Abstracts

Many non-compliance were observed during the use of the 

S16 zero between hematology analyzer and flow cytometry. The concordance correlation coefficient between the results of hematology analyzer with any of the other methods was measured by kappa analysis and found 0.7 between two methods. The results of Nageotte hemocytometer was obtained by: rWBC/μl = [Cells counted X Dilution/ Gridded area volume (50μl)] and flow cytometry a centralized quality monitoring system for leuco-

detection by standard hematology analyzers and presents a technical challenge. The need for quality control of leucoreduction of blood components is below the level of accurate enumeration of rWBC. All tests were performed within 24 hours of collection and according to manufacturers' recommended methods. A total of 36 single donor platelets collected by apheresis from a tertiary care oncology center during January’20 to March’20, were subjected to testing by Nageotte hemocytometer. Aims: To describe the role of Technical personnel such as medical counsellor for efficient functioning and operation of a blood centre. Since opaque areas were observed in the shape of the 

Background: Donor adverse reactions have always had a negative impact on Donor return rate. Many donors will not return to donate for 5 to 6 years if they have had an adverse vasovagal reaction while donating. They cause discomfort, anxiety, and embarrassment to the donors who develop the adverse reaction along with apprehension, anxiety, and fear among the donors who are looking for the donation.

Aims: To estimate the prevalence of immediate VVRs (vasovagal reactions) among blood donors in our hospital and to determine the factors associated with it. Methods: A retrospective study conducted between January 2019 to December 2020 in blood centre of Vinayaka Missions hospital and a total of 4126 whole blood donors were analyzed. All donors were subjected to whole-blood phlebotomy for 350ml. Results: Out of 4126 Whole blood donors, 66 VVR cases were
reported (1.6%). Factors associated with high VVRs were young age group, female gender, first time donors and donation performed in a mobile donation campaign. The most common vasovagal symptoms are Nausea which accounts for 19.6% (13 cases) of the reaction. This is followed by dizziness (12 cases; 18.1%), discomfort (11 cases; 16.6%), sweating (9 cases; 13.6%), anxiety (7 cases; 10.6%) loss of consciousness <30 s (5 cases; 7.6%), weakness (4 cases; 6.1%), hypotension (3 cases; 4.54%) and bradycardia (2 case; 3.3%).

**Conclusion:** This study reinforces the fact that donor retention could be improved by following certain friendly, reassuring practices and by ensuring strict pre-donation screening procedures. This can ultimately result in better retention of blood donors.

**PP_WB 2**

**Green plasma in a male blood donor**

**Soumee Banerjee**

Indian Red Cross Society Blood Centre, Thanjavur, Tamil Nadu, India

Collected whole blood is separated into components to facilitate storage and ensure efficacy and appropriate utilization of each of those components. Plasma is normally yellow and abnormal colors have been associated with metabolic derangements. The case being presented here is of a 21- year old male donor, with no prior history of any significant illness. On separation, his plasma was found to be green. This donor had normal blood counts, serum ceruloplasmin, bilirubin (total, direct and indirect) and no growth was seen in his blood culture. A similar phenomenon has been sporadically and rarely reported in literature. In majority of those cases, the donors were females on oral contraceptive pills, which raised their serum ceruloplasmin levels and caused the greenish color. Reports in males are extremely rare. Consumption of sulphonamides, Pseudomonas aeruginosa infection and elevation of ceruloplasmin in rheumatoid arthritis and high estrogen states such as pregnancy have been deemed as the other most common causes. Green plasma have not only been deemed safe in most literature, they have also been found to have higher coagulation potential. But since no uniform guidelines exist regarding their usage or discard, they are often discarded owing to their appearance. Therefore, it is important to report these cases to familiarize blood centre staff about its occurrence in both genders and with the workup necessary to establish the safety profile of such plasma units. Also, evidence showing that green plasma is associated with normal blood parameters is important in assuring such plasma units. Also, evidence showing that green plasma is associated with normal blood parameters is important in assuring such plasma units.

**Conclusion:** This study was done to know the female contribution towards blood donation at our center and it was found to be 0.46% which was nowhere near to the studies done abroad.

**Aims:** To study the percentage of females as blood donors at our center and to compare the results with similar studies in India and abroad.

**Methods:** It is retro- prospective study done in university medical college blood center of north India from Jan 2018 to Dec 2019.

**Results:** Total blood donors during study period were 18122. Out of which 18038 (99.54%) were males and 84 (0.46%) were females. Thus our study shows that only 0.46% females contribute towards blood donation.

**Conclusion:** To conclude, women in transfusion medicine are less energetic than men, so efforts should be made to make them eligible for blood donation by minimizing anemia prevalent in women. This study was undertaken to know the percentage of females as blood donors in a university medical college blood center of north India.

**PP_WB 3**

**Ladies first but not as blood donors at university medical college blood centre of north India**

**Sukriti Arora, Kusum Thakur, MLT Natish, Jyoti Kumari**

Maharishi Markandeshwar Institute of Medical Sciences and Research, Ambala, Haryana, India

**Background:** There is a paucity of gender studies in the transfusion medicine. This is true regarding effect of gender on motivating potential donors, the selection of donors, promotion of repeat donations, whether blood components collected from a man or a woman may have different effect on recipients and women as recipients’ of blood/components. Blood can be taken from healthy donors in the age range of 18-65 years, weight more than 45kg and hemoglobin equal or more than 12.5gms%, for providing safe blood/component to the needy patients. Women can donate every 16 weeks whereas men can donate every 12 weeks. Recent WHO data shows that globally 32% women are blood donors, although this ranges widely and 14 of the 119 reporting countries report lower than 10% of female donors. India has lowest number of female blood donors in the world as female have 21% deferral rate. A study in India shows that only 3.1% women are blood donors. Women are more eager to donate blood than men despite their limitations which affect their donation rate. Females cannot donate blood while in periods, pregnancy, lactation, on IVF treatment and if previously transfused. Ideally men and women should contribute equally. This study was done to know the female contribution towards blood donation at our center and it was found to be 0.46% which was nowhere near to the studies done abroad.

**Aims:** To study the percentage of females as blood donors at our center and to compare the results with similar studies in India and abroad.

