, there was an unusual reaction with O cells. Reaction with anti-H lectin was negative which suggested the absence of H-antigen. In IAT the reaction was 4+ with each cell. Patient's two brothers were identified as having Bombay phenotype. Both were undergone through donation criteria and successful donation done. Compatibility testing done by CAT method and RCC was issued after X-RAY Irradiation process to avoid TA-GVHD as the donation was from a sibling.

CONCLUSION:

"X-RAY Irradiation" made it safest to transfuse a rare "Bombay group".

PP 105
RARE CASE REPORT OF NEONATAL HYPERBILIRUBINEMIA IN TWINS DUE TO RH HEMOLYTIC DISEASE OF FETUS AND NEWBORN

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BACKGROUND:

Haemolytic disease of the newborn (HDFN) is a very common condition that leads to significant hyperbilirubinemia and anemia in the neonatal period. This condition is secondary to maternal antibodies crossing the placenta and producing hemolysis by destroying the fetal or neonatal red blood cells (RBC) leading to hyperbilirubinemia in neonatal period often requiring phototherapy, exchange transfusion or blood transfusion later in life. Here we report a case in which both the twin had severe hyperbilirubinemia due to anti 'c' antibodies.

CASE PRESENTATION:

Samples of mother (P2L3) who recently delivered twins were sent to us from nearby local hospital with history of neonatal jaundice in both twins. On grouping both mother and neonates were O positive. DAT was positive for both neonatal samples and maternal sample showed a positive IAT. The irregular antibody present on the maternal serum was identified as anti-c with a titre of 128. On Rh antigen phenotyping, mother was CCDEe. ZZAP treatment of both neonatal samples was performed till DAT came negative. The antigen Rh phenotyping of twins revealed to be CcDEe. The father and first child were also O positive and Rh phenotyping gave ccDEe and CcDee respectively. There was no previous history of blood transfusion for mother. The mother was sensitised in her first pregnancy that lead to anti-c production which affected her subsequent pregnancy. Both neonates had immediate post partum serum bilirubin values 17.1 and 17.3mg/dl and hemoglobin values 13.5 and 13.9g/dl respectively who required phototherapy on Day1. 24 hr post phototherapy serum bilirubin values were 13.2 and 13.7 mg/dl and hemoglobin values were 12.7 and 12.1g/dl respectively and exchange transfusion was not required for them. Both mother and infants were discharged on Day 5 with no further complications.

PP 106
BYSTANDER HEMOLYSIS IN SICKLE CELL DISEASE: A CASE REPORT IN SIBLINGS.

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BACKGROUND:

Alloimmunization in sickle cell disease (SCD) may cause delayed hemolytic transfusion reaction/hyperhemolysis(DHTR/H) syndrome. In some instances of DHTRs, the apparent loss of circulating red cells exceeds what would be expected if only antigen-positive transfused red cells were cleared from the peripheral blood. There may be evidence of complement deposition on autologous red cells, with a positive direct antiglobulin test(DAT)due to C3 persisting for up to 100 days. This phenomenon has been called "bystander hemolysis".Typically, bystander hemolysis is mild and is differentiated from autoimmune hemolytic anemia(AIHA) by the absence of anti-IgG reactivity in the DAT and the lack of autoantibody in the eluate.

AIM:

We report cases of brother and sister (aged 14 and 13 respectively) of SCD presenting with pain crisis.They had signs and symptoms of accelerated hemolysis evidenced by an unexplained fall in Hb,elevated Lactate Dehydrogenase, elevated bilirubin, and hemoglobinuria,all occurring between 7 to10 days after RBC transfusion.

METHODS:

ABO grouping and auto-control(4 degrees,37 degrees and room temperature) were done by conventional tube technique(CTT). DAT, antibody screening, antibody identification were done by column agglutination technology(CAT) using orthoBioVue card and Ortho reagent red blood cells(surgiscreen and Resolve PanelA)

RESULTS:

Both had DAT positive(only C3d with IgG negative).Antibody identification of both showed anti-E alloimmunization with negative auto-control. They were successfully managed with avoidance of further transfusions and administration of corticosteroids.

CONCLUSIONS:

DHTR/H syndrome in SCD patients may mimic pain crisis. HTRs may be severe in patients with SCD. In such patients, the degree of anemia may be greater than before transfusion.This is most likely the result of bystander hemolysis of autologous red cells. Pain crisis in SCD patient following transfusion, or the inability to sustain an adequate hematocrit, should suggest the occurrence of sickle cell HTR syndrome.It is important to realize that further transfusion in this setting may exacerbate the anemia and even prove fatal.

PP 107
BLOCKED - D PHENOMENON IN A NEWBORN WITH PASSIVELY ACQUIRED MATERNAL ANTI-D AND ANTI-C

Dr. Anila Mani, Dr.Poornima.A.P, Dr.Debasish Gupta

CASE REPORT

A 27-year-old lady with one live birth and one abortion was admitted at 35 weeks of gestation. Her blood group was A-Rh(D) negative and first child A-Rh(D) positive. She received Anti-Rh(D) prophylaxis after delivery and abortion. No history of blood transfusions.

Indirect Antiglobulin Test (IAT) was positive with a titre of 64 at 16 weeks of gestation. From 24 weeks, fetal anemia warranted intrauterine transfusions. Last transfusion was given five days prior to delivery. Baby was delivered at 35 weeks of gestation.

Baby's blood group on cord blood sample was O-Rh(D) negative. Being a case of fetal anemia requiring intrauterine transfusions, cord blood samples of baby and maternal blood samples were sent to rule

out Hemolytic Disease of Fetus and Newborn (HDFN).

Blood group of mother was confirmed as A-Rh(D) negative. IAT was positive with a titre of 512. Antibody screening and identification showed pattern corresponding to "anti-D" and "anti-C". In order to rule out anti-G, maternal serum was adsorbed onto R2R2(D+C-) cells. Eluate from these cells tested for reactivity against r'r(D-C+) cells were negative. Hence, anti-G was ruled out. Maternal Rh phenotype was D-C-E-c+e+.

The antibody titre against R2R2(D+C–) cells were 512 and r'r(D–C+) cells were 32. Thus, anti-D titre was 512 and anti-C was 32.

Cord blood sample of baby was initially typed as O-Rh(D) negative. Direct anti-globulin test showed weak mixed field reaction. Suspecting blocked-D phenomenon, baby's RBC subjected to elution showed weak mixed field reaction with anti-D revealing baby to be Rh(D) positive. Weak reaction could be explained by the presence of RBC from recent intrauterine transfusions. C antigen typing was negative. Eluate showed reactivity pattern of anti-D.

CONCLUSION

This was a case of HDFN presenting as blocked-D phenomenon due to transplacentally obtained anti-D with coexisting anti-C.

PP 108
PRETRANSFUSION ANTIBODY IDENTIFICATION: A RETROSPECTIVE ANALYSIS OF A TERTIARY HEALTHCARE SYSTEM

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BACKGROUND AND AIM:

The objective of pre-transfusion antibody screening for red cells is to ensure that enough red blood cells (RBCs) survive when transfused. This retrospective study was conducted with the aim to see the prevalence of clinically significant alloantibody/autoantibody.

METHODS:

This study was carried out in a tertiary healthcare center between June 2015 and May 2018. There were a total of 19888 blood samples of patients tested for 3 cell antibody screening by solid phase method using Immucor Capture-R Ready Screen 3. Positive antibody screen were further tested for antibody identification using Immucor Capture-R Ready-ID Panels. In case of presence of autoantibody, presence of alloantibody was detected using Immucor's Elukit & WARM reagents. freshly prepared cord blood was used, when required. Multiple panels and additional reagents were only used for any unresolved or in autoantibody cases.

RESULTS:

Of 177 positive screen samples 111 (63%) sample were identified for having single or multiple allo- antibodies followed by 53(29%) samples having auto antibodies with AIHA and 13(7%) results were found inconclusive having nonspecific antibodies.of allo-antibodies, total 129 antibodies were identified in single or multiple doses, out of them 111(86%) of total identified antibodies were Rh & Kell type (anti-D-52%, anti-E-16.2%, anti-c-7.7%, anti-C-4.6%, and anti-K-4.6%). In total 53 AIHA cases 43(81%) samples were tested having only warm reacting auto-antibodies and 10 (19%) were having autoantibody along with other allo-antibodies. Other clinically significant antibodies detected along with auto-antibodies were anti-Fyb, anti-Jka, anti-Jkb, anti-S, anti-P. In 1 case (2%) autoantibody was tested with specificity of 'Anti-D'. And 2 (4%) samples were identified as Cold AIHA with specificity of 'anti-I'.

CONCLUSION:

The alloantibody detected were mainly against the Rh and Kell phenotype(>85%). Approximately 20% of the AIHA cases were having hidden alloantibodies.

PP 109
THE DOUBLE EDGED SWORD OF HEIGHTENED SENSITIVITY -TUBES, COLUMNS AND TITERS!!!

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BACKGROUND

The time tested method of doing antibody titration is by tube method. With the advent of Column agglutination technology and the ability to automate it is tempting to assess the comparability of this platform in determining titers.

METHODS

This study was done with the aim of comparing Coombs titer of 5 patients and 4 different lots of antisera on tube and column agglutination technology method. For the latter, testing was done on Ortho and Biorad cards.

RESULTS

Of the reagent titers tested on all three methods, despite difference in titers it met quality control requirements. The difference noted varied as follows. Compared to tube technique, Ortho column showed higher titer equivalent to one tube. However, Biorad showed one tube difference for one lot and two tube difference for three reagents. With regard to patient titers, the titers of 2 and 4 correlated well with the Biorad column, but showed marginally increased titer equivalent to two tube difference in the Ortho card. Titers of 8 showed and one and two tube difference and 16 showed a two and three tube difference in Ortho and Biorad respectively.

CONCLUSION

Column Agglutination Technology is clearly a more sensitive platform and higher titers are to be expected if performed using the same. In the case of reagents, the impact on working processes was minimal as all of them were clearly within acceptable quality control ranges. However, in patient samples particularly, in titers of 8 and 16, the discrepancy noted would lead to changes in monitoring and management. It is therefore important to document clinical correlation of titers identified on the Column Agglutination platform before they can be used for clinical care. The difference between various vendors requires attention as well.

PP 110
PREVALENCE OF IRREGULAR RED BLOOD CELL ANTIBODIES AMONG HEALTHY BLOOD DONORS IN SOUTH INDIA.

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BACKGROUND

Although antibody screening of donors is mandatory according to National blood policy of India ,the prevalence of irregular red cell antibody and its specificities are not much reported in South Indian population.

AIMS

To find the prevalence of irregular antibodies and positive Direct antiglobulin test (DAT) in healthy blood donors in South Indian population.

METHODS

This is a retrospective observational study conducted in the department of Transfusion Medicine from April 2011 to March 2018 (7 years) at a tertiary care referral centre, Chennai, Tamil Nadu.Red cell antibody screening of all voluntary blood donors was performed using Commercial O cells (ID Diapool, Diamed Cressiersur Morat, Switzerland). Positive sera were further investigated to identify the irregular erythrocyte antibody by commercially available red cell panel (ID-Dia Panel, Diamed-ID Microtyping System).

RESULTS

A total of 40,629 donors were screened for the presence of irregular erythrocyte antibodies. A total of 57 donors showed presence of irregular antibodies in which 41 (71.9%) were alloantibodies. Most frequent alloantibodies identified were of MNS blood group system with anti-M being highest (n=15, 36.58%) followed by Rh Blood group system 17%(n=7). 16 donors were DAT positive which were detected during routine cross matching. Prevalence of antibodies were higher in females (0.5%) compared to males (0.12%). Majority of the alloimmunized donors were in the age group of 25-44 years.

CONCLUSION

Implementation of red cell antibody screening in all the blood donors routinely helped us understand the prevalence of antibodies in our region and its importance in providing compatible blood products and to avoid transfusion reactions.

PP 111

DIFFERENTIATION OF ANTI-D+C FROM ANTI-G BY DIFFERENTIAL ADSORPTION AND ELUTION METHOD IN A RESOURCE CONSTRAIN SETUP:

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BACKGROUND:

The G antigen is found on red cells possessing C or D antigen. Anti-G antibody serologically mimics a combination of anti-C and anti D antibodies. The challenge of anti G in the antenatal setting is to identify whether anti-D is present or not. If anti-D is absent, the female can still get immunized against D antigen and it warrants RhIG prophylactic therapy. Hence differentiating them is important as anti-D + anti-C cause's severe haemolytic disease of the foetus and new born than anti-G.

AIMS:

We have differentiated anti-G from anti-D+C by differential adsorption and elution method to determine the need of RhIG prophylaxis.

METHODS:

Sera from antenatal mothers, whose antibody identification by 11-cell panel (Dia Panel, Bio-Rad, Switzerland and Ortho clinical Diagnostic) gave a pattern for anti-D and anti-C were selected. The serum of antenatal women were adsorbed by differential adsorption at 370C for 1hr and elution was done by gentle heat elution (at 450C) using R2R2 cells and r'r cells to distinguish anit-G from anti-D + anti-C. Extended phenotyping (conventional tube technique) for Rh system was performed for these antenatal women. Antibody titres of these antibodies were determined and their clinical outcome in the new-borns were followed.

RESULTS:

A pattern suggestive of anti D and anti C combination were observed in all the four antenatal cases. After adsorption and elution all of them confirmed to have anti D and anti-C combination. Antibody titres of anti-C were lower than that of Anti-D. All new-borns were sensitized in vivo and the antibody specificity in them were confirmed with elution studies. All the mothers who had anti-D+C so they didn't need RhIG prophylaxis.

CONCLUSION:

Differential adsorption and elution studies help in distinguishing anti-D plus anti-C from anti-G, thus helping in better patient management.

PP 112

RH ANTIGENS AND PHENOTYPEs IN A POPULATION OF BLOOD DONORS AT A TERTIARY CARE MEDICAL INSTITUTE OF ROHILKHAND REGION, UP, INDIA

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BACKGROUND:

The Rh blood group system is most immunogenic next to the ABO system. Allo-immunization remains a risk for individuals who are transfused with red cells carrying antigens that are deficient on the recipient's red cells. It is imperative for blood transfusion services to be aware of the red cell Rh antigen types and their phenotypic expressions in their local and regional blood donor population.

AIMS:

The present study was therefore undertaken to observe the frequency distribution of common Rh antigens C,c , E, e , and various phenotypes among blood donors ; and further, to evaluate their possible association with gender and major blood groups (A, B, O, AB and Rh- D)

METHODS:

This study enrolled 9091 blood donors. Antigen typing was done by fully- automated immuno- hematology analyzer (NEO) using monoclonal antisera (Immucor , USA). Frequency distribution of antigen types and various phenotypes was observed. Chi- Square test was applied to evaluate their possible association with respect to gender, Rh- D status and ABO type, using statistical software SPSS version 23. Results were considered statistically significant at 95% significance level.

RESULTS:

In the present study, e was the most common antigen with a total prevalence of 98.86%, followed by C (85.05%), c (55.03%) and E (18.03%).Prevalence of D was 94.37%. CCee (44.69%) was the most common phenotype, while CCEe (0.27%) was least common. Other phenotypes included Ccee (28.93%), CcEe(11.11%), ccee(8.34%), ccEe(5.50%) and ccEE(1.14%). No statistically significant association was observed for phenotypes with respect to gender, Rh- D status and ABO blood group ;however the result was statistically significant when antigen frequencies were compared with blood groups of ABO system($p<0.00001$)

CONCLUSION:

A varied frequency of Rh antigens and phenotypic expressions in blood donors necessitates a more rational approach for blood transfusion with appropriate antigen matched blood, to enhance blood safety.

PP 113

ROLE OF BLOOD TRANSFUSION SERVICES IN DETECTING PARA NEOPLASTIC AIHA IN UTERINE CANCER

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BACKGROUND:

Autoimmune Hemolytic Anemia(AIHA) is a paraneoplastic process associated with lymphoproliferative disorders and rarely associated with solid tumors. It may be associated with immune platelet antibodies (evans syndrome),lupus anticoagulants or antibodies to C1esterase inhibitor .AIHA is associated with tumors arising from almost all organs as lungs, breast, prostate ,urinarybladder, kidney, uterus, pancreas, thyroid, liver,ovary ,stomach, cervix, testis. AIHA associated with the tumors is mediated by warm &/ cold antibodies.

CASE REPORT:

A 58 year old postmenopausal lady diagnosed with endometrial adenocarcinoma grade II underwent staging laparotomy in 2013.She

defaulted for 4 years and presented with bleeding per vaginum for 10 days .Ultrasound indicated hypoechoic mass 1.5*1.4 cms in vault. Biopsy indicated poorly differentiated adenocarcinoma(grade III) and was diagnosed as vault recurrence. Chemotherapy with Taxol / Carboplatin was given for 6 cycles. She was assessed for radiotherapy. Mean while, patient was advised blood transfusion for low hemoglobin. There was difficulty in crossmatch and fresh blood sample was requested for Coombs/Antiglobulin test . Direct and Indirect Coombs test and Autocontrol were positive. The laboratoty findings were also suggestive of AIHA.Two units of Least Incompatible PRBC were issued and Hemoglobin increased.

CONCLUSION:

It is identified that AIHA may occur prior to, concurrent with cancer or well after end of treatment,either as a sign of recurrence or in complete remission of the cancer. Tumors of breast,lung,renal cell,bladder ,ovary and cervix have been reported where AIHA occurred at the time of recurrence and was not present at initial diagnosis of cancer. In this case of uterine cancer, AIHA occured at the time of recurrence .The Oncologists may work in close association with Blood Bankers to diagnose AIHA as a marker of disease activity in solid tumors and try to establish the complex immune mediated pathogenesis associated between Cancers and AIHA.

PP114
PREVALENCE OF BOMBAY PHENOTYPE IN A TERTIARY CARE HOSPITAL IN CHENNAI

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BACKGROUND:

Bombay blood group (Oh phenotype) first discovered in Bombay, by Dr. Y.M. Bhende in the year of 1952. Individuals with the rare phenotype (hh) do not express H antigen (also called H substances). Bombay phenotype can donate RBCs to any member of the ABO blood group system if the Rhesus(Rh) antigens are compatible. They must receive blood from the people who have the Bombay phenotype only. In the general population the prevalence of Bombay blood group is about 1 in 10,000 individuals in India and 1 per 1,00,000 individuals in Europe1.

AIMS:

To determine the prevalence of Bombay phenotype in a tertiary care hospital, Chennai.

METHODS:

The ABO and Rh-D typing were carried out in blood donors & recipients by standard cell and serum grouping by test tube method using commercially available anti sera and known cells prepared in house, from pooled blood units. All blood samples showing "O" group were tested with commercial anti-H lectin of Ulex europaeus seed extract for the period of 5 years in Govt. Royapettah Hospital, Chennai.

RESULTS:

Analyzing the results of 31410 study subjects showed that the most common was "O" group (39.6%); 5 oh phenotypes (0.016%) were detected of which 4 were males and 1 female, and all were Rh-D positive.

CONCLUSION:

All blood group "O" blood donors and recipient be routinely screened for Bombay phenotype to reduce the risk of a patient with Bombay phenotype being transfused blood group O blood and causing a fatal blood transfusion reaction. There is need for the implementation of a serum typing or reverse grouping confirmation along with 'O' cell control in reverse grouping procedure in blood transfusion laboratories to detect Bombay blood group, which is commonly mistaken as "O" Blood group.

PP 115
SEROLOGICAL "WEAK D" PHENOTYPE: A DOUBLE TROUBLE - IS GENOTYPING THE ONLY SOLUTION?

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BACKGROUND:

Complexity of the D antigen expression has led to inconsistencies in transfusion medicine. There is variation in reporting of Rh D typing results when testing for Rh D by different methods. Lack of standardized testing and reporting leads to discrepancies when a patient consults at different centres. This issue is pertinent in antenatal cases with regard to administering RhIg.

AIM:

To estimate the prevalence of serological weak D among the patient population in a tertiary care hospital.

METHODS:

Patient blood samples received in the blood bank of Sri Ramachandra Medical College & Research Institute, Chennai for ABO & Rh typing during the period January 2017 to June 2018 were subjected to testing by the conventional tube technique. For Rh "D" testing, IgM anti-D reagent was used. Whenever a sample showed a weaker reaction for Rh "D", further testing for weak D was carried out using IgG anti-D reagent.

RESULTS:

During the study period, 58,800 blood samples were subjected to ABO & Rh typing out of which 124 samples were serological weak D; of these 124 serological weak D, 26 were antenatal cases.

CONCLUSIONS:

Prevalence of serological weak D was 0.2% in the present study. These individuals are to be considered Rh "D" negative as transfusion recipients. If these serological weak D individuals are proven to be Rh "D" positive by genotyping, precious reserve of Rh D negative donor blood can be spared for the confirmed Rh negative patients in case of transfusion needs.Genotyping for RhD can help in resolving the issue of D variants like weak D and Partial D. Consistent practice is important when reporting the Rh D status for all patients, more so in antenatal cases to avoid unnecessary administration of RhIg.

PP 116
A RARE CASE OF BOMBAY RH D NEGATIVE PHENOTYPE IN A PREGNANT PATIENT

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BACKGROUND:

Bombay phenotype or Oh is a rare autosomal recessive phenotype characterized by absence of H, A and B antigens on red cells and in secretions. Bombay phenotype is challenging when patient needs transfusion. We report an interesting case of Rh (D) Negative Bombay phenotype in a pregnant woman.

CASE REPORT:

A 26-year-old pregnant woman G2P1L1was referred at 28 weeks gestation to the Obstetrics and Gynecology OPD. Patient was typed as O Rh (D) negative with positive indirect antiglobulin test (IAT) elsewhere. On blood grouping, discrepancy between cell and serum grouping was observed (cell grouping showed as O negative and serum grouping gave positive reaction with O pooled cells). IAT of patient was positive with 4+ strength using column agglutination technique. Auto-Control and Direct Antiglobulin Test (DAT) were negative. Patient's sample was further tested with Anti-H lectin along with O cells as control and she was confirmed as Bombay Rh D negative phenotype. Past history revealed transfusion reaction with O negative blood. Family screening revealed Bombay Rh D positive

in one of the siblings. Multiple adsorptions were performed with O negative cells to adsorb Anti-H from serum. After adsorption, IAT was negative with adsorbed serum at AHG phase. IgM Anti-H titer was 1:32 and IgG was 1:64. The clinician was informed about the rarity of blood group, difficulty in finding donor of same group, need for Anti D immunoprophylaxis and close fetal monitoring. Her initial hemoglobin was 9.0 g/dl. Dietary advise and hematinics were added to build up her hemoglobin to 11 g/dl. An elective LSCS was planned and she delivered a healthy child at 36 weeks of gestation without any blood transfusion.