**Methods:** It is retro- prospective study done in university medical college blood center of north India from Jan 2018 to Dec 2019.

**Results:** Total blood donors during study period were 18122. Out of which 18038 (99.54%) were males and 84 (0.46%) were females. Thus our study shows that only 0.46% females contribute towards blood donation.

**Conclusion:** To conclude, women in transfusion medicine are less energetic than men, so efforts should be made to make them eligible for blood donation by minimizing anemia prevalent in women. This study was undertaken to know the percentage of females as blood donors in a university medical college blood center of north India.

**PP_WB 4**

**Assessment of a tool to evaluate donor vein suitability for blood donation**

**M Deepika, C Megala, R Thamilselvi**

Vinayaka Missions Kirupananda Vairiyar Medical College Hospital, Salem, Tamil Nadu, India

**Background:** Phlebotomy is the primary task to be executed during whole blood donation. Any blood donation related adverse events would prevent the donors from further donating blood. Inadequate venous access can result in needle dislodgement and poor flow resulting in low volume collections. A vein score assessment tool was used to assess the suitability of the donor’s veins for donation.

**Methods:** This descriptive study was carried out in the Department of Transfusion Medicine, Vinayaka Missions Kirupananda Vairiyar Medical College and Hospital, Salem during the period of July to December 2020. Assessment of donor vein score was done by using LIKERT SCALE which includes vein visibility, palpation, vein size. Donor vein suitability was judged by two different phlebotomists. Blood donors who are eligible for whole blood donation (new or regular voluntary donors) were provided written consent for general blood donation. Also verbal consent was taken to be a participant for phlebotomists to assess their veins twice for the vein descriptors.
Results: Out of 842 donors with vein score 0-7, 154 (83.24%) of these donations were successful and 31 (16.76%) were unsuccessful. For vein score 8-9, 188 (95.92 %) of these donations were successful and 8(4.08%) were unsuccessful. For vein score 10-12, 452 (98.05%) of these donations were successful and 9 (1.95%) were unsuccessful.

Conclusion: In this study, donor's with lower vein score had higher blood donation failure compared with donors with high vein score. The vein assessment tool minimize the donor discomfort and could be used to guide the new phlebotomist to learn the skill of successful phlebotomy. Therefore, the vein score tool appears to be predictive of a successful donation outcome. Hence, proper successful phlebotomy entices the donor to donate blood regularly.

PP_WB 5

Assessing the impact of adverse donor reactions among replacement and voluntary blood donors

Zulifqar Ahmed
GMC Jammu, Jammu and Kashmir, India

Background: Blood donor reactions are unwanted and unpleasant adverse events that occur during the process of blood donation and can have an impact on subsequent blood donation from the donors.

Aims: This study is aimed to analyse and compare the frequency and severity of adverse events in voluntary and replacement blood donors.

Methods: A retrospective analysis of adverse donor reactions was done at Department of Transfusion Medicine, GMC Jammu, over a period of 1 year from April 2018 to March 2019. Blood donors were observed during and following donation.

Results: A total of 18624 blood donations occurred during the study period with 11267 replacement donations and 7357 were voluntary donations. Among blood donors 17937 (96.3%) were male donors and 687 (3.7%) were female donors. Donors who donated first time were 4577 (24.58%) and 14047 (75.4%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period. Adverse donor reactions among replacement donors were found to be 464 (4.11%) whereas 249(3.38%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period. Adverse donor reactions among replacement donors were found to be 464 (4.11%) whereas 249(3.38%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period. Adverse donor reactions among replacement donors were found to be 464 (4.11%) whereas 249(3.38%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period. Adverse donor reactions among replacement donors were found to be 464 (4.11%) whereas 249(3.38%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period. Adverse donor reactions among replacement donors were found to be 464 (4.11%) whereas 249(3.38%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period. Adverse donor reactions among replacement donors were found to be 464 (4.11%) whereas 249(3.38%) were repeat donors. An overall of 713 (3.83%) adverse donor reactions occurred during the study period.

Conclusion: Adverse donor reactions were found to be less among voluntary blood donors as compared to replacement blood donors. Blood transfusion services should have processes in place for prevention and management of such events to better donor care during blood donation.

PP_WB 6

Adverse events of whole blood donation: A observational study on coastal region of Odisha

Debiprasad Sahoo, Smita Mahapatra,

Binay Bhusan Sahoo, Prasant Ku Dash, Jagannath Sahoo
SCB MCH, Cuttack, Odisha, India

Background: Blood is life saving fluid that cannot be created artificially. So blood donors are the precious resources. Whole blood donation is generally considered to be a safe procedure. Donor recruitment and reaction are essential for ensuring adequate blood supply. However adverse events in donors have negative impact on donor's return.

Aims: The aim of study was to find out the prevalence of adverse donor reaction in whole blood donation and analyzing the predisposing factors.

Methods: The study was a prospective observational study which was conducted on 3000 whole blood donors over period of 3 months at Department of Transfusion Medicine and SCB Blood Bank, Cuttack. The whole blood was collected from eligible Donors after screening as per the NACO guideline and SOP of our institution.

Results: The overall prevalence of adverse donor reaction was 2.33 %. Among which 2.17%are male and 5.2% are female. Among the donors experiencing adverse reaction, most common is vasovagal reaction, and least common is Hematoma. Adverse donor reaction showed a significant association with young age, lower weight, first time donor status and female gender.

Conclusion: Donor safety is an essential prerequisite to increase voluntary blood donation. Adverse donor reaction analysis helps in identifying blood donor at risk of donor reaction. All donors are to be observed during and after the procedure of blood donation for any adverse effect up to 30 minutes. Donors were asked to contact the department if they fill any adverse reaction after words. Adopting appropriate donor motivational strategies, pre donation counselling and care during and after donation retain the donor for future donation.

PP_WB 7

Profile of allogenic whole blood donors with delayed adverse donor reactions

Simranjeet Kaur, Ravneet Kaur, Kshitija Mittal, Gagandeep Kaur
Government Medical College and Hospital, Chandigarh, India

Background: Adverse donor reactions (ADR) either prior to, during or at end of blood donation. These are influenced by donor characteristics such as age, sex, body-weight etc. Immediate ADRs occurring at the blood collection site are reported and managed on-site but the issue arises with the delayed ADRs which occur after donor has left the blood collection premises. Such delayed ADRs are often missed and left undocumented.

Aims: To analyze the profile of allogenic whole blood donors experiencing delayed ADRs.

Methods: A cross-sectional observational study was conducted in the Department of Transfusion Medicine, Government Medical College and Hospital, Chandigarh enrolling 1845 allogenic whole blood donors. Study population was selected using random number of tables. Informed consent was taken from blood donors. Phlebotomy needle withdrawal time was noted. ADRs occurring after 15 minutes of needle removal were termed as delayed ADRs.
and details were recorded. Enrolled donors were also telephonically followed-up on day-2 and day-7 post-donation. Both days, two calls were made at interval of 4 hours before declaring the participant as non-respondent.

**Results:** Delayed ADRs (n=238) were reported by 180 donors of which one required medical assistance. On-site delayed ADRs (n=5) were reported by 2/180. More than one off-site delayed ADRs were reported by 24.71% (44/178) on day-2. The commonest delayed ADR reported were bruise (40.44%) followed by arm-pain (34.36%) and generalized weakness (23.59%). Donors who aged 18-30 years (12.5%), female blood donors (27.3%), first time donors (15.2%) had 1.222, 2.969 and 1.641 times more odds of experiencing delayed ADRs respectively when compared with counterparts. Donors having body-weight 45-60 kg (15.9%) and body mass index (BMI) less than 18.5 (24%) had 2.918 and 2.304 times more odds of experiencing delayed ADRs respectively.

**Conclusions:** Blood donors do experience delayed ADRs but these are reported to blood center only when it starts hampering their daily activities. Female sex, first time donation status, low body-weight (45-60kg) and BMI (less than 18.5) were the risk-factors significantly associated with occurrence of delayed ADRs. Robust methodology and hemovigilance system need to be developed to capture such data in order to improve donor safety and promote donor-return.

**PP_WB 8**

**Analysis of blood donor deferral pattern in a tertiary care hospital**

V Aishwarya, Sreelatha Gayatri

Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India

**Background:** Safety of blood and blood products is a major problem all over the world screening for the markers of infectious diseases alone is an incomplete solution. One of the most important steps in improving the safety is donor selection donors who do not meet selection criteria are deferred either temporarily or permanently in view of both donor and recipient safety.

**Aims:** To analyse blood donor deferral pattern in our blood bank.

**Methods:** Data of blood donor deferral were evaluated retrospectively from January 2018- January 2021 in Department of Immunohematology and Blood Transfusion, BMCRl. Donor selection and deferral was done as per national guidelines.

**Results:** Out of 13,777 blood donors came to donate in our blood bank 13.84% (1908) were deferred. Out of 82.23% (1569) were temporarily deferred whereas 17.76% (339) were permanently deferred. The deferral rate for females and males was 54.08% (1032) and 45.91% (876) respectively. The most common cause for deferral was low haemoglobin 53% (1013) and followed by hypertensive donors 12% (229). Other causes for deferral was due to low haemoglobin 33%. Blood transfusion within one year 12% (229). Immediate deferral was 16% (300).

**Conclusions:** In this study, temporary deferral was most common. Females were deferred more than males. Most common deferral reason is low haemoglobin. Temporary deferred donors require proper follow up and management so as not to lead to a diminished supply of future donors.

**PP_WB 9**

**Effectiveness of therapeutic plasma exchange in pemphigus vulgaris - A case report**

Rajvi Vora, Nidhi Bhatnagar, Mamta Shah, Sangita Shah, Shital Soni, Nihar Chaudhari

Department of I.H.B.T, B J Medical College, Civil Hospital, Ahmedabad, Gujarat, India

**Background:** Pemphigus vulgaris is a rare autoimmune disease that causes painful intraepithelial blistering on the skin and mucous membranes. The average age of onset is between 50 and 70 years. Pemphigus rarely occurs in children. It correlates with the level of circulating autoantibodies; therapeutic plasma exchange is hypothesized to remove pathogenic autoantibodies and has been used in refractory or severe cases.

**Case:** A 15-year-old boy came to our tertiary care hospital with blisters and erosions all over his body and in the oral mucosa. He was diagnosed with pemphigus vulgaris by skin biopsy about 2 years before hospitalization. He was admitted in the Dermatology Department due to aggressively worsening symptoms and extensive lesions. Since, he did not respond to prednisolone and IVIG therapy, trial of 5 cycles of Therapeutic plasma exchange was given and partial remission of back and oral blisters was observed.

**Conclusions:** There is a paucity of studies showing the effectiveness of plasmapheresis in inducing partial or complete remission in young patients. The purpose of this case report is to describe an aggressive presentation of pemphigus vulgaris, especially because the onset of the disease was at an early age. The disease rarely begins in childhood, and this case report highlights the importance of plasmapheresis as a useful intervention in patients with pemphigus vulgaris who are not responding to conventional therapy.

**PP_WB 10**

**Evaluation of the reasons for deferral of prospective blood donors in a tertiary care hospital in north India**

Annu Radha Rajwal, Meena Sidhu, Naveen Akhtar, Neeti Dutt, Devinder Paul Singh

Department of Transfusion Medicine, Government Medical College, Jammu, Jammu and Kashmir, India

**Background:** Selection of a healthy blood donor is an important step in ensuring the safety of blood supply. The shortage of safe blood donors is frequent, and it is important to understand the causes of deferral in blood donors in developing countries, as blood donation is predominately from replacement blood donors.

**Aims:** This study was carried out to determine the reasons for deferral of prospective blood donors.

**Methods:** This study was conducted in the Department of Transfusion Medicine, Government Medical College, Jammu over a period of 1 year from January 2020 to December 2020. Donor deferral records were analyzed for causes of deferral of blood donors. The donor selection standard operating procedure was followed and the donors were subjected to a questionnaire followed by hemoglobin testing, if found suitable, physical examination of donors was performed.
**Results:** From a total of 14446 blood donations, 875 (6.06%) blood donors were deferred due to various reasons. Among all the deferred blood donors 797 (91.1%) were males where as 78 (8.9%) were females. Donor deferrals comprised of 91.2% temporary and 8.8% permanent deferrals, respectively. The primary cause of temporary donor deferral was low haemoglobin: 214 (24.4%) followed by hypertension: 160 (18.2%), Covid-related (travel/ exposure): 92 (10.5%), hypothyroidism: 79 (9.0%), history of medication: 62 (7.1%), tattooing: 53 (6.1%), Alcohol intake: 41 (4.7%), dogbite/anti-rabies vaccination: 29 (3.3%), fever/infections: 25 (2.9%), ear piercing: 24 (2.8%), and history of surgery: 19 (2.2%). The primary of permanent deferral was History of Jaundice: 44 (5%) followed by High risk behaviour: 21 (2.4%) and heart disease: 12 (1.4%).