CONCLUSION:

The case highlights the importance of grouping with inclusion of O cells in serum grouping and the challenges faced by blood bank to provide rare blood phenotypes.

PP 117

AX SUBGROUP: A CASE REPORT

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BACKGROUND:

Weak subgroups of A can be defined as those of group A subjects whose erythrocytes give weaker or no reactions with anti-A antisera than do those of subjects with A2 RBCs. These weak phenotypes, in majority of the cases result from the expression of an alternate weak allele present at the ABO loci. Weak subgroups of A are A3, Ax, Aend, Am, Ay, and Ael..

METHODS & RESULTS:

Qwalys 3 (Diagast) show discrepancy in cell & serum grouping. Then ABO grouping was done by conventional tube technique after washing the donor and reagent RBCs three times with 0.9% normal saline. Monoclonal anti-A and anti-B and anti-A,B antisera were used to reconfirm the routine findings. Agglutination of donor red cells by anti-A1 and anti-H lectin was also determined. The result was confirmed after microscopic examination. For confirmation of blood group adsorption-elution and saliva testing was done.

The results of above tests show that the blood group of donor was AX Rh D positive.

CONCLUSIONS:

Identification of Ax subgroups is important because these donors may be mistyped as group O. It is very dangerous when these units transfused to O blood group patients. This is due to naturally occurring anti-A and anti-B antibodies present in O blood group patients.. Similarly since Ax individuals almost always have anti-A1 antibodies in their serum. If clinically significant, they can lead to fatal transfusion reactions on transfusing their whole blood or plasma to group A individuals. All the donors should personally inform about their group and issue a special blood group card.

PP 118

AINT BLOOD GROUP: A CASE REPORT ON RARE SUBTYPE OF BLOOD GROUP A

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BACKGROUND:

A1 (80%) and A2 (20%) are the major subgroups of A. This differentiation is based on the basis of reactivity of A1 cells but not A2 cells with anti-A1 lectin. A2 cells show increased reactivity with anti-H lectin. The role of subtyping group A is critically important as A2 organ can be transplanted to O group not A1 group. The incidence of Aint subgroup is unreported in this region.

CASE REPORT:

A 23-years male came to Blood Bank, AIIMS Raipur as replacement donor. He was screened and found fit for donation. 350 ml whole blood was collected. All the pre-donation, donation & post-donation protocols were followed. After donation, blood grouping was done by tube method. Forward grouping was done with commercial monoclonal antiseras anti-A, anti-B, anti-D1 and anti-D2 (monoclonal anti-D antiseras from different lots) and reverse grouping done with DAT negative pooled A cell, B cell, O cell and Autocontrol. It came out to be A-positive. It was further tested with anti-A1 lectin which gave 1+ reaction. On further testing with anti-H lectin, it showed 4+ reaction. On saliva testing, both A, and H substances were present. Based on these results it was typed as subgroup of A- A intermediate (Aint) group. However we were not able to perform molecular tests.

CONCLUSION:

Aint is considered a heterogeneous subgroup commonly seen in black people than in white ones. In India, the incidence of Aint was reported to be 2% in Maharashtra. There is no reported case of Aint in this region and this would be the first reported case. Our report points to the need to perform molecular tests or flow cytometric analysis in certain cases. We also recommend that Anti-A1 and anti-H lectin must be mandatorily used for typing of all A blood group.

PP 119

BLOCKED D PHENOMENON: A CASE REPORT

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BACKGROUND

Blocked D phenomenon is one in which all the D antigens on fetal D Pos cells are coated with maternal IgG Anti-D, making fetal red cell typing difficult. It is encountered in cases of severe HDFN. The D antigen of Rh system being most immunogenic is the most common cause of HDFN. Since the Rh antigens are fully expressed at the time of birth, unlike the weak expression of ABO in neonates, confirming the Rh status can be difficult at times. Here we report a case of Blocked D in a 2 days old infant born to a Rh negative mother.

CASE REPORT:

Sample of 2 days old male baby c/o suspected HDFN was received for confirmation of grouping and DCT. Mother was 28yr old G4P2L2A1 case of Rh incompatibility. Mother's blood grouping was found to be AB Neg and father's group was B Pos. Mother's antibody screen and identification revealed anti-D with a titre of 1:256.

Baby had jaundice on day 1 of life with total bilirubin of 19.6g/dl. DCT was 4+, but the grouping was found to be AB Neg. Hence grouping was repeated with warm saline wash in conventional tube technique. Repeat grouping was found to be the same (AB Neg).

Heat elution was done to remove the antibodies coating the red cells. Antibody identification of eluate from the baby sample revealed anti D. Grouping of eluted cells was found to be AB Pos.

CONCLUSION:

Blocked D phenomenon is believed to be far more likely in theory than in practice. With the use of commercial monoclonal reagents, rate of false negative Rh typing is usually very less. However, if not identified promptly, it can cause delay in making a diagnosis Rh-HDFN and further management.

PP 120

WHEN SAFETY IS IN NUMBERS- THE ROLE OF MULTIPLE REAGENTS AND PLATFORMS IN Rh (D) TYPING

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BACKGROUND:

Assigning Rh (D) status confidently is extremely important in the practice of transfusion medicine. The immunological implications of wrongly assigned Rh (D) status are well known and have implications of great magnitude. We report here a case of a 12-year-old female

child in whom a discrepancy of Rh typing related to the reagent used was observed.

CASE REPORT:

A request was received for a unit of RC for a 12 years old female child with Glanzmann Thrombasthenia. As per institutional protocol ABO and Rh typing was performed using both tubes and column agglutination platform (CAT). The former showed a clearly negative reaction with Anti D whereas latter showed 3+ reactivity. The tube was subjected to weak D testing which showed a 3+ reaction. Given this difference the sample was retested using tube technique with alternate reagent and 2 different CAT and positivity noted in all these. The clear negativity noted on the tube technique with just one reagent raised the possibility of this being reagent related. In order to address this, the test was repeated with 4 different lots of the same reagent which were again clearly negative. Titers in all of these lots met quality control requirements. Subsequently molecular typing using PCR SSP was performed for both weak D and partial D. Results showed it to be clear Rh positive.

CONCLUSION:

This D positive child who demonstrated negativity with one particular reagent demonstrates the challenge of assigning D antigen status when there is variability of reagent reactivity. It was strange that 4 different lots of a particular D typing reagent continued showing negativity while 4 other reagents on 2 different platforms showed positivity which was confirmed by molecular typing. This case highlights the need for multiple platforms and multiple reagents for immunohematology testing.

PP 121
OVERCOMING DARATUMUMAB INTERFERENCE IN IMMUNOHAEMATOLOGY TESTS – A CASE REPORT

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BACKGROUND:

Drug interference is a well-known phenomenon in Transfusion medicine. Interference with routine methods for compatibility testing for blood transfusion puts patients at risk for delay in receiving compatible blood. Daratumumab, a novel IgG1k anti-CD38 monoclonal antibody which effectively targets human myeloma cells, shows an unexpected interference in routine immunohaematology tests.

CASE REPORT:

49 year old male, a known case of Relapsed refractory IgG-K multiple myeloma had disease relapse on day +135 post autologous stem cell transplant (SCT). It was planned to get him into remission with novel agents followed by matched sibling donor allogeneic SCT. Despite therapy, he had progressive disease with increasing monoclonal protein, and he was started on monoclonal antibody Daratumumab based protocol.

Initial antibody screen using commercial three cell panel, Direct and Indirect AHG were negative. He received 11 units of AHG compatible packed cells pre-Daratumumab therapy. Extended phenotyping could not be done as the previous transfusion was within three months. After the initiation of Daratumumab therapy, antibody screen, direct and indirect AHG became pan reactive (2+). Crossmatch with multiple units were compatible upto 370C, but incompatible at AHG phase. In order to eliminate the interference of anti-CD38, donor units and reagent cells were treated with dithiothreitol (DTT). After DTT treatment with standard protocol the antibody screen was negative and the RBC units were AHG-compatible. The patient was transfused with compatible RBC units and no hemolytic transfusion reactions were observed. Since the RBC units were AHG compatible prior to the initiation of daratumumab, we suspected that daratumumab interfered in pretransfusion testing.

CONCLUSION:

Daratumumab interferes with the antibody screening, causing a panreactivity that can mask clinically significant allo-antibodies. Routine serological methods are ineffective in circumventing the interference in compatibility testing, there by resulting in an unexpected delay in finding suitable blood for these patients.

PP 122
DOES RED CELL ALLOIMMUNIZATION CONTINUE TO CHALLENGE BREAST FED BABIES? A UNIQUE CASE REPORT

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BACKGROUND

Nature has provided adoptive immunity in two instalments during early mammalian life.As pregnancy progresses,the maternal immune system shifts away from Th1- and towards Th2-driven responses,a unique humoral bias which facilitates the transmission of maternal IgG across the placenta, while IgA largely in extrauterine life through breastmilk.We present a case report of IgG red cell antibodies being transferred through breastmilk and persisting at six months.Literature search showed this to be the second case being reported worldwide.

CASE REPORT

Blood sample of a six month old child was received for blood grouping and compatibility testing. Antibody screen was positive and alloantibody with anti-Kell specificity was identified.Careful revisiting of the history showed no sensitising events.Hence the mother was tested and was found to have anti Kell antibodies.

The maternal IgG in newborn declines progressively over 1-2 weeks as the antibody slowly breaks down.These observations led to the question of whether IgG RBC alloantibodies continued to be passively transferred from mother to child via breastmilk.Therefore consent was obtained and breastmilk was tested which confirmed positive for anti-Kell specificity.

The titres of these antibodies in maternal serum, breastmilk and baby's serum were found to be 1:1024, 1:2 and 1:8 respectively. Transmission through breastmilk may be due to the markedly high titers in mother. Monospecific DAT with breastmilk showed IgG isotype.Further, subtyping of IgG showed presence of IgG1 in both maternal and baby's serum but not in breastmilk owing to very low titers.No evident hemolysis was seen as the child was Kell antigen negative.

CONCLUSION

We report that maternal anti-KELL antibodies were present in breastmilk and were capable of being transferred to feeding child. This persisted at six months of age.If antigen positive, the child could have had an ongoing hemolysis.Breastmilk as a source of antibodies should be considered in children with unexplained anaemia.

PP 123
ANOMALOUS BLOOD GROUPING EXTRINSIC TO RBCs MIMICKING Bel PHENOTYPE THAT WAS NOT TO BE !

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B.T.O

BACKGROUND:

Discrepancy in 'forward' and 'reverse' grouping leads to confusion in ABO-typing. Mostly it could be genetic in nature, classified as per the presence and/ or absent of antigen on RBCs and antibody in plasma as well as antigen in saliva.

AIM:

To study the grouping anomaly in a recently delivered woman who required transfusion. METHODS:

A standard protocol, including testing the patient's RBCs with battery of antisera, absorption-elution, and saliva was followed.

RESULTS:

The case: A 27 year old female 4 gravida, 3 para required transfusion to correct her hemoglobin. While grouping, her red cells showed group O while serum showed an absence of anti-B. Her RBCs did not react with anti-B or anti-A,B in the battery of anti-sera used. Anti-B was eluted from her sensitized RBCs by anti-B or anti-A,B. Saliva possessed H but no B antigen, indicating to Bel phenotype. The follow up investigation after 2 weeks' revealed her RBCs group O as was found on previous occasion, but her serum now had anti-B with hemolytic property having an agglutinin titer of 1:512, IgG titer of 1:128 after treatment of serum with 2ME. The problem of missing antibody on earlier occasion was thought to be due to a complement fixing high-titer IgG anti-B that showed an atypical prozone phenomenon due to the deposition of C1qrs macromolecule causing physical distance and thereby preventing the cross linking of the antibody coated RBCs.

CONCLUSION:

The unusual case of erroneous reverse grouping was attributed to complement mediated inhibition of the antibody. One must keep this point in mind while evaluating such rare observation.

PP 124

PRESENTATION OF ANTI-M REACTING AT WIDE THERMAL AMPLITUDE AND ITS CLINICAL/LABORATORY SIGNIFICANCE

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BACKGROUND

Anti-M is naturally occurring saline agglutinins that react below 37°C. These antibodies are considered to be clinically significant when they are reactive at 37°C causing HDFN and DHTR. Anti-M appears to be more common in children than in adults and is particularly common in patients with bacterial infections.*

AIMS

To study the serological spectrum of Anti-M and its clinical/ laboratory significance

METHODS

This Study was conducted in the Department of Transfusion Medicine, TNMGRMU from Aug 2016-July2018. The group discrepant samples are further evaluated by advanced Immunohematological work-up. If the antibody identified as anti-M, its thermal amplitude was ascertained by tube technique.

RESULTS

In our study, among the discrepant samples, 4 cases of Anti-M identified. Out of 4 patients, 2 were males and 2 were females. One male patient had history of prior blood transfusion and other had no history of sensitization. Both female patients were multigravida and one was presented at 6 weeks of pregnancy.

3 of the four samples were IAT positive. Antibody screening and identification revealed the presence of anti-M antibody. After auto-adsorption, the mono-specific differential card revealed the type of antibody as IgG. Since one of the female patients being antenatal mother, antibody titration was done; anti-M titre is 2. She is on regular follow-up. The other two cases were transfused with antigen negative compatible blood.

The remaining one sample without history of sensitization, IAT showed positive reaction at IS and negative reaction in 37oC. However, antibody screening and identification at IS phase revealed anti-M antibody, most probably naturally occurring Anti-M antibody.

CONCLUSION

Our study has revealed the significance of maintaining M antigen negative blood donor registry for transfusion in emergency situations, even though anti-M is widely accepted as naturally occurring insignificant antibody.

PP 125

IMMUNOHEMATOLOGICAL DISCREPANCIES- ALWAYS A SINGLE ETIOLOGY? - A CASE OF SUSPECTED PARA-BOMBAY BLOOD GROUP.

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BACKGROUND:

The parabombay groups have always defied and tested the immunohematologists. These individuals who are H deficient, who might have weak or absent anti-H activity could remain undetected but have serological reactions which can be extremely confounding. We report here a case for whom a parabombay group was suspected.

CASE REPORT:

A request was received for a 50-years old female requiring gastroscopy. Her reports from outside showed her blood group to be A positive. Blood grouping done in our laboratory using two different platforms showed forward typing reactions consistent with A positive blood group. However, the discrepancy was noted in the reverse typing, which alongside 4+ reactivity with B cells which was expected, also showed weaker(1+) reactivity with A cells and O cells. However, this positivity was demonstrable in 2 out of 3 A and O cells. The red cells showed a clearly negative reaction with H lectin. The lack of positivity in all A and O cells tested, raised the possibility of a co-existing alloantibody. Antibody screening a performed was negative but reverse typing done at room temperature was positive. A repeat Antibody screen and ID done at 40C showed reactivity consistent with anti-Leb antibody. The patient's phenotype was found to be Lea-Leb-. ABH secretor status was negative. The crossmatch done with 1 Bombay and 5 O red cell units were compatible both at room temperature and coombs phase. The compatible units which were also Leb negative were made available for the patient.

CONCLUSION:

This case highlights the needs to consider multiple etiologies for discrepant serological findings in immunohematology and also the complexities in identifying an alloantibody complicating the patient with a possible Para-Bombay group.

PP 126

OUR EXPERIENCE OF ABO-HEMOLYTIC DISEASE OF NEWBORN - CASE SERIES FROM A TERTIARY CARE HEALTH CENTRE OF NORTH INDIA

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BACKGROUND

ABO-Hemolytic disease of newborn (HDN) is caused by maternal and fetal ABO incompatibility, mainly seen in neonates of blood group A or B born to mothers of blood group O. With the introduction of Rh immune globulin (RhIg) the incidence of Rh D allo-immunization has decreased over last few decades. Consequently hemolytic disease of newborn due to ABO incompatibility and other allo-antibodies have now emerged as major cause of HDN.

AIM-

To assess the severity and clinical outcome of ABO HDN in our settings

METHODS

Routine investigations are raised from neonatology department after delivery of neonate for direct antiglobulin test (DAT) and ABO blood grouping and are sent to immuno-hematology lab. From May to July 2018, there were 4 cases of ABO–HDN diagnosed. In all cases mother was group O so, serum IgG titre was performed for anti A and anti B. Treatment and clinical outcomes of all the four cases were analysed.

RESULTS-

Forward grouping for all cases was B+ve, except one which was A+ve. Mother serum anti A titre were from range 1:512 to 1:1024 ,

similar results were seen for anti B. Titre was also done on eluate of neonate samples which range from 1:128 to 1:1024 for anti A , and from 1:512 to 1:1024 for anti B.

CONCLUSION

-ABO-HDN incidence is 15-17% in Indian population. ABO-HDN should be suspected in neonate with blood type A or B born to mother blood type O with antibody screen negative. Most of the cases of ABO-HDN had benign clinical outcome without the need for exchange transfusion. The intervention of choice was phototherapy, which was also done in the present four cases.

PP 127

RED CELL ALLOIMMUNIZATION IN MULTI-TRANSFUSED PATIENT POPULATION: A STUDY FROM A TERTIARY CARE HOSPITAL IN ODISHA.

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BACKGROUND:

Alloimmunization to red blood cell (RBC) blood group antigens remains a major complication for multi-transfused patients and often presents significant challenges in their medical management. Sensitization to Rh antigens (D, C, c, E, and e) and to K comprise the majority of the RBC antibodies encountered. One major explanation of the high rates of alloimmunization is the disparate distribution of RBC antigens between donors and patients.

AIM:

To assess the incidence of RBC alloimmunization in multi-transfused patient population at a tertiary care hospital in Odisha.

METHODS:

Antibody screening was carried out in 783 multi-transfused patients(thalassemia, Sickle cell disease(SCD) and oncology patients) prior to crossmatching with a commercially available three-cell panel(surgiscreen). Antibody screen-positive samples were analyzed for the specificity of the alloantibody with an eleven-cell identification panel (Resolve Panel A). Above tests were done by Column agglutination technology(CAT) using OrthoBioVue card.

RESULTS:

The overall incidence of RBC alloimmunization in multi-transfused patients was 3.19% (25/783), with one case of multiple alloantibodies(anti-c and anti-JKb).Rh alloantibodies were the most common 53.84%(14/26) while Non-Rh alloantibodies being 46.15% (12/26) consisted of MNS 11.53%(3/26), Kidd 7.69%(2/26), Lewis 7.69% (2/26), Lutheran 3.84%(1/26)and unknown antibodies 15.38%(4/26).The highest incidence of alloimmunization was observed in thalassemia patients (2.04%), followed by SCD(0.76%) and oncology patients (0.38%).

CONCLUSIONS:

Most of the alloantibodies detected in the current study were clinically significant and patients were transfused with antigen-negative crossmatch-compatible blood. Therefore, antibody screening on patients' samples prior to crossmatching needs to be initiated to ensure safe transfusion practice.

PP 128

ALLOIMMUNIZATION WITH MULTIPLE ALLO-ANTIBODIES IN A PREGNANT FEMALE.

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BACKGROUND :

Unexpected antibodies in the recipient pose a challenge to blood transfusion services, more so, when multiple allo-antibodies are present. We hereby report a case of a pregnant female with multiple allo-antibodies.

CASE-REPORT :

A 27 years old pregnant female G2P1L1 with previous caesarean section, presented at 32 weeks of gestation with leaking per vaginum in department of Obstetrics and Gynaecology. Requisition for two units of packed red blood cells was received in blood bank. Patient was typed as AB RhD Negative but discrepancy between cell and serum grouping was observed (cell grouping show AB RhD Negative but serum grouping gave weak positive reaction with A1, B, O pool cells). The direct antiglobulin test and auto-control was negative whereas Indirect Antiglobulin Test was positive. Antibody screen and identification with 3 and 11 cell panel was performed which identified D, C and Jka . Total twelve packed red blood cell bags were typed for D, C, and Jka antigens, out of these only three bags were negative for all three antigens and found compatible with patient's sample. Patient delivered a low birth weight female child by caesarean section but did not require transfusion. Baby was typed as B RhD Positive and direct antiglobulin test was positive. Sample of the baby and father were phenotyped and both were positive for D, C, and Jka antigens. Baby developed jaundice and total serum bilirubin levels reached 20mg/dl on day 4. Baby was managed with phototherapy and one double volume exchange transfusion with packed red cell unit identified negative for these antigens.

CONCLUSION:

This case highlights the importance of performing antibody screening during antenatal period to detect the presence of clinically significant allo-antibodies.

PP 130

ANTI M : REPORT OF TWO CASES IN DONOR AND PATIENT AND ITS CLINICAL SIGNIFICANCE

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BACKGROUND:

Anti M is a common naturally occurring antibody, mostly reactive at temperature below 37°C and considered clinically insignificant. Sometimes, it is active at 37°C and may cause hemolytic transfusion reaction and hemolytic disease of newborn. We encountered two cases of anti M in our laboratory. One in a donor presented as Indirect antiglobilin test(IAT)positive and other in a patient presented as crossmatch incompatibility.

CASE REPORT:

CASE 1: A 20yr old male first time voluntary donor was typed as O Rh D negative on cell and serum grouping .Weak D testing was negative, but IAT was 2+ positive. Antibody screen and identification panel (Bio Rad,DiaMed, switzerland) revealed the presence of anti M antibody. Donor was phenotyped as M antigen negative. Anti M detected was reactive at 4°C with homozygous cells and non reactive at 37°C and Antihuman globulin (AHG) phase. There was no history of blood transfusion, suggesting it as naturally occurring clinically insignificant antibody.

CASE 2: A 3yr old male child with pyrexia of unknown origin, presented with signs and symptoms of anemia with Hb 2.4 g%. Blood group of the patient was B Rh D positive. Two units were crossmatched and were incompatible. DAT and autocontrol of the patient were negative, but IAT was 3+ positive. Antibody screen and identification panel (Bio Rad, DiaMed, switzerland) showed the presence of anti M. Patient red cells were M antigen negative. Antibody reacted at 37°C and AHG phase of IAT . Two M antigen negative PRBCs were crossmatched, were compatible and transfused uneventfully. Since there was no history of blood transfusion ,it was naturally occurring clinically significant antibody.

CONCLUSION:

Anti M are mostly cold reactive antibodies.sometimes, may cause HTRs and HDFN. Special immunohaematology card should be issued alerting nature and type of antibody.

PP 131

PHENOTYPE PATIENT WITH POLYTRAUMA

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BACKGROUND:

Correct determination of blood group by forward and reverse grouping is a vital step in pre-transfusion testing. We report transfusion management of a 37-year old polytrauma patient with Bombay (Oh) RhD negative group.

AIMS:

To determine the actual blood group of the patient and manage his transfusion requirement.

METHODS:

Blood grouping and antibody titer were done by tube technique. Antibody screen (ABS), direct antiglobulin test (DAT) and compatibility testing were done using gel technique (Bio-Rad, Switzerland). To characterize IgM and IgG di-thiothreitol (DTT) treatment of serum was done.

RESULTS:

Forward grouping was O RhD negative, while the reverse grouping showed 4+ agglutination with A, B and O cells. Anti-H lectin reactivity was negative, so the blood group was concluded to be Bombay (Oh)RhD negative. Autocontrol and DAT were negative, and ABS was 4+ (all 3-cells). IgM and IgG titer of anti-H was 1024 and 512, respectively. Before referral, he was transfused multiple O RhD negative PRBCs which might have resulted in hemolytic transfusion reaction. The patient was severely anemic (Hb=4.4 gm/dl) and his renal functions were deranged (urea=220 mg/dL;creatinine=4.9 mg/dL). As the urine output was low (~700mL/day) he was on regular dialysis. Among his first-degree relatives, his brother was found to be OhRhD negative, whose blood was collected and the PRBC transfused to the patient after irradiation. An extensive search was also made through NGO websites and telephonic communications with other blood banks. Two units of OhRhD negative were arranged by an NGO through their registry and air-shipped to our centre. The PRBCs were transfused to the patient without any adverse reaction (Hb=6.8 gm/dl).

CONCLUSION:

Detection of Bombay phenotype requires careful performance of forward and reverse grouping and transfusion management of such rare group patient needs a rare donor registry for ensuring timely availability.

PP 132

WEAKER SUBTYPE OF 'A' DETECTED IN A HEALTHY VOLUNTARY BLOOD DONOR

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BACKGROUND:

ABO subgroups are phenotypes that differ in the amount of A & B antigen carried on red cells & present in secretions . Several weaker subgroups have been described (eg. A3, AX, Am,A el) which are very infrequently encountered.

Here, we present a case of weak A subgroup detected in a 32yr male healthy voluntary blood donor .

AIMS:

The adsorption -elution and saliva testing plays an important role in resolving ABO blood group discrepancies.

METHODS:

Both EDTA & clotted samples were collected . Blood grouping done by conventional tube technique.DAT was done by polysp. Gel card method . Adsorption elution done using Human polyclonal anti-A sera. Saliva was tested for secretor status . Anti-A1 titre was performed by pooled A1 cells in double dilution technique.

RESULTS:

Blood grouping by CTT method using monoclonal antisera. FORWARD GROUPING showed 1+ reaction with anti-A, negative with anti-B, 4+ with anti-D,4+ with anti-H,1+ with anti-AB, negative with anti-A1. REVERSE GROUPING showed 2+ reaction with pooled A1 cells, 4+ reaction with pooled B cells, and negative with pooled O cells . Saline control & DAT were negative . The reaction strength with pooled A1 cells persisted up to 4 dilution at room temperature.

Adsorption with polyclonal anti-A (three serial adsorption from healthy B group individual) and heat elution (560C for 10mins) showed agglutination with A cells from six individual donor units on immediate spin .

Agglutination- Inhibition testing done on saliva showed ' H' secretor only.

CONCLUSION:

Blood group confirmed as weaker subtype of 'A'. The pattern shows probable blood group is Ax .Since we could not perform the molecular testing ,the exact subtype of A could not be confirmed.

Adsorption elution and saliva testing appears to be an useful tool to resolve ABO blood group discrepancies.

PP 133

AN ALGORITHM TO SIMPLIFY COMPLEX ANTENATAL RED CELL ANTIBODY WORKUP TO GUIDE THE CLINICAL MANAGEMENT

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BACKGROUND:

Rh blood group system is most often associated with Hemolytic Disease of Fetus and Newborn (HDFN) predominantly by D antigen. Anti G antibody can cause HDFN either alone or in combination with anti D or anti C. Proper antibody identification and providing a clinical guidance on the fetal outcome can be challenging to the immunohematologist for such cases. This study was aimed to simplify the workup so that timely RhIg can be given to the patient.

METHODS:

We retrospectively collected data from the blood bank software of all the ante natal antibody screening request over three years. Patients with a positive antibody screening and identification were categorized into pattern suggestive of anti G or others. Anti G gives a pattern of anti D plus anti C in the identification panel. All tests were done using BioRad screening and identification panel in ID system.

RESULTS:

Mean age of 30.64 (SD=7.82). The commonest blood group was O negative (39.32%) followed by B negative (34.28%). 66 patient showed reactivity pattern of anti D and 21 showed a pattern of anti D plus anti C or anti G. 3.2 % patients were couldn't rule out the presence of anti E or anti C and the frequency of pattern suggestive of anti G was 11.2%. The complex workup pattern to identify anti G can be simplified by adsorbing onto dCe/dCe cells. The adsorbed sera is then treated with DcE/DcE cells to confirm the presence or absence of anti D (Illustration).

CONCLUSION:

A simple Immunohematological work up can guide the clinician to administer RhIg when the antibody shows pattern of anti G.

PP 134

EFFECT OF PLATELET TRANSFUSION ON THROMBOCYTOPENIA IN PATIENTS WITH DENGUE HEMOMORRHAGIC FEVER IN A TERTIARY CARE CENRE IN KERALA

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BACKGROUND

The proposed study is an analysis of the effect of platelet

transfusions on thrombocytopenia in the management of patients with Dengue hemorrhagic fever.

Responses to platelet transfusion are quantified using the Corrected Count Increment (CCI) at 1 hour after transfusion and 24 hours.

1st hour CCI above 7500 and 24 hour CCI above 4500 is considered to be evidence of a successful transfusion and 2 transfusions with CCIs below 5000 to 7500 within an hour after transfusion are evidence of refractoriness. Percentage Platelet Recovery calculated both at 1 hour and 24 hours.

AIMS

Primary objective

To know the outcome of platelet transfusion in patients with dengue hemorrhagic fever in a tertiary care centre during the period of my study

Secondary Objective

To know the factors responsible forrefractoriness in patients with dengue hemorrhagic fever.

METHODS

Study Design –longitudinal study of effect of increments in platelet counts in patients with dengue hemorrhagic disease who received platelet transfusion therapy.

Study Duration – One year six month .

Study Subjects – Patients above 14 years , enrolled in the study after taking written informed consent.

Sample size:

Out of total 1067 patients suspected of dengue fever since January 2017 upto June 30th 2018, 106 patients confirmed for Dengue, 40 patients had bleeding manifestation, and had underwent platelet transfusion.

RESULTS

The mean age is 41.75 with standard deviation 14.42

Out of total 40 patients, 12.5 % patients has refractoriness at 1 hour and 25% for 24 hours.

The grade of dengue hemorrhagic fever is statistically significant with refractoriness of CCI 1hour and CCI 24 hour.

Out of 22 males 18.2% have refractoriness at CCI 1 hour and 31.8% has refractoriness at CCI 24 hour , not statistically significant.

Pretransfusion count and blood group not statistically significant with CCI 1 hour and CCI 24 Hours.

PP 135
HIGH IMMUNOGLOBULIN-G TITER OF ANTI-H IN A CASE OF BOMBAY PHENOTYPE

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BACKGROUND-

Bombay blood group (h/h or Oh phenotype) is a rare blood group, first discovered at Bombay in 1952. In Bombay Blood group H antigen and Secretor substances are absent due to lack or mutation of FUT-1 and FUT2 genes. Naturally occurring anti H antibody is predominantly IgM in nature and exhibits wide thermal range between 4oC to 37o C and reacts with all red cells except the Oh phenotype .

Here we present a case of a 50 year old male with Bombay blood group and high titer of Anti-H IgG.

AIMS-

To identify the presence of Anti-H IgG in Bombay phenotype and its strength.

METHODS-

We received a sample in our Immunohematology(IH) lab due to cross-match incompatibility. The blood group of the sample was mentioned as 'O' Rh 'D' Positive.

The IH work-up included Direct Antiglobulin Test(DAT), forward and reverse grouping by Conventional Tube Technique(CTT), antibody screening and antibody titer in saline phase [4□, room temperature(RT) and 37□] as well as in anti-human globulin(AHG) phase was done. The serum was also treated with 0.01(M) dithiothreitol(DTT) to remove the IgM. Then the titer of the DTT treated serum was done.

RESULTS-

The saline control and DAT were negative. Forward grouping showed 'O' Rh'D' positive, reverse grouping of the serum showed strong agglutination with pooled 'O' cells at RT. There was no reaction with anti-H lectin .Saliva studies showed non-secretor status.

The IgM titer of Anti-H was upto 128 serial dilution in RT. Then the serial dilution of DTT treated sera with pooled 'O' cell showed 2+ reaction strength in upto 512 dilution in AHG, suggestive of the presence of anti-H IgG of high titer.

CONCLUSION-

Both IgM and IgG immunoglobulins were detected in the serum. The titer of IgG was of clinically significant level.

PP 136
SEVERE HAEMOLYTIC DISEASE OF THE FOETUS IN AN 'ELEVATED D' PREGNANCY:A RARE CASE REPORT FROM WESTERN INDIA

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ABSTRACT

The D-/- phenotype is a very rare variant of the Rh system, in which the red cells express D,but no C,c,E,e antigen.These individuals may become sensitized to certain high-frequency antigens of the Rh system through transfusion or pregnancy.Sensitized women carry a major risk of HDFN due to one or more clinically significant antibodies,including anti-Rh17.This presents a major challenge in case management due to unavailability of an antigen negative blood for IUT/ET.

A 23yrs old G2P1L1A0 women with blood group A RhD+ was diagnosed and worked up as a case of HDFN.ICT of the mother was 3+ at 20wks Period of gestation(POG) with panagglutination in the antibody identification panel(4+) with autocontrol negative. IHL workup revealed the patient's phenotype as RhD+C-c-E-e-(ELEVATED D).Antibody titre was 1:128 with a normal Ultrasound at 20wks.

Serial IHL and radiological workup were carried out on the patient,her relatives(to find compatible blood for IUT),and on the foetus(through cordocentesis) to monitor the severity of HDFN. Cordocentesis done at 24wks revealed the foetal blood group to be B RhD+C+c-E-e+,DCT 4+,and Hb 2.8mg%.Ultrasound examination with MCA-PSV at 24wks indicated a rapid development of fetal anemia and progression to hydrops foetalis.

IHL workup of the patient's family revealed blood group A Rh D-/- phenotype in all her siblings(ABOi with foetus).An attempt was then made to find a D-/- compatible blood by working up possible donors from multiple blood banks in the city.However rapidity of progression of foetal anemia and unavailability of a compatible blood for IUT resulted in foetal demise at 27wks POG.

The case suggested that pregnancy in a D-/- woman maybe affected with a rapid progression of hemolysis in the foetus.Timely interventions like dedicated inventories for such rare blood groups at earmarked centers and the possibility of ABOi IUT should be kept in mind to avoid such outcomes.

PP 137
DRUG INDUCED HEMOLYTIC ANAEMIA AND THROMBOCYTOPENIA - A CASE REPORT

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BACKGROUND

Ceftriaxone, a third generation cephalosporin has been reported

to occasionally cause drug induced immune hemolytic anaemia (DIHA) and thrombocytopenia (TCP). We hereby report a case where serologic workup of a patient showed ceftriaxone induced DIHA and TCP.

CASE REPORT

A 19 year old male patient operated for gangrenous ileus showed continuous decreasing trend of haemoglobin and platelet count despite multiple transfusions of PRBCs and platelets. All PRBC units issued were compatible in AHG phase (tube method). So, Direct antiglobulin test (DAT) and Indirect antiglobulin test (IAT) were performed using column agglutination test. The patient's IAT was negative. DAT was strongly positive (4+) with polyspecific AHG (anti IgG and anti C3d). After gentle heat elution, DAT was negative. The IAT of eluate from patient´s red blood cells (RBC) did not appear to cross react with commercial O pooled RBC´s. Detailed history of patient revealed, postoperatively he was on ceftriaxone and piperacillin-tazobactam for last 10 days. So, considering the possibility of DIHA and immune TCP, tests for drug dependent antibodies were performed in the presence and absence of target drugs. Haemagglutination was observed when enzyme treated O pooled cells were incubated with patient's serum, serum sample from healthy donors and 1% suspension of ceftriaxone but no reaction was observed when same mixture was used with 1% suspension of piperacillin-tazobactam. No reactions were detected when pooled serum sample of healthy donors was incubated with RBC´s in the presence of both drugs. So in this case antibodies developed in the patient, cross reacted with ceftriaxone. Discontinuation of ceftriaxone resulted in rise in haemoglobin and platelet count of patient.

CONCLUSION

This case highlights the importance of inclusion of serological tests to determine cross reactivity of drug dependent antibodies in patients receiving any drug as antibiotic treatment inducing immune hemolysis and TCP in the patient.

PP 138

PAST THE COOMBS CROSSMATCH – BLOOD SAFETY IN THE ALLOIMMUNIZED

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BACKGROUND:

Incompatible transfusion in an allo-immunized individual can result in significant haemolysis. The DGHS requirement of the coombs crossmatch is with the intention of sur mounting this problem. However variability of crossmatch results particularly related to the dosage phenomenon can lead to false-negativity and haemolysis. We report a series of allo-immunized patients and findings on compatibility testing and antigenic phenotyping of compatible units.

AIMS:

To assess antigenic status of coombs compatible units in patients with clinically significant red cell allo-antibodies excluding anti-D.

METHODS:

This was a retrospective study including patients with non D red cell allo-antibodies requiring transfusions between March and August 2018. All coombs compatible units were phenotyped for relevant antigen prior to issue. Coombs compatibility and antigen status were compared.

RESULTS:

The antibodies identified included 18 non D Rh group, 5 Kidd, 2 Kell, 13 MNS, 6 LeA and 1 duffy. Of a minimum of 5 units cross-matched for each of the 45 patient at least one coombs compatible unit was found. Phenotyping of relevant antigens revealed antigen positivity in 5 of 45 patients (11.2%). Discrepancies were due to antibodies Jka/Jkb/M/s.

CONCLUSION:

While coombs crossmatch provides a definite added layer of safety, it is critical that concomitant phenotyping of red cells for transfusion in the allo-immunized be performed prior to issue. While this could be attributed to the phenomenon of dosage it is interesting to note that no discrepancies were noted in patient's allo-immunized to the Rh system. To prevent a rechallenge and subsequent anamnestic response in sensitized recipients it is imperative that alongside documenting a negative coombs crossmatch that a phenotype is performed to confirm antigen negativity prior to transfusion.

PP 139

COMPARISON OF TWO DIFFERENT COLUMN AGGLUTINATION METHODS FOR DIRECT ANTIGLOBULIN TEST

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BACKGROUND:

Direct Antiglobulin Test was conventionally performed using the tube method. Introduction of Column agglutination technology has seen this method being used for Direct Antiglobulin Testing in most labs and is accepted as a reliable method in serological testing.

AIM:

The aim of this study is to compare the performance of gel card versus glass bead methods of column agglutination in Direct Antiglobulin Testing (DAT).

METHODS:

A total of 50 samples for which Direct Agglutination test was requested by the clinician for high suspicion of Autoimmune Hemolytic anemia were included.

The tests were done on the blood sample by both the gel card (Diamed ;Biorad) and Glass bead method(Ortho Clinical Diagnostics). The test results in both methods were compared based on agglutination grading. Statistical analysis was done on the data collected.

RESULTS:

Study is currently in progress.

PP 140

ANALYSIS OF BLOOD COMPONENTS UTILISATION AND QUALITY INDICATORS IN CARDIAC SURGICAL PATIENTS IN A TERTIARY CARE CENTRE

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BACKGROUND:

Blood products are one of the most life saving scarce resources among the surgical disciplines.More blood components are required in cardiac surgery compared to most other medical divisions.The overall blood demand depends on the total number of cardiac surgical interventions and complex nature. Due to the awareness of transfusion related immunology by allogeneic blood and its relation to patient outcome, there must be a standardisation of blood transfusion.

AIM:

Analysis of blood utilisation statistics and quality indicators in cardiac surgical patients

METHODS:

A retrospective analysis of blood components utilisation in Cardiac Surgery unit at the Vinayaka Mission's KirupanandaVariyar Medical College, Salem was done over a period from June 2017 to May 2018. Based on the blood request forms, cross matching and transfusion records,blood components utilisation were analysed. Quality indicators analysed were 1)cross match/transfusion ratio ,2)transfusion probability,3) transfusion index and 4) maximum surgical blood ordering schedule (MSBOS).

RESULTS:

A retrospective single centre study included a total of 224 cardiac surgical cases done by a single unit.Blood components were provided for all of the cardiac surgery patients without fail.A total of 820 units of blood components were requested.The utilisation patterns were PRBC- 628(80.8%),Whole blood-120(15.4%), FFP-21(2.7%) and Platelets-8(1.02%).The population distribution was male 145(64.73) and female 79(33.26).The surgical patterns were coronary artery bypass -134(59.8%),Valve replacement-67(29.91%) and coronary artery bypass with valve repair-23(10.26%).The cross match/transfusion ratio -1.05(< 2.0),transfusion probability-87.94(> 30%),transfusion index - -3.46(>0.5) and MSBOS -5.1.

CONCLUSION:

Usage of blood components by our cardiac surgical division matches the same standard across the globe with minor variations. Regular audit of the blood utilisation practice by our hospital blood transfusion committee helped to match the usage and demand without wastage.In cardiac surgical procedures, adopting various blood conservation strategies by the team of transfusion medicine, surgeon and anaesthetist will help to modify the blood transfusion plans in future.

PP 141

RETROSPECTIVE STUDY TO FIND OUT REASONS FOR DISCARDING WHOLE BLOOD AND ITS COMPONENTS IN TERTIARY CARE TEACHING BLOOD BANK ATTACH WITH IMMUNO-HEMATOLOGY AND BLOOD TRANSFUSION DEPARTMENT, GOVERNMENT MEDICAL COLLEGE SURAT IN SOUTH GUJARAT, INDIA

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Government Medical College Surat

BACKGROUND:

Blood transfusion is an important constituent of health-care delivery system. Millions of lives are saved every year in regular and urgent situations for medical and surgical indications by the accessibility of safe blood transfusion services. Extension in life expectancy and improvements in medical technology require more and more supply of safe blood for efficient health-care delivery. Human blood has no complete substitute till date. Each unit of blood is precious and has to be utilized properly with minimal discards.

AIMS:

The aim of this study was to find out the reasons for discarding blood and blood components

METHODS:

We retrospectively studied all whole blood and blood components collected during 01/01/2012 to 30/06/2018 at out tertiary care teaching hospital blood bank attach with immunohematology and blood transfusion department, government medical college surat in south gujarat, india.

RESULTS:

The total number of blood units collected during this study period was 58,242 & total 6849(6.05%) components discarded; from this 966(14.10%) whole blood, 957(13.97%) red cell concentrate, 2911(942.50%) fresh frozen plasma, 1507(22.00%) platelet concentrate, 35(0.50%) single donor platelets & 26(0.38%) cryoprecipitate were discarded. the common causes of discarding the blood components were due to expiry date 2283(33.33%), 1255(18.32%) were due to seroreactivity for transfusion transmitted infections, leakage of components 1115(16.28%), low volume 418(6.10%), hemolysed 32(0.47%) and other causes were 1746(25.49%) including components sent for quality control, hyperlipemia, red cell contamination, improper storage, return components, clotted components, etc. Among blood components discarded, most common units were platelets(14.35%).

CONCLUSION:

A properly conducted donor screening, notification and counselling of permanently deferred donors will help in discarding less number of bags which are positive for different tti. Properly implemented blood transfusion policies will help to utilize the blood components in a proper way resulting indiscarding the less number of blood bags due to expiry.

PP 142

COMPARISON OF QUALITY PARAMETERS AND BIOCHEMICAL ACTIVATION MARKERS AMONG BUFFY COAT DERIVED POOLED PLATELETS (BCPP) AND APHERESIS PLATELETS (AP-PC) AN INVITRO STUDY

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BACKGROUND:

BCPP have good attributes of both Random Donor Platelets and AP-PC as they are cheaper, contain high count of platelets, can be leukoreduced and be made available in emergency.

AIMS:

Comparative assessment of physical quality parameters and biochemical activation markers among BCPP (Non-leucoreduced vsLeucoreducedvsLeucoreduced with Platelet Additive Solution [PAS]) and AP-PC.

METHODS:

Three different preparation of BCPP were prepared: Non-lecoreduced (Part A), Leucoreduced (Part B) and Leucoreduced with PAS (BCPP Part C) using a pool of 15 ABO matched buffycoats to avoid any donor related variations so that each BCPP unit was equivalent to 5 buffycoat units. Ten apheresis platelets were taken as control. Serial samplings were done on day 0,3 and 5 of collection and assessed for volume, platelet count, WBC Count, swirling, pH, Sterility, glucose, lactate, sP-selectin, Intelukin-6, Interlukin-1β and TNF-α.