**Conclusions:** The pattern of blood donor deferral can be used as an important tool for blood safety and also provides key areas to focus on a region or policy formulation nationally for donor selection as well as ensure donor safety.

**PP_WB 11**

**Prevalence of unexpected red cell antibodies in healthy donor population in a tertiary care centre in south Kerala**

AM Gayathri, Debasish Gupta

Bangalore Medical College and Research Institute, Bengaluru, Karnataka, Sree Chitra Tirunal Institute for Science and Technology, Trivandrum, Thiruvananthapuram, Kerala, India

**Background:** Apart from naturally occurring red cell antibodies anti-a and anti-b in human plasma, there are two types of unexpected red cell antibodies: alloantibodies and auto-antibodies. Presence of these antibodies, alone or in combination, makes difficulties with compatibility testing, thereby delaying in issue of a compatible blood unit or may reduce post transfusion RBC life span. Antibody screening is mandatory as laid down by Drug and Cosmetic Act 1940 and Directorate General of Health Services (DGHS) guidelines.

**Aims:** To study the prevalence of Unexpected Red Cell Antibodies in Healthy Donor Population in a Tertiary Care Centre in South Kerala.

**Materials and Methods:** The sample size chosen for this study was 7000 randomly chosen healthy non-remunerated voluntary donors who attended in house and blood donation camps over a period between 26th November 2017 and 15th February 2019.

**Results:** The prevalence of irregular red cell antibodies was found to be 1in 1000. Male blood donations were more than female and blood donors among 18-30 years of age were greater in number. There were no cases of DAT positivity encountered. Male: Female ratio is 2.5:1 and males had naturally occurring allo-antibodies whereas females had a previous history of pregnancy. Anti-M and anti-Lewis antibodies were commonest allo-antibodies followed by anti-Rh (D and C) antibodies and anti-IH in this current study. Benign cold agglutinins were found predominately in the younger male population with a significant seasonal variation noted in the prevalence of these antibodies.

**Conclusions:** All antibodies identified were notorious to cause immune hemolytic transfusion reactions in the recipients. Benign cold agglutinin positive cases were seen more during winter season and rainy seasons when compared to hot climatic conditions.

**PP_WB 12**

**Reactive blood donor notification and calling back where is the GAP**

Rashmi Sood, Nem Singh, Dev Sharma, Satvir Rawat, Aarti, Neha

Sarvodaya Hospital and Research, Faridabad, Haryana, India

**Background:** Adequate and safe supply of blood and blood components is primary aim of blood transfusion services. Supply of safe blood starts with healthy non-remunerated blood donors. Blood screening strategies and criteria defined, redefined and updated from time to time to select safest and healthiest donors. Similarly testing strategies and methodologies for transfusion transmitted infections are updated and upgraded from time to time to have safest possible blood.

Blood donors who are tested reactive are informed about their seroreactive status after calling them back to blood bank and guided in direction of proper treatment. Already they have had given consent on donation form for their counselling.

**Aims:** Is to decrease the number of seroreactive donors in the donor pool after analysis. Also to send the maximum number of seroreactive donors for proper treatment. To determine the gaps in both the above.

**Methods:** Retrospective data of seroreactive donors from January 2020 to January 2021 collected from the records at Sarvodaya Hospital and Research Centre sector 8 Faridabad, a tertiary care hospital.

**Results:** Total blood donors during this period 4317. Sero reactive donors 94 (1.46%) , Number of HIV reactives 13 (0.29%) , HCV seroreactive 18 (0.41%) , HBsAg reactive 1 (0.25%) , Syphilis reactive 10 (0.18%) and Malaria positive 0 (0%). Of 94 seroreactive, only 67 (71.27%) could be contacted. Of these contacted donors only 20 (29.85%) responded to notification and attended counselling and follow up.

**Conclusions:** Results indicate that either some donors already knew about their seroreactive status or they were not concerned for their infection status, lack of education, awareness or non seriousness towards blood donation or towards the seroreactive results. A need to create awareness among donors at time of predonation counselling and predonation screening regarding the blood transmissible infections and the possible etiology behind these. Competent and well trained blood bank counsellors is the need of the hour. Self deferral questionnaire to be filled by all donors. Proper donor education and motivation will go a long way.

**PP_WB 13**

**Analysis of convalescent plasma donor deferrals in a tertiary care center south east Karnataka**

VK Muhammed Shihab, R Sreelatha, AM Gayathri

Victoria Hospital, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India

**Background:** Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered SARS-CoV-2. Convalescent plasma therapy was conducted as a PLACID trial by ICMR and our department was part of this trial. Stringent donor selection criteria are necessary for safer transfusion in the recipients.
Abstracts

**Aims:** Analysis on donor deferral in convalescent plasma collection over a period of 5 months 13 days, from 29th June 2020 to 11th January 2021, in our Transfusion Medicine Department

**Methods:** A retrospective analysis done on convalescent plasma donors who attended Department of Transfusion Medicine, Victoria Hospital, during a period of 5 months 13 days, from 29th June 2020 to 11th January 2021.

**Results:** Out of the total 138 registered convalescent plasma donors 128 were males and 10 were females. Among the registered donors 71% were replacement donors and 29% were voluntary donors. Total 40 were deferred out of which 34 were males and 6 were females. Reasons for deferral among males were low hemoglobin (32.35%), upper respiratory tract infection (22.58%), hypertension (11.76%), on other medication (8.82%), history of recent or ongoing infection (8.82%), recent history of surgery (5.8%), active varicose ulcer on leg (5.8%), dental extraction (2.9%) and root canal (2.9%). Reasons for deferral among females were H/o pregnancy (50%), low Hb (33.3%) and history of abortion (16.6%). Among the donors 68% were voluntary donors and 30% were replacement donors.