RESULTS:

Comparing the four products BCPP Part A, Part B, Part C and AP-PC, on day 5 the platelet count were 3.42±0.09, 3.34±0.12, 3.31±0.09 and 3.03±0.21 and the difference between BCPP and AP-PC was statistically significant ($p<0.05$). On day 5, pH was 6.33, 6.42, 6.64 and 6.29 and lactate levels were 172.30, 173.33, 99.02 and 181.91mg/dl respectively showing that biochemical parameters were better maintained in BCPP PAS than with the other products($p<0.001$). Inflammatory cytokines were also significantly ($p<0.05$) higher in non-leucofiltered BCPP part A as compared to leucofiltered products BCPP part B, C and AP-PC; IL-1β was 76.51 in BCPP part A vs 51.60 to 67.89 in others , IL-6 17.86 VS 0.947 to 1.14 in others, TNF-α 27.74 VS 3.78 to 6.05 in others.

CONCLUSION:

This study concludes that leucofiltered as well as PAS suspended Buffy coat pooled platelets are good alternative of conventional platelet preparation and can be very useful in meeting platelet requirements during emergency.

PP 143

QUALITY ANALYSIS OF CELLULAR COMPONENTS OBTAINED BY QUADRUPLE BAG SYSTEMS USING LATEST AUTOMATED COMPONENT EXTRACTOR

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BACKGROUND:

Transfusion of blood components has become an integral part of our health care delivery system. Manual separation of blood components is quite tedious and time consuming. Automated blood component processing by the latest invented technologies not only reduce the workload but also increases the production efficiency

with optimized product quality.

AIMS:

Here we share our experience of analyzing the quality of cellular blood components obtained by quadruple blood bag systems using Automated Component Extractor.

METHODS:

The prospective study from July 2014 to June 2018 included 556 units of packed red blood cells (PRBC) units and 545 units of random donor platelet (RDP) concentrates. Essential quality parameters of each cellular component described in literature and standards were analyzed and documented in dedicated quality control registers. SPSS software was used for statistical calculations.

RESULTS:

The mean platelet volume and platelet yield of RDP concentrates obtained from buffy coat (BC) and evaluated after 3 days of storage were 60.9 ml and 5.33×1010 respectively. The mean pH pf RDP concentrates was found to be 7.1. The mean volume and haematocrit of SAGM suspended PRBCs tested after 21 days of storage were 284 ml and 66% respectively. A one log leukoreduction was observed in > 90% of tested PRBCs. All units of RDPs and PRBCs subjected to culture were found sterile.

CONCLUSION:

Automation in blood component preparation significantly enhanced product quality in our blood center. We conclude that quality of blood components is dependent on multiple factors like stringent donor selection, appropriate phlebotomy, strict adherence to standard operating procedures, adoption of automated component separation and proper sampling for quality check.

PP 144
OPTIMIZING BLOOD COMPONENT USAGE IN A TERTIARY CARE CANCER CENTRE: HOW EFFECTIVE ARE THE INITIATIVES IMPLEMENTED

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BACKGROUND:

Requests for blood units are often based on worst case assumptions, resulting in demand for large quantities of blood and wastage of valuable resources. Hence few cost effective interventions were initiated to optimize the use of blood components.

AIM:

1. Calculate the discard rate and reasons for discard of blood components, before and after the interventions.
2. To assess the changes in blood ordering practice by 4 major departments; to calculate CT ratio, Transfusion probability (T %) and Transfusion Index (Ti), before and after the intervention.

METHODS:

Following interventions were implemented by the department in mid 2017, as part of blood management program.1.To completely restrict the preparation and usage of Whole Blood (WB) to 100% component preparation and restricting usage of Random Donor platelets (RDP) by preparing High Yield Single Donor Platelets (SDP).2. To proactively monitor and communicate with 4 major oncology departments to improve their blood ordering practices. Bone Marrow Transplant (BMT), Head & Neck surgery (H&N), Gastro Intestinal surgery (GI), Gynaecologic surgery. Retrospective analysis of data was done one year before & after the intervention by paired t-test.

RESULTS:

After the intervention, overall discard rate of Packed red cells / Whole Blood , RDP and SDP were decreased, which was statistically significant, except for SDP. CT ratio increased for BMT whereas it decreased for other departments. The T% and Ti decreased for BMT whereas it improved for other departments, which was significant except for Gynaecologic surgery.

CONCLUSION:

The interventions were very effective in bringing down the discard rates of blood and blood components without any additional cost of operations.An increase in CT ratio for BMT & HL unit was on account of dual policy of type and hold plus type and cross match of specialised blood products.

PP 145
HOW DO I FORESTALL PLATELET STOCKPILING? EXPERIENCE FROM A TERTIARY CARE CENTER

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BACKGROUND:

Among all the blood products, platelets had been reported to have a high rate of outdates due to its unpredictable demand and short shelf life of only 5 days. Researchers have applied techniques of management science and inventory theory to develop a model for inventory management. However, they failed to be implemented due to the variations in the demand and supply and complex computational models.

AIMS:

To analyze the utilization pattern of platelet concentrates and discuss the method of optimal inventory management.

METHODS:

We conducted a prospective observational study on platelet inventory practice at our center from January to December 2014. The number of units to be prepared is decided on daily basis by the transfusion medicine faculty or the resident. The utilization, wastage, expiry and the day's cover are calculated for the study period. Future requirement is estimated based on the usage in the previous quarter, discard rare, average increase in usage and an additional 1% for managing disasters.

RESULTS:

During this period a total of 6241 and 5706 units of platelet concentrates were prepared and issued respectively. The wastage rate was 5.1% and expiry rate was 3.5%. The average day's cover of platelet units at our centre was found to be 3 days using average monthly stock available and issued platelets. We observed that holding a stock of 45 units of platelets per day we had a cover for about 3 days for issue. Calculation of future requirement (6309) gave a high prediction when compared to the actual platelets prepared (6241).

CONCLUSIONS:

Understanding and regularly monitoring the inventory, setting up an optimum inventory level, follow of first in first out policy and to have an alternate management plan in times of shortage, like usage of apheresis products are some of the strategies which would benefit in best inventory practices.

PP 146
ANALYSIS OF WASTAGE OF BLOOD AND COMPONENTS IN A TEACHING HOSPITAL IN NORTH EAST INDIA

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BACKGROUND:

Among the 10 quality indicators for blood banks by NABH, wastage rate is one of the 5 most important tools. Blood centers, thus necessary to evaluate the wastage/discard rates regularly to improve the inventory management and initiate for appropriate action to improve the services.

OBJECTIVES:

To evaluate the rates and reasons for wastage of blood and

components and to work out strategies to minimize the wastage.

METHODS:

A retrospective study conducted in the department of Transfusion Medicine, RIMS, Imphal from January 2017 to June 2018. Records of blood units collected from donors, components separated, WB and components issued, discards and reasons thereof etc. during the study period were analyzed.

RESULTS:

A total of 17721 WB units were collected during the study period of which 256(1.44%) were discarded due to TTI reactivity. Forty-two WB units were retained and the remaining 17423 units (99.76%) were separated into components; PRBC=17423(100%), PC=4920(28.24%), FFP= 5820(33.40%) and Cryo=20(0.11%).The number of WB and components issued were 26638. Total units discarded were 1587 and wastage rate against total units of WB and components issued was 5.95% and against prepared was 5.62%. Component-wise maximum wastage was PC(RDP) with 52.11% followed by PRBC and FFP with 27.73% and 19.10% respectively. Among the reasons, expired date was highest with 1237(77.95% of all discards), the rest were broken cold chain with 90(5.67%) and others about 2% each. The discard rate due to expiry of PRBC,PC,FFP and Cryo were 61.59%, 87.4%,76.2% and 100% respectively.

CONCLUSION:

Our study found expiry units to be most common reason for discard which reveals inadequacies in the inventory management suggesting introspection of the present SOP, need for proper training and educating our staff and rational use of blood by clinicians by generating awareness among the treating doctors regarding appropriate use of each component.

PP 147
EFFECT OF MULTIPLE ROOM TEMPERATURE EXPOSURES FOR DIFFERENT TIME PERIODS ON HEMOLYSIS IN STORED RED CELL UNITS

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BACKGROUND:

The 30-minute rule that requires discard of red cell units that have been exposed to uncontrolled environments for more than 30 minutes is controversial. Whenever an issued unit is received back it creates a dilemma regarding its subsequent transfusion safety.

AIMS:

To study effect of multiple room temperature exposures for different time periods on plasma potassium, plasma hemoglobin level and percentage hemolysis in stored red cell units and determine the effect of buffy coat reduction and additive solution on the above parameters.

METHODS:

A total of 120 bag aliquots of 50 ml each were divided into 4 groups. Groups 1,2 consisted of citrate phosphate dextrose adenine(CPDA) bags while groups 3,4 consisted of buffy-coat reduced citrate phosphate dextrose(CPD) with saline adenine glucose mannitol(SAGM) bags. Exposure to room temperature was given to group 1 for 1/2,2,4 hours on 7,21,28 day respectively and group 3 for 1/2,2,4 hours on 7,21,35 day respectively. Group 2,4 were not exposed. Before and after each exposure samples were tested for hematocrit, total hemoglobin using fully automated cell counter, plasma hemoglobin using Tetramethylbenzidine method and percentage hemolysis was calculated. Plasma potassium was measured using principle of ion-selective electrode.

RESULTS:

After consecutive room temperature exposure plasma hemoglobin, percentage hemolysis and plasma potassium were significantly higher in group 1 and 3 on respective days ($p<0.001$) except for day 7 plasma potassium in group 3. Percentage hemolysis was just below 1% after 2 hour exposure on day 21 in group 1 and 4 hour exposure on day 35 in group 3.

CONCLUSIONS:

Percentage hemolysis is likely to exceed 1% in CPDA and buff-coat reduced CPD+SAGM bags receiving multiple room temperature exposures when stored beyond 21 and 35 days respectively. The quality of such units should be checked before reissue specially with regards to hemolysis.

PP 148
EVALUATION AND VALIDATION OF TWO BLOOD COLLECTION SYSTEMS WITH IN-LINE FILTERS WITH REFERENCE TO COMPONENT QUALITY AND LEUCODEPLETION PROCESS

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BACKGROUND:

It is very crucial to evaluate and validate the blood collection and processing system for centres practicing 100% leucodepletion, especially in the light of complex solid organ transplant and bone marrow transplant patients as intended recipients.

AIMS:

To evaluate the blood bags with in-line filters supplied by two different manufacturers and validate the leucodepletion process and outcome using these two different component separation systems.

METHODS:

N=118 Compoflow blood bags (Fresenius Kabi) and N=179 Macopharma bags were used for blood component separation as per the manufacturer's instructions. The component volumes, total Hb content of PRBC units, percent recovery of red cells and platelets, platelet yields and component separation time were evaluated. Validation of the leucodepletion process was done by studying the filtration time, percentage loss of red cells from the whole blood collected and residual WBC (rWBC) counts using flow cytometry platform was done.

RESULTS:

The volume and Hb content of PRBC units, platelet yield and percentage platelet recovery were higher with Macopharma bags. The time taken for component separation by macopress smart system was lesser (Mean=3 mins 39secs) than that with component G5(Mean 4 mins 57 secs) volume of platelet concentrates was higher (Mean 76.4ml) with Macopharma bags compared to the campoflow bags (Mean 65.5ml). The compoflow system resulted in lesser (8.5%) red cell loss during in-line filtration than Macopharma system (14.7%). Both bag types yielded rWBC counts <105 in 85% of the units. The time taken for filtration was lesser (<19 mins 26 secs) with Macopharma bags compared to Compoflow bags (24 mins 6 secs).

CONCLUSIONS:

Both blood bags with in-line filters have advantages and limitations associated with their use. However, both the systems ensure achievement of good component quality and leucodepletion of PRBC units which is required to fulfill special transfusion requirements of transplant patients.

PP 149
REASONS FOR WASTAGE OF BLOOD AND ITS COMPONENT IN A TERTIARY CARE HOSPITAL

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BACKGROUND:

Blood and blood products wastage is one of key indicator to measure the quality of blood utilization and the efficiency of the transfusion services. According to AABB, quality indicators are specific performance measurements designed to monitor processes and to evaluate adequacy of effective collection processing.

AIMS AND OBJECTIVES:

The objective of this study was to determine the rate and cause of wastage of blood and its products in a tertiary care hospital.

METHODS:

This is retrospective study conducted in Dept of IHBT, DMCH Ludhiana for one-year period from Jan to Dec 2017 to analyse the various factors responsible for discarding of blood and its components.

RESULTS:

The total number of blood units collected during the study period was 26476. All components were screened for TTIs. The total number of blood and its component was 64192, out of which 37.6% were packed red cells (PRBC), 31.6% were fresh frozen plasma (FFP). 21.1% were random donor platelets (RDP). 0.4% was cryoprecipitate.The in total discard of blood and its component was 9.8%. The rate of discard was highest for RDP i.e. 29.0% followed by whole blood (11.8%), PRBC (4.8%), FFP (4.6%), cryoprecipitate (4.2%), plasma aphaeresis (3.2%) and platelet aphaeresis (1.4%). The most important reasons for discard of whole blood was TTIs (41.1%) followed by lipemia (29.6%). The majorities of packed red cells were discarded due to TTIs (85.4%) and expired (5.6%). The commonest reasons for discard of FFP were TTIs (70.0%) and leakages (14.1%). The most common reasons for discard of RDP were due to expiry (82.9%) and TTIs (11.6%). The cryoprecipitate (100%) were discarded due to leakage during thawing.

CONCLUSION:

Based on the data collected more than half of wastage is preventable, blood being irreplaceable resourcesneeds to be properly utilizedideally zero percent wastage.

PP 150
USE OF PLATELET RICH PLASMA(PRP) FOR TISSUE REGENERATION

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BACKGROUND:

Platelet Rich Plasma(PRP)is a platelet product having a higher platelet concentration than in the peripheral blood. PRP & its various forms have become one of the best methods to facilitate the healing process of various tissues due to presence of various types of platelet growth factors. It can be used in disease like chronic non- healing ulcers, chronic joint pain, alopecia, tendinosis/ tendinopathy, dental implants, refractive surgeries, cosmetic treatments,etc.

AIM:

This study aims at determining effect of PRP & PRP gel on chronic non-healing ulcers & chronic joint pain.

METHODS:

Informed consent from patients for PRP were received. Clinical features & physical examination findings were noted. Relevant investigations like hemogram, blood sugar levels, pre& post platelet counts were performed.Pain score was recorded via visual analogue scale. PRP was prepared using double centrifugation method & was injected after preparation & PRP gel was applied locally over chronic non healing ulcers & efficacy of therapy was assessed.

RESULTS:

Study period-10 months. Total of 62 PRP preparation(38 PRP & 25 PRP gel) for 35 patients- 27 from orthopedics, 3 from Burns & Plastic surgery & 2 from Dermatology.Out of 35- 18(male) &17(female). Overall mean age of patients included in this study-39.7yrs(16-66yrs). Mean age of males-36.3(16-66yrs). Mean age of females-43.4yrs(20-64yrs). Mean overall precounts(counts in whole blood sample) of platelet was 2.48x103/µltrs. Mean overall post counts(count in PRP preparation) of platelet was 7.36x103/µltrs. Out of 35, 1 patient received PRP application 10 times, 1 received 5 times, 1 received 4 times, 4 received twice & 28 received only once. Positive results were obtained after treatment i.e healing of ulcer started/relief in joint pain

CONCLUSION:

Clinical response after repeat sessions of PRP & PRP gel are satisfactory. Adequate timely follow up proved good results in view of patient satisfaction & treatment efficacy.

PP 151
REDUCTION IN ANTIBODY TITERS AFTER ADDITION OF SAGM-A PILOT STUDY ON O GROUP PRCS

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BACKGROUND:

Conventionally, antibodies present in the small amount of retained plasma in PRC units is considered clinically insignificant. Nevertheless, these become relevant in non-identical ABO transfusions especially, preterm low birth weight neonates. In this study we attempted to determine the naturally occurring antibody titres in O group PRC units after the addition of SAGM.

AIMS:

To determine the antibody titres in O group whole blood & SAGM added PRC units using conventional tube technique

To identify the risk of residual plasma in SAGM added PRC units

METHODS :

In this prospective cohort study ,O group 350 ml whole blood bags were first weighed and 3 ml samples are collected after proper mixing. Procedure is repeated with PRC prepared from these whole blood bags. Both sets of samples obtained are then centrifuged at 3000 rpm for 3 minutes and the supernatant obtained is subjected to antibody titration at room temperature.

RESULTS:

Of the 40 samples analysed, average whole blood volume was 402ml(SD±31), average PRC volume – 240 ml (SD±20)and average plasma volume – 181 ml(SD±28).Median of anti A and anti B titres in SAGM PRC units was 2 and neat respectively while for whole blood it was 8 and 4 respectively .A significant reduction in mean antibody titres was seen before and after the addition of SAGM(Wilcoxon signed rank test, Z value: -5.334, P value: .05).A small difference in Anti - A/B titres in whole blood & PRC units was also observed, with anti B slightly lower than anti A.(Mann Whitney U test, Z value:-2.351)

CONCLUSION:

Two tube reduction in titre was observed after adding SAGM. However, the use of group OPRC units with low anti-A/B titres is still recommended to increase safety in non-identical ABO transfusions.

PP 152
A STUDY ON INFLUENCE OF DONOR HEMATOCRIT ON THE PROCEDURAL PARAMETERS OF CONCENTRATED SDP COLLECTED BY TWO APHERESIS DEVICES

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BACKGROUND:

Platelet transfusion remains one of the most important support therapies for thrombocytopenic patients with bone marrow failure. The new generation cell separators and protocols have made it possible to obtain high quality platelets by concentrated SDP (C-SDP) with use of Platelet Additive Solutions (PAS). It is important to assess new procedure performance with regard to cell collection efficiency, collection rate and processing time. The present study was undertaken to know the influence of donor hematocrit on procedural parameters of C-SDP collected by two apheresis devices.

METHODS:

Retrospective analysis involving 88 and 132 C-SDP procedures by TrimaAccel (65% PAS) and Hemonetics MCS+ (70% PAS) respectively were performed. For studying the influence of donor hematocrit on procedural parameters, donors were categorized into two groups viz Group A (Hct ≤46%) and Group B (Hct>46%). Procedural

parameters such as collection efficiency (CE), collection rate (CR), yield per liter (Y/L), yield per hour (Y/H), blood volume processed (%BV) were calculated for both groups and compared between two apheresis devices.

RESULTS:

Between the two groups, the mean donor Hct was (43.9% vs 48.6%) and platelet yield (5.6 vs 5.4 x 10e11). In both groups, significant difference was observed between MCS + and Trima equipment in CE (A and B: 53% vs 63%; p<0.05), Y/L (A: 152 vs 183, B: 162 vs 181; p<0.05), Y/H (A: 2.9 vs 5.0, B: 2.8 vs 4.9; p<0.05) and CR (A and B 0.04 vs 0.08, p<0.05). However, we observed %BV processed was significantly higher in donors with lower Hct (74% vs 67%, p=0.01).

CONCLUSION:

Donor Hct does not seem to influence collection parameters except %BV processed between the two equipments. In addition, Trima had better collection parameters when compared to MCS+ for C-SDP procedures.

PP 153
STUDY OF BLOOD COMPONENTS UTILISATION IN A TERTIARY CARE HOSPITAL

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BACKGROUND:

Transfusion of blood and blood components is an integral part of health care practice. The pattern of blood transfusion has changed considerably in the recent years due to advances in blood banking techniques, prolonged survival and increased frequency of complex surgical procedures. Blood and blood components must be used judiciously and rationally to help minimise the demand supply gap in a blood bank.

AIM:

To assess the utilization pattern of blood components (Platelet concentrate) and Fresh Frozen Plasma(FFP) which can help maintain inventory and prevent wastage .

METHODS:

This study was carried out over a period of six months from January 2018 to June 2018. Necessary data were collected from blood bank registers. Analysis was done for departments from which requisitions were received.

RESULTS:

During the study period, total 1058 Platelet concentrate and 536 FFP were issued. Medicine department accounted for the most number of Platelet transfusions , that is 333 (31%) followed by department of Radiation and oncology 187(17.8%) and Intensive care unit 136 (12.8%). Gastrointestinal Surgery department accounted for the most number of FFP transfusions 101 (19.2%) followed by department of Medicine 94 (18%) and Radiation and oncology 77 (14.6%).

CONCLUSIONS:

This study highlights the significance of components and usage pattern among different departments. Periodic evaluation of utilization pattern, demand for different blood products also helps to maintain the blood stock

PP 154
SINGLE DONOR PLATELET-COLLECTION EFFICIENCY, QUALITY CONTROL, AND ITS UTILIZATION-AN OBSERVATIONAL STUDY

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BACKGROUND:

Single donor plateletpheresis increases the overall yield of platelet collected and decreases the risk of alloimmunisation by decreasing multiple donor exposures particularly in treating haematological malignancies. Providing a better quality apheresis PC will ensure safe transfusion.

AIM:

To evaluate the collection efficiency, quality control and utilisation of the single donorPlateletpheresis.

METHODS:

Retrospective analysis of 62 SDP procedures were done from the period of february 2016 to february 2018 in Tamil Nadu Dr M.G.R Medical University, Chennai, Guindy.Donor selection criteria has been performed as per NACO guidelines. As per demand platelets were collected tested for quality check at the time of issue.

RESULTS:

During the study period, 62 procedures were done. Pre and Post procedural donor platelet count were 263×103/µL and 201×103/µL respectively. Average target yield and actual yield achieved were 3×1011/unit and 3.22×1011per unit. Collection efficiency: 51.39%.

PC volume were between 200 - 300 ml in 91.93%(n=57), less than 200 ml in 6.5%(n=4) and above 300 ml in 1.6%(n=1) of the procedures respectively. Swirling with score 3 and 2 were present in 90.3% (n=56) and 9.7%(n=6) PC respectively & pH observed between 6.5 & 7.0 at the time of issue. 93.5%of aphaeresis PC met the platelet count 3×1011per unit.WBC contamination is minimal due to leucodepleted filters.

All the SDP units collected were utilized. 67.7 %(n=42) of SDP concentrates were utilised for hemato-oncological patients 19.35%(n=12) in aplastic anaemia and 12.90%(n=5)due to other causes. out of hemato oncology cases 85.7%(n=36) were between age of 2-12 and 14.2%(n=6)were aged between 35-50 yrs.

CONCLUSION:

In our study the apheresis PC concentrates were collected with strict adherence to donor selection criteria. The quality parameters revealed good collection efficiency of 51.39%. Due to cost constraints, all SDP concentrates were prepared as per demand and utilised without any wastage.

PP 155
A RETROSPECTIVE ANALYSIS OF APPROPRIATE UTILIZATION OF FRESH FROZEN PLASMA IN A TERTIARY CARE HOSPITAL WITH REFERENCE TO EVIDENCE BASED GUIDELINES

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BACKGROUND:

Fresh Frozen Plasma (FFP) is mainly used in treatment of coagulation derangements; trauma emergencies. It is the most inappropriately used blood component. Since the guidelines for FFP use in a clinical setting are not well defined.

AIM:

To define the appropriateness of use of FFP in the light of its risks and adverse effect. Audit of institute FFP usage with specific aim of assessing appropriate use, based on clinical indication.

METHODS:

Retrospective analysis of 1846 FFP supplied in 608 patients from the period of January-2018 to june-2018 in tertiary care teaching hospital and the Department of Transfusion Medicine, the Tamil Nadu Dr M.G.R Medical University, Chennai. Detailed analysis of clinical indication and the number of components requested.

RESULTS:

1846 FFP was supplied to 608 Patients. Clinical use of FFP was highest in burns (52%), General Medicine(11.86%), O&G (11.12%), SGE (5.85%), Nephrology (4.22%), Paediatrics (9.15%) and ortho (1.52%). Patients with Deranged Coagulation Profile (DCP) required maximum transfusion of 910(49.3%) units, Bleeding patients were transfused 644(34.9%) units and disseminated

intravascular coagulation (DIC) 61(3.3%) units were administered. No information available about diagnosis for 77(4.2%) units was issued and administered in Emergency Department and 153 (8.3%) units transfused without clear cut indication (hypoproteinemia, volume replacement and patient with normal coagulation profile). Inappropriate requests accounted for 12.5% of the total FFP used.

CONCLUSIONS:

This study indicates the inappropriate use of FFP to be relatively low in our hospital compared with other studies. FFP is most inappropriately used blood component and should be used judiciously. Regular audit of blood components serves as tool for accomplishment of quality tools and to understand clinical transfusion practices.

PP 156

EFFECT OF DONOR VARIABLES ON THE QUALITY OF PLATELET PRODUCT AND COMPARISON OF COLLECTION EFFICIENCY OF CELL SEPARATORS

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BACKGROUND:

Apheresis in the past was done by manual methods but nowadays cell separators have made it possible to substantially improve quality of apheresis platelets. Platelet yield reflected in transfused platelet dose, influence plt recovery in the patient. This yield is dependent on numerous donor as well as separator related parameters.

AIMS:

1. To evaluate the effect of donor variables on the quality of apheresis platelets.
2. To study apheresis platelet preparation by the two cell separators i.e. Hemonetics MCS plus and Fenwal Amicus

METHODS:

This was prospective cross sectional study which included 200 procedures; conducted in Dept of IHBT, DMCH, Ludhiana for a period of one year from Jan to Dec 2017. Plateletpheresis procedures were performed on amicus and hemonetics following standard operating procedures. The donors were divided into 5 groups depending on target yield set which was the end point. Platelet yield of the bag and then platelet collection efficiency of the machine was calculated for each procedure.

RESULTS:

The effect of donor variables was assessed on platelet yield. Out of 200 donors 198 were male and rest female with mean age of 29.5 ± 8.2 yrs. Donor variables included were age, height, weight, pre donation platelet count, Hb, HCT. Positive correlation (statistically significant) was found between yield and pre donation platelets. Mean platelet yield was 3.67± .81 × 1011. No correlation was seen between age, height, weight, Hb or HCT and yield. Time taken by the procedure was more with amicus but was statistically insignificant. Both cell separators performed procedure with minimum donor discomfort but collection efficiency for amicus was higher than hemonectis.

CONCLUSION:

Donor haematological parameters can significantly affect platelet yield. Therefore, suitable donor selection is vital to the process.

PP 157

STABILITY OF HEMOSTATIC POTENTIAL OF THAWED PLASMA ON STORAGE AT 2-60C FOR 5 DAYS

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BACKGROUND:

Transfusion of fresh frozen plasma is still an important measure in emergency medicine to prevent disseminated intravascular coagulation after severe blood loss, but thawing procedures can delay its availability. On the other hand, the wastage of plasma, once thawed and not transfused within the defined period, represents an inefficient handling of economic resources. To reduce wastage, we investigated the stability of hemostatic potential of thawed plasma when stored at 2-6 0C.

AIM:

To assess the stability of hemostatic potential of thawed plasma when stored at 2-6 0 C for 5 days using APTT, Factors V, VII, and VIII and thrombin generation testing.

METHODS:

19 plasma units included in this study were separated from blood collected from the donor and frozen overnight and thawed at 35.80C using plasma thawer. One set of plasma aliquots were stored at -700c and the other set of aliquots from each bag were stored as thawed plasma at 20-6 0 C for 5 days. Factor V, VII, VIII levels, activated partial thromboplastin time and thrombin generation testing were done on first, third and fifth day of storage.

RESULTS:

The mean levels of Factor V, VII and VIII of frozen plasma on day 5 of storage were 73.31%, 52.12%, and 62.23% respectively. The mean levels of Factor V, VII and VIII of thawed plasma on day 5 of storage were 67.2%, 50.69%, and 56.97% respectively. The mean change in values of TGT variables were calculated and was comparable between both the groups on day 5 of storage.

PP 158

A COMPARATIVE STUDY ON THE QUALITY OF CRYOPRECIPITATE PREPARED BY DRY AND WET METHOD DONE IN A TERTIARY CARE CENTRE

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BACKGROUND:

Higher utilization of cryoprecipitate in clinical settings propels us to compare methods of cryoprecipitate preparation - Dry (slow thaw) and wet (fast thaw) method.

AIM:

To compare the factor VIII and fibrinogen recovery in cryoprecipitate prepared by two different methods of preparation

METHODS:

This was a comparative cross-sectional study done in the department of Transfusion Medicine over 20 months. 100 units of whole blood collected at the blood bank comprised the study population. 5 ml plasma was aliquoted& frozen prior to cryoprecipitate preparation for later reference studies. Cryo was prepared using wet & dry methods. The wet method had two different durations for thaw. Factor VIII & Fibrinogen assay was done on the cryoprecipitate and the corresponding aliquoted sample while doing monthly QC. The Recovery (%) of Factor VIII and fibrinogen levels were compared as per gender, season ,duration of phlebotomy, blood groups , thawing methods & duration of thaw.

RESULTS:

The mean percentage recovery of factor VIII and fibrinogen in

wet method were 46.22+13.67 and 50.70+10 respectively showing a better recovery in wet method. The mean percentage recovery of Factor VIII and fibrinogen recovery in dry were 28.66+8.63 and 49.14+ 11.94 respectively. Wet method had two different durations of thawing; 150 & 240 minutes each. The cryo thawed for a period of 150 minutes had better factor VIII and fibrinogen recovery (%) when compared to the 240 minutes thaw.

CONCLUSION:

The recovery of factor VIII and fibrinogen in cryo was better when wet method of thawing was used. The 150 minute thawing duration for the wet method was better compared to the 240 minutes of thawing. A standardized protocol in processing of cryo has to be improvised considering other variables like blood group of the donor, duration of phlebotomy, the duration of thawing and seasonal variations

PP 159
PREVALENCE OF TRANSFUSION TRANSMITTED INFECTIONS IN VOLUNTARY AND REPLACEMENT DONORS

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INTRODUCTION:

Transfusion of diseases is one of the major hazards of blood transfusion. In India we screen blood units for TTI namely HIV, HBV, HCV, Syphilis & Malaria .Accurate estimate of risk of TTIs in donor samples gives an idea of epidemiology of these diseases in community.

AIM:

To determine the prevalence of TTI in voluntary and replacement donations

MATERIAL AND METHODS:

This retrospective study was conducted in SUM Hospital blood bank Bhubaneswar, Odisha from Jan 2013 to June 2018. A total of 46,125 blood units from blood donors were tested for TTI by ELISA(Qualisa-Qualpro Diagnostics- TULIP).Test were performed according to manufacturer's instructions. All the reactive samples were tested in duplicate before labeling them seropositive. The donated unit was discarded when found positive for any TTI.

RESULTS:

A total of 46,125 donors were included in the study. Of these 38,264(82.9%) were voluntary and 7,852(17.10%) were replacement. Male donors 45,074(97.7%) outnumbered females 1051(2.3%). A total 686 (1.4%) of the 46,125donors tested reactive for TTI out of which replacement donors were 558(1.2%) and voluntary 128(0.2%). The overall seropositivity for HBV was 434(0.9%) out of which replacement were 308(0.66%) and voluntary 126(0.34%). HIV had seropositivity of 207(0.4%) with replacement 142(0.3%) and voluntary 65(0.1%). HCV constituted 41(0.08%) of which replacement donors were 34(0.07%) and voluntary 7(0.01%). Seropositivity of syphilis was 4(0.08%) with equal positivity in both group of donors and none tested reactive for malaria.

CONCLUSIONS:

Study shows that prevalence of TTI was high in male replacement donors. Seroreactivity was higher for HBV followed by HIV, HCV, syphilis and malaria. Stringent donor screening, encouragement for voluntary donation and retention of voluntary donors should therefore be prioritized.

PP 160
ENHANCING BLOOD SAFETY THROUGH NAT: EXPERINCE FROM A TERTIARY HOSPITAL BLOOD BANK FROM EASTERN INDIA

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Background:

Transfusion-transmitted infections are a major problem associated with blood transfusion. Nucleic acid amplification testing (NAT) is not yet obligatory in India for blood donor screening. The primary benefit of NAT is the ability to reduce residual risk of infections due to its short window period.

Aims:

Here we share our 5 years experience of screening our blood donors by The Roche cobasTaq Screen MPX platform.

Materialand Methods:

All the non reactive blood donations tested by CLIA between 23 November 2013 and 30 July 2018 were included in the study. NAT for HBV-DNA, HCV-RNA and HIV-RNA in the minipool of 6 samples was performed using the Roche cobasTaq Man MPX assay. Sample positive for hepatitis- B virus (HBV) DNA was further screened for anti-HBc antibody & antibody to HBsAg (anti-HBs).

Results: Of the total 48342 blood donations during the study period, anti-HCV, HBsAg and anti HIV by CLIA were detected in 264 (0.55%), 234 (0.48%) and 121 (0.25%) donors respectively. A total of 47723 samples were tested for NAT of which 19 (0.04%) donors were found to be carriers of HBV DNA each with a viral load of < 6IU/ml. HIV RNA was detected in one donor who was otherwise non reactive for anti HIV. The NAT yield was observed to be 1 in 2386 donations. Eleven (58%) donors carrying HBV DNA were sero-reactive for anti-HBc and 9 (47.4%) showed reactive anti-HBs antibody.

Conclusion: Introduction of NAT has successfully identified the pre-seroconversion infectious blood donors and occult hepatitis B. Despite its cost effectiveness issues NAT can prove to be a standard of blood donor screening in the future.

PP 161
SEROPREVALENCE OF HEPATITIS E VIRUS AMONG BLOOD DONORS FROM A TERTIARY CARE CENTER IN NORTH INDIA

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AIM & BACKGROUND:

US Food and Drug Administration (FDA) has recognized the Hepatitis E virus (HEV) as a transfusion-transmissible infectious agent in the year 2004. The information on the prevalence or transfusion risk from India is limited. Therefore, we conducted a study to find the seroprevalence of HEV infection in blood donors and transfusion risk by detection of IgM HEV antibodies by ELISA and HEV RNA by Reverse Transcription Polymerase Chain Reaction (RT- PCR).

MATERIALS AND METHODS:

The study was conducted at our tertiary care centre from September 2016 to December 2017. One thousand and three donors who donated during the study period were tested for the IgM antibodies against HEV using ELISA. Of these, 256 random donors were subjected to HEV RNA detection by the RT-PCR method which included HEV IgM reactive donors by ELISA and ELISA non-reactive donors selected randomly.

RESULTS:

In our study 8 (0.8%) donors were reactive for IgM antibody against HEV by ELISA. Mean age of these donors was 36 years (27-54 years). Of them, 3 were B positive (0.8%), 3 were O positive (0.9%)

and one was A positive (0.4%). All donors reactive for HEV ELISA were negative for HIV, HBsAg, HCV by CMIA and non-reactive by ID-NAT. Two donors who were reactive for HEV ELISA were positive for HBcAb by CMIA. None of the 256 donors tested was reactive by RT-PCR.

CONCLUSION:

There was 0.8% seroprevalence of HEV IgM antibody in our population. Further large-scale studies to detect the HEV prevalence in Indian population should be conducted.

PP 162
SEROPREVALENCE OF TRANSFUSION TRANSMISSIBLE INFECTIONS (TTI) AMONG BLOOD DONORS IN REGIONAL INSTITUTE OF MEDICAL SCIENCES HOSPITAL, IMPHAL

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Regional Institute of Medical Sciences

Background:

Blood transfusion is considered a life-saving procedure. But it also carries a potential risk factor for transmission of serious infections like HIV, HCV, HBV, Syphilis etc. Thus, strict mandatory screening of TTIs as per national guidelines is necessary for safe clinical blood transfusion.

Aim:

To find out the seroprevalence rate of TTIs in blood donors.

Methods:

A retrospective study was carried out in the Department of Transfusion Medicine, RIMS, in which data about the blood donors donated during the period between January 2017 and June 2018 were collected. The data of the donors including the seroprevalence were collected from various relevant registers and were analysed. The TTI tests included in the study were antibody to HIV (I and II), anti-HCV, and HBsAg and RPR (for syphilis) tests. The tests had been performed by using 3rd generation, NACO approved ELISA and RPR test kits.

Results:

A total of 17,721 blood units were collected during the study period, of which 5326(30%) were voluntary blood donors (VBD) and 12395(69.9%) were replacement donors (RBD). The overall TTI reactivity was 256(1.44%), and the order of seroprevalence were HCV (0.66%), HBV (0.53%), HIV (0.20%) and syphilis (0.03%). The TTI reactivity among VBDs and RBDs were 54(21.09%) and 202(78.9%) respectively. Among VBDs, HCV(0.45%) had highest seroprevalence rate followed by HBV (0.33%), HIV (0.18%), Syphilis (0.037%) and the rates in the RBDs for HIV, HBV, HCV, Syphilis were 0.21%, 0.61%, 0.75% and 0.04% respectively. Co-infections were found in 8 (0.04%) donors, all were RBDs.

Conclusion:

The presentTTI reactivity rate, which was more in RBDs; and presence of co-infections, needs introspection for improvement especially in the donor screening, and emphasis on increasing VBDs would ensure blood safety.

PP 163
SOCIO-ECONOMIC IMPACT OF THE PRE-DONATION HBSAG TESTING IN THE BLOOD DONORS

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Nayati Medicity Mathura

Background:

India has an estimated prevalence of 3% HBV carrier rate that is more than 37 million HBV carriers at current population level. It is not uncommon for these HBsAg carriers to present as blood donors. However, studies in the past indicate that since they are clinically asymptomatic they may not return for a counseling session later on. An important opportunity for their contact testing and further management of these high risk individuals is thus lost.

Aims and objectives:

To study the economic and social impact of pre-blood donation HBsAg testing on the HBV carrier counseling.

Materials and method:

All the blood donors who cleared the preliminary questionnaire and found fit for further testing before blood donation were tested using whole blood rapid card test kit for HBsAg. Comparison was made with the past HBsAg reactive blood donors (reactive for HBsAg after blood donation) who were called for counseling before the study was started

Results:

There was no difference in the overall prevalence of HBsAg reactivity in the study (4440 donors) Vs the control (1205 donors) population (2.34% Vs 2.32%; p=0.74). However, with the pre-donation HBsAg testing, a significantly higher proportion of the reactive donors could be counseled as against the standard post donation counseling (104 Vs 28 donors; 92.3% Vs 39.3%; p<0.001). Moreover, in addition to the significantly reduced exposure of the blood center staff to the HBsAg reactive blood, the blood center incurred 63% less expenditure in terms of the cost of blood collection.

Conclusion:

Pre-donation HBsAg testing of the blood donors significantly increases the counseling opportunity of the asymptomatic HBV carriers in the community. Such a testing decreases the potential exposure of the healthcare staff to HBV reactive samples and also results into a significant cost saving for the blood center.

PP 164
AN ANALYSIS OF DISCORDENT RESULT OF CHEMILUMINSCENCE SEROLOGY & ID NAT FOR INFECTIOUS DISEASE MARKERS.

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Rotary Bangalore TTK Blood Bank

BACKGROUND:

To reduce risk of transfusion transmitted infection Serology testing is supplemented by NAT. Discordant results in NAT & serology makes the testing strategy challenging. Therefore it is important to further evaluate the discordant samples to understand the safe testing strategy.

AIM:

To evaluate the discordant samples NAT &Chemiluminscence in order to suggest suitable & safe TTI testing protocol.

Material & methods:

We collect nearly 40000 units annually from voluntary donors. Serology testing is done by Vitros® 3600 by Ortho Clinical Diagnostics & NAT by Procleix® Panther System by Grifols. Further analysis of all discordant samples (Sero yield & NAT yield) was done. All the discordant samples were repeated by another Chemiluminescence system (Abott) Architect & Viral load PCR was also done. In addition, Western Blot for HIV & anti HBc for HBV was also performed.

Results:

From January 2016 to March 2017, total 50443 samples tested for Chemiluminscence& NAT. Out of 50443 samples, 357 samples (0.7%) were reactive by Chemiluminescence and 150 samples were reactive by both Chemiluminscence& NAT. Sero Yield was 207 & NAT Yield was 14.

Out of 62 discordant samples of HIV, only one was reactive with another chemiluminescence test, all were negative for Western Blot & PCR Viral load.

Out of 16 discordant samples in HBV, all were negative with second chemiluminescence, 5 were positive for anti HBc (Occult infection) and none has PCR Viral load.

Out of 141 discordant samples in HCV, 21 were reactive with another chemiluminesce and viral load was not detected with any

sample.

Conclusion:Addition of NAT in Blood Screening helps to detect window period donations and occult Hepatitis B infections and our NAT yield found is 1 in 5000.

We found good correlation in Serology & NAT in HBV but high Sero-yield in HCV.

PP 165
SIGNIFICANCE OF IMPLEMENTING INDIVIDUAL DONOR NUCLEIC ACID TESTING TO MINIMIZE THE RESIDUAL RISK OF TRANSFUSION TRANSMITTED HUMAN IMMUNODEFICIENCY VIRUS, HEPATITIS C VIRUS AND HEPATITIS B VIRUS INFECTIONS – A STUDY AMONG BLOOD DONORS IN A GOVERNMENT TERTIARY CARE TEACHING HOSPITAL IN CHENNAI

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Background:-

The primary aim of Blood Transfusion Services is to provide blood and blood components to the recipients as safe as possible. Even with the development of highly sensitive and specific serologic assays, Transfusion Transmitted Infections (TTI) still pose a threat to blood safety.

Aim:-

The objective of this study was to assess the significance of implementing individual donor NAT (ID-NAT) for HIV-1&2, HCV and HBV to minimize the window period donations.

Materials and Methods:

A total of 7320 donations from JAN to AUGUST 2018 were tested for all three viruses using enzyme-linked immuno sorbent assay (HIV Ag-Ab, HCV-Ab and HBsAg by ERBA LISA) and ID-NAT using ProcleixUltrio Elite assay (Grifols). All initial NAT reactive samples and serology non-reactive were tested in triplicate and NAT discriminatory assay for HIV-1 and 2, HCV and HBV were performed.

Results:

Out of the 7320 samples, 14 (0.19%) were found to be ID-NAT reactive but seronegative. All these 14 samples were reactive for HBV by discriminatory assays and nonreactive for other two viruses. The NAT yield rate was 1 in 523. Quantitative viral load assay of these NAT yield samples revealed a minimal viral load ranging from 6 IU/ml to 70 IU/ml suggesting very early period of infection.

Conclusion:

42 TTIs (14 x 3 components) have been prevented by implementing IDNAT testing in our Blood Bank within the above period. After observing the above results, the prevalence rate is highly alarming and safety of blood transfusion can only be improved by strict donor selection, quality assured sensitive serological methods and introduction of universal NAT testing. ID-NAT testing for HIV-1 & 2, HCV and HBV can significantly improve the efficacy of screening and it is an additional layer of blood safety by preventing preseroconversion window period donations thus reducing the treatment cost and burden on healthcare.

PP 166
CHANGING TRENDS IN INCIDENCE OF TTI

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Background and aims:

Blood bags collected in India are mandatorily screened for HIV antibodies, HBV surface antigen, HCV antibodies, Syphilis (RPR) antibodies and Malarial parasites which are major reason for discard of blood units. The incidence of TTI in donor population undergoes changes as the incidence of infections changes in general population because of preventive measures and disease control. The aim of the present study is to study the changing trends in incidence of TTI in donor population which indicates the current trend in general population.

Materials and methods:

TTI screening results obtained at the blood bank at Government Villupuram Medical College and Hospital from the year 2010 to 2017 were collected and analyzed to watch the changing trends in incidence of TTI.

Results: A total of 26,572 blood units were collected during the period from 2010-2017. The overall screening results also showed a declining trend from 97 in 2012 to 52 in 2017 in spite of increasing trend in blood collection. HIV declined from 4 reactive in 2012 to 1 reactive in 2017. HBV declined from 91 reactive in 2012 to 50 reactive in 2017. HCV declined from 10 reactive in 2010 to 1 reactive in 2017. Syphilis declined from 1 reactive in 2010 to nil in 2017. Malaria declined from 1 reactive in 2011 to nil in 2017. Thus HIV, HBV, HCV showed a declining trend over the years.

Conclusion:

Strict adherence to donor questionnaire and better donor screening has led to deferral of doubtful donors with risk of disease transmission. Deferral of high risk donors, follow-up of seropositive donors with referral to appropriate specialty department and strict deferral of febrile donors help to reduce the incidence of TTI and thus better blood inventory.