**Conclusions:** The major cause of deferral were low hemoglobin followed by upper respiratory tract infection. Replacement registrations were higher compared to voluntary registrations and replacement deferrals were more compared to voluntary deferrals.

**PP_WB 14**

**Donor adverse events among whole blood donors-A study from tertiary care hospital**

D Indhumathi, R Krishnamooorthy, T Ravindra Prasad, A Ashwin

Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India

**Background:** Whole blood donation is generally safe but few donors experience adverse events. Blood centres not only have the responsibility to provide safe and adequate blood to recipients but to ensure donor safety and comfort.

**Aims:** To estimate the prevalence of adverse events among whole blood donors.

**Methods:** This study was conducted retrospectively from January 2020 to December 2020 at Sri Ramachandra Institute of Higher Education and Research Institute, a tertiary care hospital. Standard operating procedure for donor selection and examination was followed. Donor screened fit for donating blood were allowed to donate after drinking 200ml of water. Donors were monitored continuously for adverse events during donation and in the refreshment area. Donors who experienced adverse events were immediately attended to and managed as per departmental SOP. Adverse events were recorded. The recorded data was analysed for nature and the frequency of adverse events.

**Results:** Total number of donations in study period was 5501. Among them male donors were 5530 and female donors were 151. Adverse events were observed in 31(0.56%) donors. Among them 20 donors were first time donors. 30(0.56%) male donors and 1(0.66%) female donor experienced adverse events. All the adverse events observed were vasovagal in nature. The adverse events categorised according to symptoms experienced by donor as; Giddiness and sweating - 25(0.45%) Giddiness and vomiting - 5(0.09%) Loss of consciousness and Myoclonic Jerks -1(0.018%).

**Conclusions:** 0.56% whole blood donors experience adverse events of vasovagal nature. Fear and anxiety associated with first time donation could be the reason for donors experiencing vasovagal reactions. Donor adverse events can be reduced by giving pre-donation counselling, comfortable atmosphere for donation and donor must be given good post-donation care.

**PP_WB 15**

**An analytical study on discard of blood and blood products at tertiary care hospital**

Vidhi Jain, Farzana Kothari, Heena Pagi, Asha Vasava

Maharaja Sayajirao University, Vadodara, Gujarat, India

**Background:** The major challenge in the blood bank is to supply of sufficient amount of safe blood whenever required. To overcome the shortage of blood supply, performance of blood bank can be increased either by increasing the level of resources from voluntary blood donors and/or by reducing the wastage of blood and blood components. Minimal wastage of blood and blood products can be obtained by proper training & education of staff.

**Aims:** To find various reasons for discarding of blood and blood products and various steps to minimize its wastage.

**Methods:** It is retrospective and analytical study based on statistical data available in our blood bank. In which discarded blood units were taken between period January-2020 to December-2020 at the tertiary care hospital, department of Immunohematology and Blood Transfusion, SSG Hospital, Vadodara, Gujarat.

**Results:** Total 9966 donor blood units were collected during period of 12 months. In which total 783 components were discarded due to seropositivity & other reasons. In 783 units, 170 units of PRBC, 114 units of FFP and 499 units of Platelets were discarded. In discarded 170 units of PRBC 76 units were seropositive and 94 were other reasons. In discarded 114 units of FFP 32 were seropositive and 82 were other reasons. In 499 discarded units of platelets 487 were expired due to non-utilization/no demand and 12 seropositive.

**Conclusions:** For judicial use of blood and blood products following measures can be taken: Proper implementation of Blood Transfusion polices & coordination between staff of blood bank and clinical hospital staff. Strict donor selection criteria with proper pre donation history & counseling. Software to identify previous TTI positive donors. Technical expertise staff for phlebotomy, preparing components & TTI testing. Use of apheresis. Proper time to time educating technical staff & doctors for maintaining & tracking quality of processing & preparing blood components.

**PP_WB 16**

**Risk of RH-D alloimmunization after transfusion of platelets from RH positive donors to RH negative recipients- A case report**

Rakesh Kumar Luhar, Parul Prajapati, Ripal J Shah

Advanced Transfusion Medicine Research Foundation, Pratham Blood Centre, Ahmedabad, Gujarat, India

**Background:** Although platelets do not express Rh antigens, they contain small numbers of intact red blood cells or fragments, which
Therapeutic phlebotomy is a safe and efficient treatment modality for haematocrit control, symptomatic relief and prophylaxis of thromboembolic events in patients of polycythaemia vera, lowering of haematocrit to below 45% is associated with symptomatic relief and prevention of complications such as thromboembolism and cardiovascular mortality. In patients of polycythaemia secondary to hypoxaemia, lowering of haematocrit to 50-52% is associated with similar effects.

Aims: To evaluate the role of Therapeutic Phlebotomy in Primary and Secondary Polycythaemia. To observe the changes in haematological and clinical parameters due to serial therapeutic phlebotomies.

Methods: This prospective longitudinal study was conducted over a period of 18 months, with a minimum sample size of 25 patients. Patients undergoing phlebotomy were assessed for clinical and laboratory parameters and their correlation with clinical outcome. The target haematocrit for polycythaemia vera and secondary polycythaemia was respectively 45% and 52%. Baseline sample was taken for CBC and iron studies. 350 ml of blood was drawn using weighing scale. Patients were followed up at 3-day intervals for subsequent phlebotomy. Post procedure symptomatic relief was assessed by a 10-point visual analogue scale (VAS). Complete blood count was performed before and after each procedure and Iron studies were done at the time of enrolment in the study and after achievement of target haematocrit.

Results: 29 patients were enrolled in the study and 3 patients were lost to follow up. 61.5% patients were of primary polycythaemia and 38.5% patients were of secondary polycythaemia. 80.7% patients were male and 19.3% patients were female. Mean haemoglobin at presentation was 17.84 ± 1.882 g/dL and decreased to 14.67 ± 1.147 g/dL at target haematocrit. Change in haematocrit at presentation and target was also statistically highly significant. Mean Serum Iron at presentation was 132.85 ± 94.136 and decreased to 69.41 ± 58.643 at target haematocrit. Symptomatic relief was highly significant as evidenced by a steady reduction in VAS scores from presentation till achievement of target haematocrit.

Conclusions: Therapeutic phlebotomy is a safe and efficient treatment modality for haematocrit control, symptomatic relief and prophylaxis of thromboembolic events in patients of polycythaemia. Frequent small volume phlebotomies can provide adequate haematocrit control and symptomatic relief without inducing overt iron deficiency.

**PP_WB 17**

**Adverse events associated with platelepheresis; A prospective study from tertiary care**

Saadat Nazir Shah

Government Medical College, Jammu, Jammu and Kashmir, India

Background: Platelepheresis is used to obtain platelets from volunteer donors, patient’s family members, or donor with HLA or platelet antigen compatible phenotypes. Increasing demand of platelet transfusions for patients had led to accelerated use of apheresis, because of higher yield of platelets obtained from single donor. It is considered to be safe procedure.

Aims: To analyze the adverse reactions in single donor platelepheresis.

Methods: This is a prospective observational study conducted over a period of one year from September 2018 to October 2019 in the department of immunohematology and blood transfusion medicine, GMC Jammu. A total of 157 platelepheresis procedures were performed after taking informed and written consent from the donor. Out of which 20 were repeat apheresis donors, 45 were first time apheresis donors with no previous history of whole blood donation and 92 were repeat donors from whole blood donation. All the donors were male, age of donors varied from 19 to 56 years. The donors were selected as per the guidelines of Director General of Health Services (DGHS). All the procedures were performed by Fresenius kabiCom.tec op 5/07.08 by intermittent flow centrifugation (IFC). The adverse events (AE’s) were classified as donor related and kit/equipment related.

Results: A total of 10 AE’s (15.7%) were noted of which 6 (9.42%) events were associated with donors, 4 donors (6.28%) were among first time apheresis donors and 2 donors (3.14%) were repeat donors from whole blood donation and 4 (6.28%) events were owned to fault in the kit/equipment. Donor related AE’s include citrate toxicity [n=3(4.71%)], vasovagal reactions [n=2(3.14%)] and hematoma [n=1(1.57%)]. Kit related AE’s include leakage in the kit [n=3(4.71%)] and interface error [n=1(1.57%)].

Conclusions: Even Transfusion of D-positive platelets can lead to development of Rh alloantibodies. It is always preferable to transfuse with same ABO group and same Rh platelet transfusion. D-positive males under 18 year of age, those who already have anti-D antibodies, and transfusion-dependent adults, the platelets of choice are D-negative. D positive platelets can be given if D-negative platelets are unavailable. Anti-D prophylaxis is not required for these recipients. D-negative girls or women of childbearing potential should receive D-negative platelets. If unavailable D-positive platelets can be given with anti-D prophylaxis.
**PP_WB 19**

**Trends of blood donations at a tertiary care center - 13 years (1989-2002) retrospective study**

C Sai Lalitha, B Shanthi, V Sudhir Kumar, K Mahesh Kumar, B Murali Krishna

Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

**Background:** Population based data on blood donor demographics, blood utilisation by various departments arevery limited in India. Research database at our blood centre offers a unique opportunity for monitoring these changes over time in donors and their donation patterns.

**Aims:** To analyse and review the demographics details of donors, changing trends in Transfusion Transmitted Infections, commencement of component preparation and blood utilization in various department of NIMS Hospital.

**Methods:** A retrospective observational study was done on all the donor data from the year 1989-2002. Descriptive statistics were used including graphs and tables. All the panel registers and master records available in NIMS blood centre were analysed manually.

**Results:** A total of 1,41,354 donors were analysed. Males were found to be 15 times (n value=1,16,172) more than female population. Majority of donors were between the age of 20 to 39 years (n value =1,15,782) indicating mostly were from the young and the middle ages. HBsAg showed the highest incidence amongst the blood transmitted infections around 65% (n value = 4,980) of all the Transfusion Transmitted Infections. Replacement donors contributed to 92.82% (n value = 1,24,216) of the donor population and voluntary donors made 7.17% (n= 9,601) and whole blood transfusions accounted to 44.7% (n value = 30,090).

**Conclusions:** Despite continued efforts on blood donor safety and recruitment majority of the donor population remains unchanged with continued under representation of females and also suggest the need for improved recruitment of young and middleaged donors. Geographic location and placement of blood banks is of utmost importance to ensure donor convenience. To overcome the demand supply gap, it is essential to concentrate on promotion of voluntary blood donation. A declining trend is noticed in transfusion transmitted infections but still drastic measures are required to combat these diseases in general population.

**PP_WB 20**

**Assessment of iron status in regular blood donors in a tertiary care hospital in south India**

Anju Joy, Debdata Basu, B Abhishekh, Zachariah Bobby

JIPMER, Pondicherry, India

**Background:** Regular blood donation depletes iron stores. For safe blood supply there is a need to increase national voluntary blood donation. However there is paucity of data in the country regarding impact of regular donation on iron status of donors. The present study aims to find out ferritin values among regular donors as estimation Hb alone is not enough for estimation of iron stores.

**AIMS:** To assess the hematological and biochemical variations with respect to the iron status in regular blood donors in a Tertiary Care Hospital in South India.

**Methods:** Cross sectional analytical study comprising 323 regular whole blood donors in a Tertiary Care Hospital in South India constituted the study population. Seven haematological parameters (Hb, Red cell count, MCV, MCH, MCHC, RDW) by an automated cell counter. 

**Results:** In our study, 323 blood donors were recruited. Among them, 317 (98.1%) were males and 6 (1.9%) were females. The Mean age of the study participants was 30.8. Median number of donations was 10. The number of participants with ferritin level less than 100 ng/dl was 287 (88.8%), out of which 49 (15%) had a ferritin level less than 15 ng/dl. On cross tabulating the result, 86.7% of the individuals with Hb more than 12.5 have ferritin levels less than 100 ng/dl which was statistically significant. We were also able to find a significant negative correlation between ferritin levels and hemoglobin levels.