PP 167
SEROPREVALANCE OF TRANSFUSION TRANSMITTED INFECTIONS IN MULTIPLE TRANSFUSED THALASSEMIA MAJOR PATIENTS

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BACKGROUND

Thalassemia also known as “Cooley’s anaemia” is an inherited disease of the red blood cells classified as a haemoglobinopathy. It is characterised by decrease or absent synthesis of normal globin chain. Appropriate and regular red cell transfusion remains the main treatment of choice for a large number of patients with thalassemia major. These patients who are maintained on transfusion regimen can develop various complications due to multiple transfusions, one of them being transfusion associated infections.

Keywords:

Hepatitis B, hepatitis C, Human immunodeficiency virus, β-thalassemia major, seroprevalence

AIMS

To study the rate of seropositivity to Human Immunodeficiency Virus (HIV), hepatitis B and C infections among patients with β-thalassemia major receiving multiple transfusions.

METHODS

The study was performed from January 2016 to June 2018 in DMCH, Ludhiana on 189 multi-transfused thalassemia patients. All the patients were screened for HIV (p24 antigen & antibodies to HIV-1 & HIV-2), Hepatitis B (Hepatitis B surface antigen) and Hepatitis C (Anti-HCV antibodies) by ECLIA (Electro Chemiluminescence Immunoassay) COBAS e 411 ROCHE. Further screening and discriminatory assays by PCR (Polymerase Chain Reaction) confirmed the presence of TTI’s.

RESULTS

Out of the 189 multiple transfused patients, 54 (28.6%) were infected with TTI’s. HCV was positive in 52 cases (27.5%), HBV in 1 case (0.5%), and HIV in 1 case (0.5%). PCR confirmed the presence of HBV DNA in 1 case (0.5%), HIV RNA in 1 case (0.5%) and HCV RNA in 22 cases (11.6%).

CONCLUSION

HCV was the leading TTI in multi transfused thalassaemia major patients in this study. Provision of safe and adequate blood supply to these patients is a key to improve their quality of life and longevity.

transfusion associated diseases are overcome by safe donor selection and, further, by application of better screening methods.

PP 168
STUDY OF NAT YIELD IN ELISA TESTED NON REACTIVE BLOOD UNITS AT INDU VOLUNTARY BLOOD BANK, VADODARA.

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Background:

Risk of Transfusion Transmitted Infection (TTI) is always there during any transfusion. Nucleic Acid Testing is one of the best currently available technology when used in combination with ELISA to reduce the window period and risk of TTI.

Aim:

To study the NAT yield & determine the benefit of NAT technology as an additional safety for Blood Transfusion services.

Method:

We used fourth generation ELISA to screen the blood samples of all voluntary and replacement blood donors. All ELISA negative samples were tested by MP-NAT based on the principle of POLYMERASE CHAIN REACTION using COBAS 201s with MPX v2.0. All NAT reactive donors were retested for viral load by COBAS TAQMAN 48.

Results:

Starting from 19/05/2018 to 31/08/2018, MP-NAT was performed on 7143 donor samples which were found non reactive on ELISA testing. Out of the 7143 donors tested by MP-NAT, 6 were found to be NAT-reactive which were ELISA non reactive (NAT yield) for HBV. The prevalence of NAT yield cases among was 1 in 1190 donations tested (0.084 %). Out of 6 NAT reactive donor samples, 5 were tested for quantification test. All those 5 blood units were having viral load above the detection level & 3 out of 5 donors samples were having viral load more than 6IU/ML & 2 were having < 6IU/ML Since we supply blood components (packed red cells, fresh frozen plasma and platelet concentrate), these 6 units of blood would have yielded 18 components & hence 18 patients could have been infected with HBV viruses.

Conclusion:

In the vast majority of blood units tested, the results of ELISA and MP-NAT for HIV-1&2, HBV and HCV were concordant. MP-NAT did detect the presence of viruses missed by ELISA in some blood units. Its widespread use in blood banks would ensure safer blood transfusion.

PP 169
PREVALENCE OF NAT POSITIVITY IN SERONEGATIVE BLOOD DONORS:A RETROSPECTIVE STUDY IN A TERTIARY CARE HOSPITAL

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Background:

Transfusion of blood and blood components, as a specialized modality of patient management saves millions of lives worldwide each year and reduces morbidity. It is well known that blood transfusion is associated with a large number of complications, transfusion transmitted infections(TTI) is one of them. Nucleic acid Amplification (NAT) test has been implemented in many developed countries as a screening test of blood donors to reduce the window periods of viruses.

AIM:

To detect the seroprevalence of Hepatitis B(HBV), Hepatitis C(HCV) and Human Immunodeficiency Virus (HIV) in all seronegative blood donors and providing the information regarding blood safety.

Methods:

A retrospective review of donor records within periods from July 2016 to June 2018 was done in the Department of Transfusion Medicine,SCB Medical College &Hospital,Cuttack,Odisha. All the samples were tested for Hepatitis B Virus(HBV), Hepatitis C Virus(HCV) and Human Immunodeficiency Virus(HIV1/2) first by Enzyme Linked Immunosorbent Assay(ERBA elisa ,3gen) and all seronegative ELISA samples were retested by Minipool-NAT.

Result:

A total of 51,627 donors were screened for Hepatitis B(HBV), Hepatitis C(HCV) and Human Immunodeficiency Virus (HIV1/2) by ELISA . Out of which 51,109 seronegative ELISA donors were retested by MP- NAT. The overall ELISA positivity and NAT positivity were 1.01% and 0.09% respectively.The prevalence NAT positivity was 0.086% in voluntary and 0.093% in replacement donors. The NAT positivity of HBV, HCV and HIV1/2 were 0.08%, 0.003% and 0.006% respectively.NAT yield was 1 in 1100 seronegative donors.

Conclusion:

Transfusion transmitted infections(TTI) screening is a primary concern of blood safety. This study reveals replacement donations are more unsafe in comparision to voluntary. Based on the results we feel that to reduce the risk of these infections, non-remunerated voluntary donor services need to be instituted along with adoption of more sensitive methods of TTI screening for improvement of blood safety

PP 170
COMPARISON OF NUCLEIC ACID AMPLIFICATION TESTING AND ROUTINE SEROLOGICAL TESTING IN PATIENTS UNDERGOING HEMODIALYSIS

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Background:

Patients on chronic hemodialysis are at high risk for contracting bloodborne infections like Hepatitis C Virus (HCV), Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV). Blood transfusions can also increase this risk. Routine serological tests like Enzyme Linked Immunoflourescent Assay (ELFA) are done at regular intervals to detect the occurrence of HCV/HBV/HIV infection in these patients. Use of Nucleic Acid Amplification Testing (NAAT) will enable us to identity these infections much earlier and reduces the transmission of infections among patients in dialysis units.

Aims:

To study the ability of NAAT testing to detect HIV, HCV and HBV infection compared to the currently used serological tests in hemodialysis patients.

Methods:

Patients undergoing hemodialysis for minimum period of six months at our centre were tested randomly for HBV DNA, HCV RNA, HIV RNA by ID-NAAT test. Serology tests were done every three months and this data was collected from their medical records. The risk factors for infection like dialysis at multiple centres, blood transfusions, repeat use of dialyser were recorded.

Results:

Eighty eight patients (62.5% Male and 37.5% female) were analysed. Mean age of 60 ± 13.49 years. 12.5% of patients had undergone dialysis at more than one centre. Average number of blood components transfused per patient was 10.8 units. Duration of dialysis ranged from 13-151 months. Dialyser for each patient was used multiple times after sterilisation. All patients were negative by serology (ELFA) and ID-NAAT.

Conclusion:

ELFA assay seems to be equally effective as NAAT in detecting HCV, HBV and HIV infections in hemodialysis patients. Proper Sterilisation protocols, designated machines for TTI positive patients,

dialysis at single centre and transfusion of NAAT screened blood could have prevented TTI in our hemodialysis patients.

PP 171
UTILITY OF MULTIPLE PLATFORMS TO INCREASE THE SENSITIVITY OF TRANSFUSION TRANSMITTED DISEASES (MALARIA & SYPHILIS) SCREENING IN BLOOD DONORS – A STUDY FROM HINDUJA HOSPITAL & MRC MUMBAI

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Background & Aim:

Transfusion Transmitted Disease is a major threat to blood recipients. With various sensitive methods and techniques, the risk of Malaria & Syphilis transmission has drastically reduced. Factors associated with this are effective donor selection, donor counseling, method and sensitivity of screening tests. With this background we carried out a prospective study to compare sensitivity of the different methods used for Malaria and Syphilis testing and results compared with gold standard.

Methods:

Prospective study was carried out between January 2017 -August 2018. In Malaria testing 70 (42 positive & 28 random negative) donor's samples and for Syphilis 73 (45 positive & 28 random negative) samples were tested. For malaria Pan Malaria card, Malaria Pan/Syphilis Combo (Immunochromatography), peripheral smear and for Syphilis Redgen kit (flocculation test), Malaria Pan/Syphilis Combo and Treponemapallidumhemagglutination test (TPHA) tests were carried out. All the positive samples were tested on all the platforms.

Results:

28(40%) out of 70 donors were negative for malaria in all three platforms. 42 (60%) donors had positive results in either of the platforms. 34(80.96%) of 42 had all three platform positivity and 8(19.04%) tests had discordant results. Analysis showed 7/8 cases were positive on Pan Malaria & peripheral smear and only 1 (2.39%) test was positive on both immunochromatography platforms however negative on peripheral smear examination.

28/73 (38.35%) donors were negative for Syphilis in all platforms. 45(61.65%) donors had positive results in either of the platforms. 31(68.89%) of 45 had all three platform positivity and 14(31.11%) tests had discordant results. Analysis showed 9 /14 cases were positive in both rapid tests however negative on TPHA. Remaining 5 cases were positive in Pan/Syphilis combo kit & TPHA and negative on Flocculation test (Redgen).

Conclusion: This study highlights the importance of identifying sensitive screening tests to reduce risk of TTI.

PP 172
QUALITY CONTROL OF HIV, HBSAG & HCV SCREENING KITS - DISCORDANT RESULTS OBSERVED BETWEEN ELISA AND RAPID CARD TEST

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Background:

Quality control(QC)is simply to ensure that the results generated by the tests are correct and to monitor the accuracy & precision. ELISA(Enzyme linked immunosorbent assay) is a recommended and preferred screening technique for blood banks. Many blood banks use rapid, easily performable and user friendly kits.

Aim:

To evaluate the discordant results observed between ELISA and Rapid card test for quality control of HIV,HBsAg& HCV screening kits.

Materials and methods:

A prospective study carried out in the Department of Transfusion Medicine, the Tamil Nadu Dr M.G.R Medical University in the month of July -2018. QC of ELISA for HIV,HBsAg& HCV is done by using in-house control and virotrol with Levey-JenningsChart(LJ chart).QC of Rapid card test for HIV, HBsAg and HCV by in-house control and virotrol are also done to observe the concordant and discordant results of quality control test between ELISA and Rapid card.

Result:

In Elisa,the westgard rule is applied with± 2SD, in total 20 runs of QC kits were analysed for three infections, in house control ± 2SD,20 runs cut off value for HIV,HBsAg&HCVare0.11-0.82,0.2-0.46& 0.35-0.67 whereas in QCrun values are 0.21-0.8,0. 21-0.4&0.39-0.63 respectively.

In virotrol± 2SD, 20 runs cut off value for HIV,HBsAg & HCV are 0.48-0.88, Nonreactive&1.47-2.9 whereas in QC runvalues are 0.58-0.73, Nonreactive&1.8-2.7 respectively.

Hence no discordant results found in all the three infections by using In house control whereas virotrol shows discordant result for HBsAg.

In Rapid card test, the in-house controls show Nonreactive for all the three infections whereas virotrol shows Nonreactive for HBsAg.

Conclusion

Failure of the rapid kits to detect HIV,HBV& HCV reactive samples may be due to Inadequate coating of the antigens, Nature of the antigens used and Genetic heterogeneity of the virus. It signifies the need of ELISA testing in TTI to ensure the safety of blood and blood products being issued to the needy patients.

PP 173
PREVALENCE OF VIRAL MARKERS AMONG BLOOD DONORS AT A TERTIARY CARE CENTRE- A RETROSPECTIVE STUDY

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BACKGROUND:

Blood transfusion is associated with several risks particularly exposure to blood transfusion-transmissible infections (TTI), including: Hepatitis B virus (HBV), Hepatitis C virus (HCV), Human immunodeficiency virus (HIV) , syphilis, malaria and others. The safety of donated blood can be estimated by monitoring the prevalence of viral markers in the donor population.

AIM & OBJECTIVES:

The aim of this study was to evaluate the prevalence of viral markers among blood donors.

MATERIALS AND METHODS:.

Over a period of three and a half years (January 2015 to July 2018, a total of 40,253 blood units were collected from healthy voluntary and replacement blood donors. The donated units were serologically screened for hepatitis B surface antigen (HBsAg) , antibody to hepatitis C virus (anti-HCV) and HIV.

RESULTS:

A retrospective analysis of blood donors' records covering the study period was undertaken. The records were analyzed to evaluate the prevalence of TTIs. The prevalence of HBsAg was highest in the year of 2016 and 2017 (1.6 %) compared to 2015 (1.5%) and 2018 (1.1%). There was a marked decline in the prevalence of HCV infection from 0.03% in 2015 and 2016 to 0.01% in 2017 and no case detected in 2018 till July. The prevalence of HIV was highest in the year 2016 (0.17%) , 2017 (0.15% %) compared to 2015 (0.06%) and 2018 (0.07%).

CONCLUSIONS:

The study reveals that the decrease in HBV, HCV and HIV prevalence among blood bank donors might be associated with the introduction of immunization programs and an increased health

awareness throughout the country. However, there is a need for continuous surveillance of TTIs .

PP 174
PREVALENCE OF TTI AMONG VOLUNTARY BLOOD DONORS WITH DIFFERENT ABO, RH AND BOMBAY BLOOD GROUP SYSTEM

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BACKGROUND:

Transfusion of unscreened blood is associated with risk of Transfusion transmissible infection. Genetically determined ABO blood group antigen may prevent binding of possible causative organism to polysaccharide on cell and non secretors of antigens are at risk of TTI.

AIM:

To determine the prevalence of TTI among voluntary donors with ABO, Rh and Bombay blood group system.

MATERIAL AND METHOD:

This was a retrospective study conducted at blood bank of The Tamilnadu Dr. MGR Medical University and Tertiary care hospital over a period of five years from January 2013 to December 2017. Details were collected from the records in the Transfusion Medicine department.

RESULT:

Out of the 41,013 donors, overall 532 (1.3%) were showed seropositivity. Among ABO system, "A" blood group (1.5%, 116/7864) showed comparatively more prevalence of TTI than other groups. Highest percentage of HBsAg was in blood group "A" (1.28%, 101/7864) followed by "B" (1.23%, 173/13971), "AB" (1.1%, 31/2858), and "O" (0.1%, 163/16319).Percentage of HCV was more in group O (0.89%, 14/16319) followed by group AB (0.14%, 4/2858). VDRL was commonly observed in group AB (0.04%, 1/2858) followed by group B (0.03%, 4/13971). Highest percentage of MP antigen was in group B (0.007%, 1/13971) followed by group O (0.006%, 1/16319). Donors with AB group (0.07%,2 /2858) showed slightly higher percentage of HIV infection .The prevalence of TTI seropositivity was relatively higher among Rh-negative blood donors (1.56%, 35/ 2232) comparing to Rh positive donors (1.28%, 497/ 38781). HBV (1.3%, 29/2232) &HCV(0.27%, 6/2232) seropositivity percentage was highest in Rh Negative. Bombay blood group showed no positivity for TTI.

CONCLUSION:

In our study, we observed only marginal variations in TTI prevalence among ABO, Rh and Bombay Blood group systems. Hence, further studies to be conducted with larger number of donors for conclusive remarks.

PP 175
MARKERS FOR TRANSFUSION TRANSMITTED INFECTIONS IN A MEDIUM SIZED BLOOD BANK

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Introduction:

One of the adverse effects of allogenic blood transfusion is the transmission of infectious agents. Florence Nightingale, more than 100 years ago said "No stronger condemnation of any hospital or ward could be pronounced than the single fact that zymotic (infectious) disease has originated in it, or that such a disease has attacked other patients than those brought in with them". It should, therefore, be obligatory on those who are involved in transfusion of blood to apatient for saving his life, that the blood transfusion does, no harm to the patient. Nothing could be worse than the fact that in an attempt to save life, blood & blood products having transmissible infectious agents have been given. 25-30% of multiple transfusion recipients in india show evidence of infection with both HBV and non A and non B hepatitis or HCV.To be licensed, blood banks must screen each donor unit for HBsAg,antibodies to HIV-1 and HIV-2,HCV and VDRL.

Objectives:1) To study and calculate the percentage of HIV , HbsAg ,HCV and VDRL positive donors out of total voluntary and replacement donors in 2017 2) To reduce risk of post transfusion infections in future.

Methods:

In 2017, 17798 voluntary and replacement donors at this centre were screened for the above markers, using commercially available kits.

Results:

The annual data was tabulated month wise. There were 11.13% HbsAg positive donor units, HCV antibodies were detected in 0.22 % of total donors, annual VDRL reactivity was 0.37% and HIV was detected in 2.14% of donors tested.

Conclusion:

Prevention is the key to handling transfusion transmitted infections.The Implementation of donor selection, sensitive screening tests and effective inactivation procedures can ensure the elimination of risk of acquiring transfusion transmitted infection with the collaboration of national haemovigilance system for protecting a secure blood product supply

PP 176
BLOOD DONOR NOTIFICATION AND COUNSELING: OUR EXPERIENCE FROM A TERTIARY CARE HOSPITAL IN SOUTH INDIA, PUDUCHERRY

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INTRODUCTION:

An adequate, safe supply of blood and blood components is a crucial part of blood transfusion services in order to avoid transfusion related infections. Blood donors with reactive screening test results are informed of their results by telephone call, and are requested to come for counselling either at the blood centre or the integrated counselling and testing centre. Many notified donors either do not respond at all or do not follow up their first visit to the blood bank. This study was undertaken to determine the response of blood donors after notification of their reactive status by telephone call.

AIM AND OBJECTIVES:

To evaluate the response rate of transfusion-transmissible infection (TTI)-reactive donors after notification of their abnormal test results during first half of 2018.

MATERIALS AND METHODS:

This is an observational descriptive study performed in our department over a period of 6 months. We evaluated the response rate of TTI-reactive donors after notification of their abnormal screening test results using telephonic intimation.

RESULTS:

During the study period 85 blood donors were found to be seroreactive. Of these 85 seroreactive cases, 1 was HIV positive, 80 were reactive for Hepatitis B surface antigen (HBsAg), 3 were Hepatitis C (HCV) positive and 1 was VDRL reactive. Among the TTI-reactive donors (85), 43 (50.5%) were contacted telephonically. Of the 43 contacted donors, the response rate was 32% as only 14 donors reported for one to one counseling.

CONCLUSION:

Donor notification and post-donation counseling are an essential aspect of the blood bank that entails provision of information on serological status, assess the impact of test results on the donor and finally referral for medical care.

PP 177

STUDY OF INCIDENCE OF HEPATITIS C VIRUS IN LEUKEMIA PATIENTS ATTENDING CANCER INSTITUTE, CHENNAI, INDIA.

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Aim:

A retrospective study was carried out to determine the incidence of Hepatitis C Virus [HCV] Infection among Leukemia patients undergoing treatment at Cancer Institute, Chennai.

Introduction:

Whentransfusion is an essential part of treatment protocol, the screening of donor blood and itscomponents for transfusion transmitted infections like HCV assumes great significance.

Material and Methods:

The retrospective study was carried out at Cancer Institute, Chennai, India during the period 2009 – 2015 on leukemia patients undergoing treatment. The incidence with respect to number of transfusions, demographic profile,time gap between detection of leukaemia and HCV seroconversion, genotype, viral load, Liver function tests and co infection was analysed.

Results:

A total of 79 cases were detected HCV seropositive (Genotype 1). Mean age of presentation was 13.60 ± 11.09 years, 64.1% male, mostly belonging to low income group from rural areas.The average number of total transfusions received by these patients before seroconversion was 7.35 ± 3.77 units and mean time gap between diagnoses of leukemia to HCV seroconversion was found to be 13.42 ± 18.50 months.43% of these patients reported abnormal liver function parameters.The incidence proportion of HCV seropositive cases decreased significantly from 62.5 cases per 1000 population (2009) to 7.17 cases per 1000 population (2015).

Conclusion:

In this study, Seropositive HCV infection was found primarily in young male leukemia (ALL) patients from low socio economic and rural background.The incidence proportion of HCV seropositive cases showed a decrease when transfused with donor blood screened for HCV by Ag-AB Monolisa Ultra V2 as compared to screening with Anti-HCV Assay.

PP 178

PREVALENCE OF HYPOTHYROIDISM, DIABETES MELLITUS AND DELAYED PUBERTY IN PATIENTS OF THALASSEMIA MAJOR IN A TERTIARY CARE CENTER OF JAMMU PROVINCE, JAMMU KASHMIR, INDIA

Dr. Neeti Dutt, Dr Meena Sidhu, Dr Sushilsharma
Government Medical College , Jammu

Background:

Thalassemia is a common genetic disorder which is associated with a lot of complications. Frequent blood transfusions result in increased iron deposition in various tissues leading to dysfunction of many organs of our body. Endocrine disorders constitute a major part of such complications increasing the morbidity of thalassemia manifold in the affected patients.

Methods:

This is a prospective study carried out in 64 thalassemia major patients attending thalassemia day care centre at SMGS Hospital Jammu from December 2014 to November 2015. Patients were examined and investigated for presence of one or more endocrine disorders including diabetes mellitus, hypothyroidism and delayed puberty.

Results:

Endocrine disorders were detected in a total of 22 patients. Diabetes mellitus was detected in 4.7% (n=3) patients, hypothyroidism in 4.7% (n=3) patients and delayed puberty was found in 26.6% (n=17) patients. Mean serum ferritin level was found to be 2885.5 ng/ml and there was no significant difference in patients affected with endocrine disorder and those without any endocrine disorder.

Conclusions:

Endocrine complications occur commonly in patients of thalassemia major. Increasing life span of thalassemia patients has increased the number of patients living with these disorders. A lot of morbidity occurs due to the presence of one or more of these disorders. Hence timely detection of these disorders by screening in all patients of thalassemia should be done to initiate treatment at the earliest so as to limit the morbidity caused by these disorders.