**Conclusions:** Assessment of haematological and biochemical variations with respect to iron status reveals iron deficiency is prevalent among regular blood donors. Hemoglobin estimation alone in regular blood donors may not be adequate; it will be necessary to review the screening tests for the selection of blood donors and include serum ferritin measurement in the donor screening. Iron supplementation for regular blood donors may be considered.

**PP_WB 21**

**Retrospective analysis of the prevalence of vasovagal reaction among blood donors: 2 years experience**

Debasish Mishra, Girija Nandini Kanungo, B Pati, Rachita Behera, Santosh Ku Mishra

IMS and SUM Hospital, Bhubaneswar, Odisha, India

**Background:** Vasovagal donor reactions are the most common reaction occurred in the blood donation area. The prevalence of these reactions is dependent on age, sex, body weight, and type of donation, like first time vs. repeat. It is essential to find out the prevalence of vasovagal reaction and its prevention of future donation.

**Aims:**

Primary AIMS: To estimate the prevalence of vasovagal reaction among blood donors.

Secondary AIMS: To motivate such donors to come back for future donations.

**Methods:** A retrospective study was done in the Department of Transfusion Medicine from January 2019 t0 January 2020. Data was collected from adverse donor reaction record. Vasovagal reactions were included form record, and other adverse reactions were excluded from the study.

**Results:** Of 20,619 blood donors, 88 (0.42%) persons experience vasovagal reactions throughout the study period. Out of 88, 82 donors are male and 6 female. The age and weight of those donors with vasovagal reactions are 26.48 ± 12.61 years and 70.87 ± 20.52 kg, respectively. 1 donor has vomiting, and 4 donors fell down.

**Conclusions:** Vasovagal reactions are significant reactions seen during and after blood donation. It also causes fear among blood donors for future donations. So it is necessary to minimize such
reactions. Measures to be taken like drinking of water before and after donation. Donors should be counseled to overcome the fear factor associated with such vasovagal reactions.

**PP_WB 22**

**Quality control failure as a marker of quality indicator in transfusion medicine department of a teaching hospital in eastern India**

Santosh Kumar Mishra, Girija Nandini Kanungo, Millind Ku Agarwal, B Pati Co, Debasish Mishra

IMS and SUM Hospital, Bhubaneswar, Odisha, India

**Background:** Internal quality control is the main foundation of a quality assurance programme. Quality control (QC) of blood components ensures the timely provision of best quality of blood products with a minimal risk to the recipients. Hence QC failure rate signifies the lookout for the various areas of improvement needed for blood component preparation.

**Aims:** Our study is aimed to analyze the QC failure rate of blood components and evaluate our performance as a blood centre.

**Methods:** Present retrospective study took place from January 2020 to December 2020 in the Department of Transfusion Medicine, Institute Of Medical Sciences And SUM Hospital, Bhubaneswar. Blood components are tested periodically as per the guidelines by latest amended Technical Manual, Transfusion Medicine, Director General Of Health services (DGHS). Various parameters obtained are compared with the standard values laid down by the DGHS. QC failure rate was calculated as no of units that fail to meet the standard values upon the total number of respective units tested and percentage was obtained month wise for the twelve months in 2020.

**Results:** As per Transfusion medicine Technical Manual DGHS, 1% of total number of component prepared or 4 units of each component should be tested for QC each month. Packed Red Blood Cell (PRBC), Random Donor Platelet (RDP), Single Donor Platelet (SDP) and Cryoprecipitate showed 16%, 8%, 8% and 16% as QC failure rate respectively. Fresh Frozen Plasma (FFP) had nil QC failure value showing the better quality among all the components.

**Conclusions:** PRBC, RDP, SDP and cryoprecipitate show non-conformity to the laid down guidelines by DGHS, hence requiring a detailed root cause analysis of the blood component separation procedure followed. Verification of quality control of automated component extractors as well as training and updating the concerned technician to be considered. All corrective actions taken shall be documented and shall be submitted in the Hospital Transfusion Committee meetings with modification in departmental Standard Operating Procedures.

**PP_WB 24**

**Challenges in optimal blood utilization and inventory management during COVID-19 pandemic - A study from a designated covid care center in an institute of national importance in central India**

Rishi Raj Sinha, Pratul Sinha, Vilasini Patil

AIIMS, Bhopal, Madhya Pradesh, India

**Background:** Maximum Surgical Blood Ordering Schedule (MSBOS) pertains to the process of transfusion support for surgical cases. This involves the communication from the surgical departments for the blood bank regarding blood requirement for a designated surgery. Blood requirements is usually determined by the clinical condition of the patient, surgical expertise and complications. It serves as a guideline to anticipated normal blood usage for elective surgical procedures, with the intention to relate the ordering of blood to the likely hood that a transfusion will be required. Subsequent to this communication the blood bank responds by selecting compatible units and reserving these components for the patient on the day of surgery. An improper communication or lack of inventory can result in wastage of resources or inadequate support for the patient. Once cross-matched the blood bag is held in reserve, ensuing inventory problems for blood banks, loss of shelf life and wastage of blood unit. Consequently if unnecessary blood
orders can be reasonably waived, it will reduce both workload and financial expenditure. The last step involves de-reserving units after the end of surgery. However, this too requires a reliable communication between the surgical dept and the blood bank. If surgical department doesn’t inform about the reserved blood to be taken back in stock, it might create less inventory in blood bank due to which the needy patient might face problem in getting blood unnecessary. MSBOS can be extended and made applicable on non-surgical cases too like in medicine, pediatrics, Radiation oncology. MSBOS therefore is also a reflection of the quality of inventory control and communication protocols of the blood bank, with other surgical departments and non surgical department. COVID-19 affected all these aspects of providing transfusion support to all categories of patients. In our study we present the effects of COVID-19 on the patterns of usage of blood components and inventory management.

**Aims:**

i. To study the pattern of blood utilization and inventory management during COVID-19 pandemic:

ii. To analyze the blood request forms in order to increase the efficiency of blood utilization and inventory management during COVID-19 period.

**Place of Study:** Department of Transfusion Medicine, All India Institute of Medical sciences, Bhopal, Madhya Pradesh.

**Study Type:** Retrospective study of the analysis of Blood bank data.

**Study Duration:** April 2020 to December 2020.

**Methods:** Data of Blood donation area, Issue section were analysed from 1st April to 31st December 2020. The dates were decided as following the implementation of lockdown in country due to COVID 19. These data are analysed for utilization of blood components, pattern of blood donation, reactive status of the donated blood in COVID 19 times.