PP 179

TO EVALUATE BLOOD TRANSPORTATION WORKFLOW EFFICIENCY BY IMPLEMENTING IRREVERSIBLE TEMPERATURE MONITORING DEVICE IN A BLOOD BANK OF A TERTIARY CARE CENTRE

Dr. Akshaya Tomar, Major (Dr) Amit Kumar Biswas
Col (Dr) Bhushan Asthana,
Lt Col (Dr) Neerja Kushwaha, Lt Col (Dr) Sudeep Kumar

BACKGROUND:

Wastage of Packed Red Blood Cells (PRBCs) due to interruption in cold chain during transportation hampers the blood transfusion services in meeting its goal of safe and efficient supply of blood.

AIM:

We undertook this prospective and observational study with the aim of finding out whether there is any difference between dedicated trained transportation team and patient's relatives in cold chain maintenance of PRBCs.

METHODS:

Pre validated irreversible temperature monitoring strips (Time strip®) were attached to PRBCs before issue from the blood bank. We included 120 PRBC units into two groups of 60 each; one with trained carriers (dedicated staff) and the other with untrained carriers (patient's relatives). Time of issue from blood bank, time of receipt at the recipient's end, total time elapsed prior to starting transfusion and Time strip® reading were recorded and compared.

RESULTS:

Statistically significant results were obtained between the two arms (Trained Vs Untrained) with p value <0.002 on Chi square testing). 73% of PRBCs were delivered within 30min in the trained group, when compared with 45% in the untrained arm. No statistically significant results were obtained in the average time elapsed from the time of issue to the start of transfusion in both the groups. 6 units were discarded in the untrained arm due to unacceptable Time strip® reading.

CONCLUSION:

This study reiterates the importance of dedicated transportation team in maintaining temperature of PRBCs to less than 10°C during transportation and time limit of 30 min between the issue of blood & starting transfusion, thereby minimizing chances of hemolysis which may cause transfusion reactions due to improper handling of blood, especially in a tropical country like ours.

PP 180

EVALUATION OF BLOOD REQUISITION FORMS AND UTILIZATION PRACTICES AT A TERTIARY CARE HOSPITAL TRANSFUSION MEDICINE DEPARTMENT IN KERALA

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Amala Institute of Medical College, Thrissur, Kerala

BACKGROUND:

Quality of a blood service is evaluated in three analytical phases

(pre analytical, analytical, and post analytical). Pre analytical phase accounts for 68% of total errors. The pre analytical phase includes hospital-based procedures outside the domain of blood bank such as requisition form filling, proper sample identification etc.

The Blood Request forms (BRF) is the first line of communication between the clinician and transfusion medicine .Auditing of blood transfusion requests and calculation of quality metrics (cross match-to-transfusion ratio [C:T] ratio, %T, TI) have been considered the most effective way of evaluating the appropriateness of transfusion.

AIMS:

1. To audit the Blood Bank request forms so to evaluate its appropriateness
2. To assess the utilization of the blood product by Calculating the number of quality metrics: that is the Cross match transfusion ratio(C:T ratio) transfusion probability (%T), and Transfusion index.

METHODS:

A cross-sectional, prospective study was conducted. The blood request forms received from Jan 20 to Feb 2018 were evaluated for its completeness .The red cell concentrate utilization practices were assessed using C:T ratio, transfusion probability (%T), and TI using equation.

RESULTS:

Among 350 requisition forms, 221(63%) were for males and 129(37%) females. Only (2.5%) requisitions completed all parameters, majority were incomplete. Percentage of parameters which remained incomplete were, patients name 4% , Age:10% , Sex:7%, Hospital ID:2%, Ward:3% ,Bed Number:7%, Patient group and Rh:5%, Diagnosis:5% ,Indication:6%, previous transfusion:11%, referring doctors name:4%.Referring doctors signature:47% and If female history of pregnancy or still birth:17%. The Cross match Transfusion ratio was assesses 1.15 and transfusion probability, 89.3%and transfusion Index, 1.5 which shows appropriateness.

CONCLUSION:

Incomplete requisition forms may at times cause alarming issues, need of continuous education programme. Small proportion of blood product marked as urgent was issued in urgency, thereby, compromising inventory management. There was appropriateness in the utilization as the quality metrics were under normal limits.

PP 181
SYSTEMATIC ROOT CAUSE ANALYSIS OF BLOOD BAG DAMAGE IN COMPONENT LABORATORY

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All India Institute of Medical Sciences, Rishikesh, Utharakhand

BACKGROUND:

An efficient error reporting system can limit the magnitude and severity of incidents and prevent future episodes. The MERS-TM approach was applied to an incident involving damage of blood bag during centrifugation which occurred in component laboratory using systematic root cause analysis (RCA) and subsequent implementation of corrective and preventive action (CAPA) was done.

METHODS:

Systematic RCA was performed followed by a fish bone diagram. After identifying the cause, incident was analysed with the aid of MERS-TM and all four evils of error were assessed. Adequate corrective action was undertaken and strict adherence to preventive measures was ensured.

RESULTS:

The incident occurred in component laboratory where the technician noted damage of blood bag while taking it out from the centrifuge buckets after the initial hard spin. A tear was found in the bottom of blood bag which seemed to have been caused by some sharp object/s, while the ports were found intact. The damage was extensive with leakage being sufficient enough to fill the buckets with blood. It was brought to the notice of resident doctor posted in the laboratory who initiated an RCA followed by CAPA for the same. Suspicion of possibility of balances which were moderately sharp in nature and or sealed end of tubing which were accidently kept on the bottom of blood bags were raised. Subsequently technicians were reiterated about the importance of adherence to standard procedures to avoid occurrence of any such incidents in future. Further, resident and technician on duty were assigned the responsibility of supervising correct placement of blood bags into the buckets.

CONCLUSION:

Correct placement of tubing of blood bags in the buckets prior to centrifugation can help circumvent wastage of precious blood resource. Active reporting of such incidents and analysis using systematic RCA approach must be encouraged.

PP 182
ARE PHYSICIANS UTILIZING BLOOD APPROPRIATELY? A RETROSPECTIVE STUDY OF TRANSFUSION PRACTICES IN A TERTIARY CARE HOSPITAL

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BACKGROUND:

Excessive cross matching in addition to being wasteful of resources has adverse consequences on the management of blood inventory and blood quality. Cross match/ to transfusion (C:/T) ratio is an important measure that is used to assess how the physicians are utilizing the blood transfusion services .A C:T ratio of > 2 indicates excessive ordering of cross matched blood.

AIMS:

The main aim of this study was to analyse the pattern of blood cross matching and transfusion requests requirements by the physicians with the aim of creating updated local policies that minimize resource wastage.

METHODS:

76 months of retrospective data from may 2012 to august 2018 was collected which included RBC cross match requirements requests and all RBC units transfused.

RESULTS:

A total of 40,908 units of packed red blood cells were cross matched and 24,787 units were used. The overall C:T ratio was 1.65 corresponding to 60.59% of red cell usage and 39.41% of wastage. The Obstetrics and Gynaecology department had the highest C:T ratio of 2.8 followed by surgery department with 2.2. The department of medicine had the lowest C:T ratio of 1.2 followed by department of oncology with 1.4.

CONCLUSIONS:

The primary outcome of the study was compliance of overall C:T ratio with the international guidelines. We found that current deficiency of MSBOS(Maximum Surgical Blood Order Schedules in the departments like obstetrics and gynaecology and surgery departments were the major factor responsible for high C:T ratio. Therefore MSBOS were suggested for common elective procedures in both the departments.

PP 183
AUDIT OF BLOOD REQUISITION AND UTILIZATION IN ELECTIVE NEUROSURGICAL PROCEDURES

Dr. Kapil Singh, Afreen Karimkhan, Gopal Kumar Patidar, Anjali Hazarika

BACKGROUND:

Over ordering of blood components is common in major cardiac and neuro surgeries. These leads to unnecessary burden

on transfusion services in form of wastage of blood components, manpower and financial outflow. So continuous audit of blood transfusion during major surgeries ensures better usage of resources, cost effectiveness and streamline the process.

AIMS:

The study aims to analyse the differences in number of packed red blood cells (PRBC) requested, cross-matched and transfused in patients' undergone neurosurgery in tertiary care institute.

METHODS:

This retrospective observational study includes 450 patients undergone elective neurosurgery for 6 months period from January 2018 to June 2018. Data were collated from the blood bank E-record. The data collected include patients' age, sex, type of surgical procedure, number of PRBC units requested, cross matched, returned, transfused, cross match to transfusion ratio (C: T), transfusion index (Ti) and transfusion probability(%T).

RESULTS:

During study period for 450 patients, 1628 units of PRBCs were requested of which 1118 (68.6%) units were cross-matched, while 954 (59%) units issued, and only 330 (20.2%) units were transfused. The overall C: T ratio, transfusion probability (%T) and transfusion index (Ti) were 3.38, 39.11% and 0.73 respectively. Maximum PRBC transfusion were in craniotomy and excision surgical procedure {66.36% (219/330)} while minimum transfusion was in cranioplasty procedures {0.12% (4/330)}. The overall difference between PRBC cross matched to issued and PRBC issued to transfused were found statistically significant (p=0.000).

CONCLUSION:

This study highlights wide gap between ordering of blood and transfusion. This indicates the need of implementing Maximum Surgical Blood Ordering Schedule (MSBOS) for elective neurosurgical procedures to reduce wastage of blood components, save time and manpower of transfusion services and efficient management of blood inventory.

PP 184

IMPACT OF SCHOOL AWARENESS PROGRAM ON INCREASING VOLUNTARY NON REMUNERATED BLOOD DONORS IN THE POPULATION - STUDY FROM A TERTIARY CARE CENTRE IN SOUTH INDIA

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Christian Medical College, Vellore

BACKGROUND:

Access to safe blood is a key component of effective health care and voluntary non remunerated blood donation has been universally declared to be the cornerstone of safe blood.

AIMS:

The present study was undertaken to determine existing awareness regarding blood donation among students and local stakeholders and to design specific methods to increase awareness among these groups.

METHODS:

A close ended questionnaire was administered to 22 teachers from 4 different schools and their responses were compiled and analyzed. This was followed by an awareness training programme following which the same questionnaire was administered after the intervention to assess if there was an improvement in knowledge and attitude towards blood donation. 154 school students and 36 parents were also included the study and the same study algorithm was followed. Focused group discussion based on knowledge of blood and blood donation, myths of donation and ideas to improve blood donation in the community was also assessed.

RESULTS:

There was a significant improvement in knowledge regarding blood donation among all participants post the training session. However with respect to attitude scores, there was an improvement in attitude towards blood donation among teachers and students. More than half of the teachers (64%) had not donated previously and there was no correlation between demographic variables and knowledge of blood donation. Children were aware of the need of blood, but was unaware of the concept of voluntary blood donation. Fear of needles, deleterious effects on health and lack of awareness were the most common reasons for non-donation among all groups.

CONCLUSION:

This study highlights that greater knowledge about blood donation does not transform into actual practice. It is essential that donor education and sensitization through extensive campaigning strategies need to be initiated to target different population groups and to reinforce motivational perceptions.

PP 185

THE PATTERN OF RED CELL UTILIZATION IN FOUR MAJOR SPECIALTIES IN A GOVERNMENT MEDICAL COLLEGE AND HOSPITAL OF EASTERN INDIA

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Medical College Kolkata

BACKGROUND:

The tussle between the daily demands of blood and the supply realized is never ending. There is always a limitation to our stores of safe blood. So, it is imperative that the supply and utilization graphs remain at least somewhat proportional.

AIM:

To assess the proportion of red cell units that are not being put to optimal use or are being wasted.

METHODS:

Four departments, with major blood requirements, were randomly selected, viz., Gynaecology and Obstetrics (G&O), Paediatrics, Medicine and Surgery. They were monitored for 16 days. On the 17th day, a surprise audit was made at the in-patient department and assessed for the number of units transfused and the number of units still present in their inventory.

RESULTS:

In the department of G&O, 156 red cell units were issued whereas only 47 units were transfused and 34 units were still in their refrigerator. In Paediatrics department, 289 units were issued versus 206 transfused and in the Medicine department the figures were 274 and 187 respectively. Out of 177 units issued to the Surgery department, 50 were transfused and 66 were in their domestic refrigerator.

In G&O, the cross-match to transfusion(C/T) ratio was 3.32, transfusion probability (%T) was 27.11% and Transfusion Index (TI) was 0.39. In Paediatrics department, C/T ratio, %T and TI were 1.4, 71.75% and 0.77 respectively. In Medicine department, C/T ratio was 1.47, %T was 69.62% and TI was 0.79. In the department of Surgery, C/T ratio was 3.54, %T was 34.59% and TI was 0.37.[C/T ratio <= 2.5, TI >= 0.5 and %T >= 30%, implies significant blood usage]

CONCLUSION:

There appears significant underutilization/ wastage of red cells mainly in the G&O and Surgery departments. This is detrimental to the overall blood stores, thus depriving many in need of this essence of life.

PP 186

TYPE AND SCREEN PROTOCOL VERSUS COOMBS CROSSMATCHING IN HOSPITAL TRANSFUSION PRACTICE

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BACKGROUND:

Pre transfusion compatibility testing mainly includes ABO & Rh

typing, screening the patient's serum for unexpected antibodies and cross matching. If antibody screen is negative and the patient has no previous history of sensitization, then 99.9% of ABO compatible red cell units would be compatible in Coombs cross match.

AIMS:

1. To compare the safety of Type and Screen protocol and Coombs cross matching for compatibility testing.
2. To estimate the efficiency of blood utilization in the department of Obstetrics and Gynaecology for elective surgical procedures.

METHODS:

This was an observational study implemented in three phases on 1800 requisitions from the department of Obstetrics and Gynaecology for crossmatching from December 2015 to December 2017. In Phase I, on 150 requisitions Coombs crossmatching was performed as the pretransfusion test. In Phase II, on 150 requisitions, Type and screen protocol was performed. In Phase III, on 1500 requisitions Coombs crossmatch and Type and Screen protocol were done independently without considering the result of each other. The safety, cost and turnaround time of both the protocols were compared. Blood utilization statistics were estimated.

RESULTS:

In the present study, T&S protocol gave safety level of 100% when compared with Coombs crossmatch. It was detected that 30% of the technologist's time could be saved by using T&S protocol. The usefulness of T&S protocol was shown through detection of unexpected antibodies in 0.4% of cases, which would have been missed otherwise. The transfusion rate amongst the blood ordered and crossmatched were 5.37% and 10.09% respectively. On implementing the T&S protocol; the Crossmatch to Transfusion ratio, Transfusion probability, Transfusion index were corrected from 14.9, 11.3%, 0.13 to 1.1, 100% and 1.07 respectively.

CONCLUSION:

A review of blood ordering habits and blood utilization statistics along with implementation of T&S protocol can help in improving the hospital transfusion practices.

PP 187
EVALUATION OF ERRORS IN BLOOD REQUISITION FORMS

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BACKGROUND:

Errors can take place in any section of a blood bank. An essential section is the reception of requisition forms. The errors present in the received requisition forms can be fatal for the patients if not noticed on time. Therefore, a system is required to monitor the errors or non-conformance in the blood bank continuously. In this context, we evaluated the request forms received at our blood bank. In the evaluation, we found different possible errors in approximately 10% of the forms.

METHODS:

Being a stand-alone blood bank, we receive around 12400 requisition forms from different hospitals in Siliguri and nearby area every year. We evaluated all the requisition forms and samples (37288) collected between the year 2015 and 2018 for detecting errors and non-conformance.

RESULTS:

we were able to find 3946 erroneous requisition forms out of which 3207errors were minor errors for example, incorrect/ missing name (80/12), missing sex or age of the patient (220), unstamped form (1230), unsigned form (410), unmentioned clinical diagnosis (840), incorrect or missing ward/bed number (383) and unmentioned hospital name (44).While 739 errors were severe errors for example, samples found with wrong group (49), unmentioned blood group (250), different registration number on form and sample (364), unmentioned required component name (58) and sample received was of another patient (18). These errors could have been fatal to the patient but our efforts and preparedness detected all the erroneous requests on time.

CONCLUSION:

Approximately 10% requisitions were erroneous among which 20% (2% of total) were severe. The evaluation reports were shown to the hospitals and they were convinced to modify their SOP in order to minimize the errors by rechecking the forms and samples at the hospital level before sending to the blood bank.

PP 188
ESTIMATING BLOOD NEEDS FOR A TERTIARY CARE HOSPITAL

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BACKGROUND:

There is always a disparity between demand and supply of blood units in hospital. Even though there cannot be a single standard or formula for estimating blood needs and estimation needs to be tailored to the local region.

AIM:

The aim of the present study was to estimate the blood needs of the population attending a tertiary care hospital.

METHODS:

Blood needs were estimated by two methods and compared at the blood bank of Government Villupuram Medical College and Hospital, taking the blood utilization pattern of 2017. In the first method, discarded units during the same period, 10% for expected increase in demand and 4% for disaster management were added to 2017 blood utilization data. In the second method, 6 months data of blood usage was obtained (July to December 2017); one week of high usage was subtracted and the sum total was divided by 25. This gave the blood needs for each week.

RESULTS:

In the first method, number of units utilized from January to December 2017 was 8799 blood components. 378 blood components were discarded of which 77 units were red cell units. After computing for discard and demand, the estimated blood needs is 10375 blood components. In the second method, average weekly demand was calculated to be 181.61. When computed for a year (52 weeks), the expected demand was 9445 blood components. Assuming 60% component separation, 5247 blood units have to be collected.

CONCLUSION:

Whatever the formula used, the local blood needs have to be estimated. This will help to assess the burden for blood bank, recruit adequate blood donors and advocate appropriate use of blood and blood components.

PP 189
A STUDY ON BLOOD REQUISITION AND TRANSFUSION PRACTISE IN A TERTIARY CARE HOSPITAL

Dr. Rythu T S, Dr Mayadevi S, Mrs Ancy
Govt TDMC Aleppey

BACKGROUND:

Blood loss is an integral part of any surgical procedure. It depends upon type of surgery, coagulation status & surgical expertise. Demanding large quantities of blood of which little is used commits exhaustion of valuable time and resources.

AIMS:

1. To determine Cross match Transfusion ratio, Transfusion probability and Transfusion index
2. To determine how appropriately blood is ordered in various surgical departments

METHODS:

A total of 412 cases, which had request for PRBC cross match for various surgical procedures during May 2018 were studied

retrospectively with respect to number of units ordered, cross matched and transfused. Then CT ratio, Transfusion probability and Transfusion index were calculated

RESULTS:

CT ratio was 4.6 for elective cases & 2.9 for emergency cases. It was high for Surgery, Orthopaedics, Obstetrics & Gynaecology departments and acceptable level for Cardiothoracic surgery & Neurosurgery department. 96.5% of the requests from Obstetrics and Gynaecology department was appropriate whereas 3.5% was inappropriate

CONCLUSION:

CT ratio of less than 2.5 is associated with significant blood usage. In our study it was much more than 2.5 except Neurosurgery and Cardiothoracic surgery departments. This indicates unnecessary cross matches. In surgeries which have insignificant blood loss, cross match can be avoided.

PP 190

EVALUATION OF TRANSFUSION - RELATED ADVERSE EVENTS IN THALASSEMIC PATIENTS : A STUDY FROM TERTIARY CARE CENTRE AT BARODA

Dr.Parul Prajapati, Dr MilindDighe, Dr Farzana Kothari
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Introduction

Regular blood transfusion is the mainstay treatment and a life saver for thalassemia patients, it may be associated with various transfusion related complications.

Aim

This study was carried out to evaluate immune and non- immune transfusion reaction in thalassemia patients over a period of one year at SSG Hospital, vadodara.

Methods:

This study was carried in the Department of ImmunoHematology and Blood Transfusion, Govt Medical College Baroda from May 2017 to April 2018.A total of 100 thalassemia major patients were included in study who received regular blood transfusions. A detailed history , examination and monitoring of patients throughout the transfusion and up to one week after transfusion for any reaction was done. Various investigations like serum ferritin, blood sugar, liver function test, thyroid function test, serum calcium level, ELISA for HBsAg, HCV, HIV, malaria and syphilis were done. Antibody screening and identification was carried out in all patients.

Results:

There were 27 females and 73 males in total of 100 patients. Adverse transfusion reaction rate was 5.47 %(93/1700). Allergic reactions constituted 13%, febrile reactions 25%, FNHTR 51% and febrile with allergic constituted 11%. Antibody screening revealed 3 patients positive for alloantibody and 5 patients positive for autoantibody.TTIs were found sero-reactive in 5 patients .Serum ferritin levels with multi-organ dysfunction were found despite chelation in 3 patients.There were 2 patients of diabetes mellitus. Total 25 patients who were more than 16 years of age, 11(44%) patients had delayed pubertal development and hypogonadism.

Conclusions:

In the present study, it was found that thalassemia patients suffer from numbers of complications owing to repeated blood transfusion. Thus meticulous monitoring of transfusion and highly accurate, sensitive and specific investigation must be carried in these patients to minimise chances of adverse transfusion complications.

PP 191

DO CERTAIN HLA EXPRESSIONS INCREASE THE RISK OF PSORIASIS ? – AN INDIAN EXPEREINCE

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Dr. T. Ravindra Prasad, Dr. Panicker V.K.
Sri Ramachandra Medical College & Research Institute

Background:

Transfusion Medicine is a multispecialty that includes immunology. This study focuses on HLA association in Psoriasis since studies showing HLA association in Psoriasis are mostly from the West with very little information about HLA association in Psoriasis in the Indian Population. Psoriasis is an immune mediated genetically determined skin disorder affecting 0.5 – 3.0% of the Indian population. Psoriasis is a multi-factorial disease and has been associated with certain HLA expressions.

Aim:

To screen Psoriasis patients for HLA - A & B and determine its association.

Methodology:

The study was conducted in the Department of Transfusion Medicine at a tertiary care hospital in South India. Hundred Psoriasis patients (cases) and 100 healthy blood donors (controls) were enrolled in the study. Samples from the Psoriasis patients were collected from Dermatology Out Patient Department and the samples from the controls were taken from voluntary blood donors in the Department of Tranfusion Medicine. HLA typing was done using PCR – SSP method. The HLA results were analysed stastically by open epidemiology and SPSS software and its association with Psoriasis was determined.

Results:

The alleles which were found in higher frequency among the cases were HLA A*02 (45% of the cases), HLA A*11 (34% of the cases) and HLA A*24 (35% of the cases). HLA B*35 was found in 36% of the cases.

Conclusion:

Certain HLA alleles are present in higher frequency in the disease population than the controls implying that individuals expressing these alleles may have a higher relative risk of developing Psoriasis. The findings of this study on HLA association with psoriasis differs from previous studies done on different ethnicities

PP 192

HLA - C ASSOCIATION IN PSORIASIS

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Sri Ramachandra Medical College & Research Institute

Background:

Transfusion Medicine is a multispecialty that includes immunology. This study focuses on HLA association in Psoriasis since studies showing HLA association in Psoriasis are mostly from the West with very little information about HLA association in Psoriasis in the Indian Population. Psoriasis is an immune mediated genetically determined skin disorder affecting 0.5 – 3.0% of the Indian population. Psoriasis is a multi-factorial disease and has been associated with certain HLA expressions.

Aim:

To screen Psoriasis patients for HLA- C and determine its association.

Methodology:

The study was conducted in the Department of Transfusion Medicine at a tertiary care hospital in South India. Hundred Psoriasis patients (cases) and 100 healthy blood donors (controls) were enrolled in the study. Samples from the Psoriasis patients were collected from Dermatology Out Patient Department and the samples from the controls were taken from voluntary blood donors

in the Department of Tranfusion Medicine. HLA typing was done using PCR – SSP method. The HLA results were analysed stastically by open epidemiology and SPSS software and its association with Psoriasis was determined.

Results:

The alleles which were found in higher frequency among the cases were HLA C*06 (52% of the cases) and HLA C*07 (33% of the cases). HLA C*12 was found in 35% of the controls.

Conclusion:

Certain HLA alleles are present in higher frequency in the disease population than the controls implying that individuals expressing these alleles may have a higher relative risk of developing Psoriasis. This study confirms the previous studies findings that HLA – C*06 is strongly associated with psoriasis.

PP 193

A PILOT STUDY OF PREVALENCE OF RH, MNS, KELL, DUFFY ,KIDD & P1 BLOOD GROUP ANTIGEN IN BLOOD DONORS IN WESTERN RAJASTHAN

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Kuldeep Mehra , Manoj Saini
Blood Bank Bikaner

Introduction

Transfusion support is one of the most widely used therapy in hospital practices but have many risks which can be fatal. Still, RBCs for blood transfusion are mostly only matched for the major antigens, ABO and D, an approach except in chronic transfusion recipients (e.g. thalassemia), who additionally match for minor antigens.

Aim

Objective of this pilot study is to know blood group antigenic frequencies in Western Rajasthan population.

Material and methods

The study was conducted at Blood Bank, attached to department of Transfusion Medicine, Sardar Patel Medical College &A.G. of Hospitals, Bikaner .This pilot study was performed on 200 randomly selected voluntary blood donors(188 men and 12 women, (age range, 18–60years).A total of 200 donors were typed for D, C, c, E, e, K,k, Jk(a), Jk(b), P1, M, and N, S, s, Fy(a), Fy(b) antigens were typed using antisera from ImmucorInc employing tube methods (Indirect Antiglobulin Test). Antigens frequencies were expressed as percentages..

Results:

From the 200 blood donor samples used for extended antigen typing in the Rh system, e antigen was found in 98% donors, followed by D [92%], C [78%], c [71%], and E [30%], with DCe/DCe (R1 R1) as the most common phenotype.K was found to be positive in 2.5% and k=99.5%of donors .Frequencies of M (88%),N(71.5%),S (53.5%) and s (89%) ,Kidd blood group system antigens (Jka = 79%, Jkb = 64%) ,(Fya = 84.5%,Fyb =56%),P1=87%were significantly different than other ethnic group.

Conclusion

So knowledge of red cell antigen frequency and phenotype of different regions will helpful in creating donor data bank for preparation of indigenous cell panels and providing antigen negative compatible blood to patients.

PP 194

EFFICIENT TRANSFUSION DEPARTMNT:-- NOT ONLY FUNTION AS HEART FOR BLOOD SUPPLY BUT ALSO AS STRONG BACKBONE FOR SUCCESSFUL ORGAN TRANSPLANT

Dr. Purnima Rao, SmitaJoshi
Manish Pathak, BipinVibhute
Sahyadri Speciality Hospital Blood Bank

Background:

Organ transplants is the most significant advances in medical practice for saving or extending the lives of people with end-stage organ failure .Over 60 years organ transplantation has been conducted successfully. Indian doctors have opinion that 'LIVER TRANSPLANT YET TO GAIN ACCEPTANCE " the high and rising incidence of chronic diseases like diabetes, kidney & liver disease etc will greatly increase the need for organ transplant which is" The best & only cure "from a living or cadaver source .

Material & Method:

In Pune in 2 ½ years in our hospital 102 transplants were performed for liver Kidney & pancreas. Includes 64 cadaver transplants which are always unplanned cases where the efficiency of transfusion department plays an important role for arranging blood & its components in volume & 38 cases were live transplants.

Results:

As per transplant policy minimum 10 units of every components were kept ready, being cadaver transplants the blood bank was always on their toes to meets all requirements for arranging 4080 units. Including all products for above cases only 1412 (34.60%) units were overall utilized as there was no release of entire reserved stock to be maintained at OT & 65.4 % significant percentage of blood could be utilized for other cases. Out of 102 patients 93 (i.e 91%) is our success rate.

Conclusion:

With proper camp schedules & voluntary donor support unplanned cadaver Organ transplants could be managed efficiently. Only with proper co-ordination ethical & rational use of blood without wastage was achieved."TeamSahyadri in coordination with Rotary has made a gunnies world record for "Organ Donation Pledge "from 21,600 people. When team Sahyadri alone could get this achievement, great miracles can be done if we all unite for such noble cause

PP 195

INCIDENCE AND ANALYSIS OF 7 YEARS ADVERSE TRANSFUSION REACTION: A RETROSPECTIVE ANALYSIS

Dr.Deepthi Krishna, Suryatapasaha
Raghuramprasath, DeeptiSachan

Introduction

Safe blood transfusion is the primary need of all the health care delivery system. Though with the advances of transfusion medicine, the incidences of transfusion risk is gradually reduced, but the Adverse transfusion reaction (ATR) of non haemolytic type still prevails. The purpose of this study was to estimate the incidence and pattern of transfusion-related adverse events at our centre.

Materials and Methods:

The present retrospective observational study was conducted in the Department of Transfusion Medicine, at a multiorgan transplant centre in South India. Adverse Transfusion Reactions reported to the department between April 2011 to April 2018 were included in the study. All the reactions were investigated in detail in the blood bank for the clerical errors, immunohematology workup and classified according to their nature with imputability assessment.

Results:

A total of 140 ATR were reported out of 100569 blood

components distributed during the study period. After the analysis and workup of the reported reactions, majority of the reactions were observed in males (71%, n=99). Most common symptom presented was Itching/ Rashes in 43.57% (n=61) ATR. Allergic reactions (51.42%, n=72), were the most commonly encountered ATR followed by FNHTR (25.71%, n=36). FFP transfusions (0.19%) contributed to the majority of the reactions followed by Red cell transfusion (0.148%). ATR were observed maximum in Liver disease patients (62%) followed by oncology patients (15%).

Conclusion:

The overall incidence of ATR in our study is 0.139% which is comparatively low compared to other studies due to well established hemovigilance systems. Adoption of more equipped methods & sensitive technology in various areas of blood banking will help to bring down the unwanted adverse transfusion reactions.

PP 196

ROOT CAUSE ANALYSIS(RCA) OF INCOMPATIBLE CROSSMATCH AT A TERTIARY CARE TEACHING HOSPITAL

Dr. Heenaben Hirabhai Pagi, Nidhi Bhatnagar, M.D. Gajjar , Tarak Patel , Mamta Shah

Background:

Blood transfusion is an essential part of therapy for many patients.Although life-saving for many patients,blood transfusion is not without risk.The main goal in transfusion medicine is that transfused blood should be compatible with the patient.The clinical and serologic evaluation,which allows for the transfusion of the most compatible(or "least incompatible") blood,requires a joint effort between the clinician and the transfusion medicine physician.The transfused Red Blood Cells(RBC's) will have acceptable survival rate and there will be no significant destruction of recipients own RBC's as well as detection of most clinically significant alloantibodies.

Aims:

Root cause analysis of incidence & causes of incompatible cross matches in patients by column agglutination method.

Methods:

In this prospective study, total of 582296 cross matches were performed over period of last 4 & half years, out of which 867 units were found incompatible by column agglutination method-CAT in polyspecific (IgG + C3d) gel media.A root cause analysis protocol was formulated to resolve incompatibility to ensure safe transfusion to patients.

Results:

On the evaluation of 582296 patients' samples,only 867 units were found to be incompatible(0.14%).The major cause for incompatibility found in patients was autoimmune hemolytic anaemia(32.87%).Other causes of incompatibility were infections(27.44%), multiple transfusions(17.41%),trauma(11.23),evan's syndrome(4.15%),hemolytic disease of newborn(3.57%),sickle cell anemia(2.99%) and incompatibility due to DAT-Direct Agglutination Test positive Packed Cell Volume(0.34%). Majority of incompatible cross matches in patients were found in females than in males.The most common antibody was found was anti-'M' and anti-'c'.

Summary:

The commonest cause of incompatibility was autoimmune haemolytic anaemia(32.87%).Incompatibility was found more in females(51.44%) than in males.Most incompatible units were found between age <12(32.87%).Most incompatible units were found in O positive blood group(33.10%).Clerical and technical error has very low incidence.The RCA protocol involves a thorough evaluation of the patient's clinical condition and underlying pathology to identify the cause. A logical stepwise approach will enable provision of safe transfusion to the patient.

PP 197

A RETROSPECTIVE STUDY ON MAJOR CAUSES OF DISCARDING THE BLOOD & ITS COMPONENTS AND TO CONTROL THE WASTAGE FROM AVOIDABLE REASONS

Dr. Suresh Kumar Lakhara ,Dr Sanjay Prakash ,Dr BhagchandRegar ,Dr VandnaChhabra ,Dr Kailash Kumar
RNT Medical College, Udaipur, Rajasthan

Background:

Blood transfusion is essential part of modern health care. Human blood has no complete substitute till date. There should be no wastage due to avoidable reasons.

Aim:

To find out the major causes for discarding whole blood or components and develop strategy to reduce wastage of blood.

Material & Method:

A retrospective study of discard of blood & blood components was carried out from July 2017 to June 2018 using records available in blood bank, RNT Medical College,Udaipur. The data were collected from donor record, TTI testing, component preparation & discard records & analysed various reasons for blood bag discard such as seropositivity, hemolysis, clots, less quantity, punctured and expiry.

Result:

A total of 21831 blood bags were collected during aforesaid period from which 16512 FFP units and 3228 RDP units were prepared.Total 289(1.32%) units of WB/ PRBC discarded, out of which Major cause was HbsAg (68.85%).Total 204 (1.23%) units of FFP was discarded, out of which major cause was HbsAg (51.96%). Total 330(10.22%) units of RDP was discarded, out of which major cause was expiry (88.78%).It is seen that wastage of R.D.P. is highest among all blood components. Seropositivity leads to maximum wastage of blood and blood components. Thanks to our FIFO policy, no single unit of PRBC, WB and FFP was discarded due to expiry.

Conclusion:

Most common reason for discard of blood was seropositivity. So a simple, non costly, effective and rapid method should be developed for TTIs during screening. Strict FIFO policy should be there. Regular audit will also help to reduce blood wastage. Proper screening of donor and detailed history may also avoid wastage. Bonding between clinician and blood bank staff may also reduce wastage due to improper use, expiry of blood and component specially to reduce R.D.P. wastage.

PP 198

The Perception of Haemovigilance Among Doctors and Health Care Provider: An Institutional Study

Dr. Subhashish Das, Dr. V. Lakshmaiah, Dr. Sunil B N.
Sri Devaraj URS Medical College, Tamaka, Kolar, Karnataka, India

Background:

Haemovigilance program of India (HvPI) was initiated in the year 2012 and is a continuous process of data collection and analysis of transfusion-relates adverse reactions in order to investigate their causes and outcomes to preventrecurrence. To improve the existing transfusion services and to check the under reporting transfusion reactions.The present study was done to ascertain the knowledge attitude and practice (KAP) of haemovigilance among doctors and health care providers (HCP). The information thus collected would facilitate corrective and preventive actions to be taken to minimize the potential risk associated with blood collection processing and transfusion to patients.

Aims and objectives:

a) To assess the knowledge, attitude and practice (KAP) of HCP regarding haemovigilance.

b) To identify the factors which either encourage or discourage transfusion reactions reporting.
c) Generate evidence based recommendation and creates awareness amongst the HCP.
d) Communicate the findings to all key stakeholders.

Methods:

It is a cross sectional, pre-validated questionnaire based study carried out among 405 doctors and health care providers in our hospital after obtaining their consent.

Results:

The response rate of the results was 98%. 70% of the responders had poor knowledge whereas, 10% of the responders had good knowledge about HvPI. The awareness of reporting of the transfusion reactions was unsatisfactory with only 21% of the responders having the adequate and relevant information.

Conclusions:

In order to improve HvPI, it is essential to improveKAP of the HCP. This study will not directly benefit the participants, but their knowledge and practice will safeguard the wellbeing and healthcare of society. The understanding of KAP regarding HvPI among the HCPis the highest standing determinant of their active participation in HvPI implementation. Hence the present study has beendone using the KAP model as a survey tool.

PP 199
Family History during screening blood donors. Do we really give much importance??

Yashaswi Dhiman
CNC blood bank AIIMS Ansarinagar Delhi

Background:

Familial correlations of Hepatitis B and Hepatitis C infection has been published previously in general population. The risk of this infections in blood donors from their families have not been diligently explored.

Aim:

Analysis of consecutive donors reactive for Transfusion Transmitted infection (TTI) by fourth generation ELISA.

Material and methods:

A retrospective study was conducted from January 2016 to July 2018 in a tertiary care hospital, New Delhi. Consecutive donors reactive by ELISA (fourth generation) for HIV, HBV and HCV infections were noted and evaluated.

Results

Out of the 51782 donations 1061 donors were reactive for TTI during our study period. Prevalence of HBV, HIV and HCV infection was 1.32%, 0.21% and 0.51% respectively. Consecutive donors reactive for HBV were 9.20% (63/685), for HCV were 6.0% (16/266) and nil for HIV. In 63 consecutive donors reactive for HBV, 3.80% (26/685) were related to each other, 1.40% (10/685) were not related to each other when donating for the same patient and 3.90% (27/685) were not for the same patient. In 16 consecutive donors reactive for HCV 2.30% (6/266) were related to each other when donating for the same patient and 3.80% (10/266) were donating for different patients. These findings were found statistically significant($p<0.0001$).

Conclusion:

Among all TTI reactive donors 7.4% (79/1061) were consecutive reactive. The reason for the same may be donor or process related. Donor related reasons may be, virus is transmitted from one of the infective family members. Process related reasons may be cross contamination of the consecutive samples, faulty pipetting etc. In our study 32 reactive donors had close contacts with persons having history of infective disease. Hence, family history for risk factors in donor questionnaire shouldn't be missed to further reduce TTI.

PP 200
WHEN VARIABILITY IS THE NAME OF THE GAME – THE ROLE OF MONOSPECIFIC DAT

Sheela Kayalvizhi, Jess Elizabeth Rasalam, Amalraj P., Dolly Daniel.
Christian Medical College, Vellore

BACKGROUND:

Direct Anti globulin Test(DAT) is a very common immuno-haematological test that is performed. The identification of what is coating the red cells has a great impact on the clinical management. Routine DATs use polyspecific anti-human globulins (AHG) and are able to detect Immunoglobulin-G (IgG) and complement components (c3c, c3d) on red blood cells. However, clearly the in vivo significance of different immunoglobulin isotypes/complement coating, impacts variably. Clinical management of these variations are also different. Monospecific DAT helps define the reason for DAT positivity in most cases.

AIM

The aim of this retrospective study was to describe the profile of Immunoglobulin/complement positivity identified in patients on whom Monospecific DAT was performed during the last six months.

RESULTS:

Out of the 45 patients tested, 19(42.2%) patients showed an isolated IgG positivity. IgG with C3d was present in 11(24.4%) patients. IgM along with IgG and complements was seen in 3(6.7%) patients. Isolated complement components (c3c, c3d) positivity was observed in 5(11.1%) patients. 7(15.6%) cases were not interpretable as the controls failed.

DISCUSSION AND CONCLUSION:

Wide variability of antibodies detected on Monospecific DAT is critical to our understanding the primary disease due to the variability of clinical presentation and different management choices. The in vivo significance of a given degree of RBC sensitization by autoantibodies varies greatly, even among antibodies of the same immunoglobulin class. Corticosteroids which are an initial therapeutic tool in treating patients with autoimmune hemolytic anemia (AIHA) of warm antibody type is less effective for CAS. It is critical that particularly in patients with suspected autoimmune hemolysis, where management can vary greatly based on the type of AIHA, a monospecific DAT be done to help aid diagnosis.

PP 201
EVALUATION OF MASSIVE BLOOD TRANSFUSION PROTOCOL PRACTICES; SINGLE CENTER EXPERIENCE FROM A TERTIARY CARE SETUP

Prof. Shamee Shastry, Vijay Ram Reddy, Ganesh Mohan, Chenna Deepika
Kasturba Medical College, Manipal

Background:

Concepts regarding the massive transfusion in hemorrhagic shock are constantly changing.This study evaluates massive transfusion protocol (MTP) practices at a tertiary care transfusion center.

Methods:

A retrospective review was performed of all the MTP activation episodes. Patient records were reviewed for demographics, indication, blood components transfused, lab parameters and outcome. Blood components (PRBC, FFP, RDP) were given in 1:1:1 ratio. Appropriateness of activation of MTP was assessed on case to case basis. Data management was done using Microsoft Excel Worksheet. Descriptive statistics and paired t test was used for the analysis.

Results:

Massive transfusion protocol (MTP) was activated for a total of 105 cases over a period of two and half year (Jan 2015 to June 2017).

with a male to female ratio of 1:3. Majority of the requests for massive transfusion were from trauma unit (43%) followed by Obstetric unit (19%). Blood group 'O' was the commonest type (41%) among the patients. Prior to the activation of MTP, 14 patients (13%) received 1 to 3 units of Packed Red Blood Cells transfusion. Only one pack (2 PRBC: 2FFP) was used in 56 patients (53%). MTP activation was appropriate in 44% of the cases where patient had actually received massive transfusion. On comparing the hematological parameters between the group of patients with massive blood loss versus the group where MTP was activated in anticipation of massive blood loss, statistically significant difference was with respect to mean hemoglobin (6.7 Vs 10 g/dL) and fibrinogen levels (150 Vs. 188mg/dL). Outcome was favorable in 71 (68%) of the patients.

Conclusion:

The present study shows that MTP was activated in anticipation of massive bleed in significant number of cases. Hence we modified the existing protocol incorporating the point of care testing for real time monitoring and to provide individualized transfusion therapy.

PP 202

A STUDY ON ROLE OF PLATELET RICH PLASMA IN ANDROGENIC ALOPECIA

Dr Divya Sharma, Brig (Dr) P S Dhot, Dr Mayurika Tyagi
Santosh Medical College, Ghaziabad.

Background

Androgenetic alopecia is a hereditary, androgen-dependent dermatological disorder more common in men. It is occasionally seen in women. It commonly begins by 20 years of age and affects nearly 50% of men by the age of 50 years. The activated autologous Platelet Rich Plasma(PRP) has growth factors which induce the proliferation of dermal papilla cells. The basic idea behind PRP injection is to deliver high concentrations of growth factors to the scalp, with the hope of stimulating hair regrowth

Materials and methods

In our study, 12 young male and 4 female patients suffering with alopecia in the age group of 25-35 years were selected. After taking adequate consent, they were given autologous PRP injections on the affected area of alopecia with insulin syringes in a therapeutic dose of 1.5 million platelets per ml. The injections were given over a period of 3 months at the interval of 2-3 weeks and results were assessed. PRP is generated by taking 30 ml of blood before surgery; this blood is centrifuged at 1000 rpm for 10 minutes (low spin). The plasma is removed and centrifuged at 2000 rpm for 15 minutes (hard spin). The buffy coat is removed and this is PRP.

Results

3 months after the treatment patient presented with growth in the number of hair, thickness, hair strength and overall alopecia.

Discussion

Androgen-dependent processes are predominantly due to the binding of Dihydrotestosterone (DHT) to the Androgen Receptor Conversion of testosterone to DHT within the dermal papilla plays a central role, while androgen-regulated factors deriving from dermal papilla cells are believed to influence the growth of other components of the hair follicle. The main growth factors involved in the establishment of hair follicle are VEGF, epidermal growth factor (EGF), insulin 1-like growth factor, and fibroblast growth factor.

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Figure 6: The CliniMACS Prodigy Instrument

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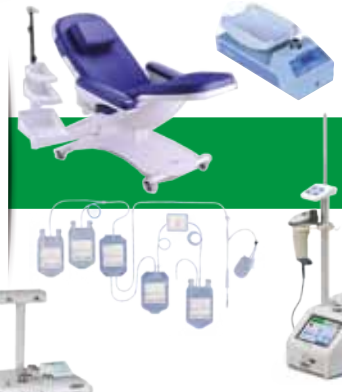

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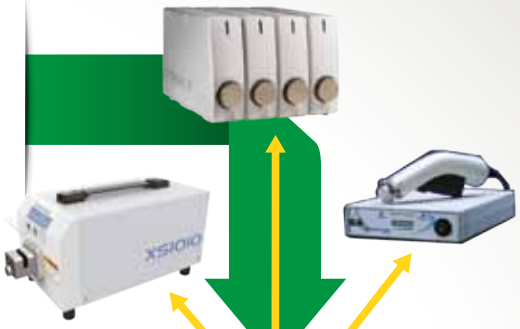

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