**Results:** Medicine department has highest number of cross match (24.62%) department wise in COVID times compare to any other department. Trauma and emergency comes the next (17.07%), Pediatric being the 3rd (13.64%) & OBGY being the 4th with 13.06%. Medicine department has highest number of issue (26.67%) department wise in COVID times compare to any other department. Pediatrics comes the next (16.50%), Trauma and emergency being the 3rd (14.29%) & Orthopedic being the 4th with 12.80%. Crossmatch/Transfusion ratio found to be highest with the OBGY department being 1.55, 2nd comes Ophthalmology department being 1.5, 3rd comes Trauma and Emergency with 1.46 and 4th ENT with 1.35.

Total 382 out of 1886(20.25%) blood donors were deferred in COVID times from April to December 2020. Out of 382 deferred, 136(35.60%) were deferred due to other causes like tattoo, alcohol intoxication, history of vaccination, dental extraction, underweight, last blood donation within 3 months, Underage, lack of sleep and second highest were deferred due to anemia. 229 Voluntary donation were done in COVID times from April to Dec 2020 without camp, whereas 261 voluntary donation were done in Non COVID times from April to Dec 2019 with camp. No significant reduction were seen in same span in COVID and Non COVID times inspite of Lockdown imposed in country to stop the transmission of corona virus, with the fear in voluntary donors of getting contacted with COVID positive patients in hospital premises. It means that our voluntary donor programme was so functional that we didn’t face problem in voluntary donation. 1384 Replacement donation were done in COVID times from April to Dec 2020, whereas 1887 Replacement donation were done in Non COVID times from April to Dec 2019. Reduction of 503 donation were seen in same span in COVID and Non COVID times with the multiple reasons like Lockdown imposed in country to stop the transmission of corona virus, with the admission of mostly COVID positive cases giving the 1st priority and not getting replacement donation from their relatives being in the primary contact with the Covid patients.

**PP_WB 25**

**Importance of repeat blood donations camp in Gujarat**

Dhrumil Barad, Kirit Bhatt, Nishith A Vachhani, Sanjeev Nandani

Life Blood Centre, Rajkot, Gujarat, India

**Background:** Blood is considered to be the living force of our body. Human blood is an essential element of human life with no substitute. Blood transfusion has been responsible for saving millions of lives each year around the world. Yet the quantity and quality of blood pool available for transfusions is still a major concern across the globe, especially in the developing countries like India. Main source of blood donation is come from voluntary blood donation camps on a regular basis.

**Aims:** To evaluate the impact of repeat blood donation camp organization.

**Methods:** The cross sectional study was carried out to evaluate the impact of repeat blood donation camp at standalone Life Blood Centre of Rajkot, Gujarat, India. Three years data of year 2018, 2019 and 2020 for organized blood donation camps were analyzed statistically.

**Results:** At the mean of 154 ± 24 camps were organized annually for three year with average collection of 8353 ± 1721 units annually. 31 out of 175 camps were organized repeatedly in 2018, 33 out of 166 camps were organized repeatedly in 2019 and 17 out of 121 camps were organized repeatedly in 2020 with the average of 17 repeat camps in a year. Average of 2166 ± 538 blood units (11% of camps responsible for 26% of total collection) collected in these repeat blood donation camps.

**Conclusions:** Supply of adequate blood could be achieved through timely blood donation camps, where voluntary donors can donate blood. Repeat blood donation camps helps the blood centre to manage supply of quality blood products of nonremunerated voluntary blood donors.

**PP_WB 26**

**FIRST REPORT OF RARE Dc/Dc FROM INDIAN SUBCONTINENT**
Abstracts

Swati Kulkarni1, Tamanna Afroza2, Garima Mishra1, Abu Jafar Mohamed Salehi3, Manisha Madkaikar4

1National Institute of Immunohaematology, Mumbai, India, 2Apollo Hospital, Dhaka, Bangladesh

**Background:** The Rh antigens are clinically very important as the corresponding antibodies can cause transfusion reaction and hemolytic disease of the fetus and newborn. Unusual Rh deficient phenotypes are rarely encountered in routine blood bank testing. Rh null lacks expression of all Rh antigens, D-- phenotype lack C, c, E and e antigens on the red cells. The Dc- phenotype is characterized by the lack of expression of C, E and e on the red cells due to mutations in both alleles of the RHCE gene. Such individuals show presence of multiple Rh antibodies.

**Aims:** To determine the molecular basis of rare Rh phenotype (Dc-/ Dc-).

**Methods:** A 61 year old female, B RhD positive, had a transfusion history of one unit PRBCs in 2019 during which she developed a transfusion reaction. Her obstetric history revealed five miscarriages with two living children. She was on hemodialysis when referred to ICMR-NIHM, Mumbai from Apollo Hospitals Dhaka, Bangladesh for extensive serological and molecular workup. Molecular studies were performed by PCR-SSP and Quantitative Multiplex Polymerase Chain reaction of Short Fluorescent fragment (QMPSF). The copy number of specific RHD and RHCE exons was determined.

**Results:** Serological testing with different clones of anti-C, anti-c, anti-E, and anti-e showed absence of C, E and e antigens, thus identifying the rare Rh variant as Dc-/Dc-. Adsorption-elution & PCR-SSP techniques confirmed absence of these antigens. Molecular analysis by QMPSF showed gene conversion event (RHCE-D (4-9)-CE) between RHCE and RHD causing Dc- phenotype.

**Conclusions:** Though Rh deficient cases (two cases of Rh null & many cases of D-- phenotype) have already been reported from India, this is the first case of rare Dc-/Dc- variant individual from the Indian subcontinent. Presence of RHCE (1-3)-(D(4-9)-CE(10) hybrid was found to be molecular mechanism causing this rare phenotype. The molecular characterization of this rare phenotype might contribute to better understanding of the clinical outcome associated with absence of Rh antigens. In addition, we recommend that all pregnant women should be screen for irregular antibodies irrespective of the rhesus type.

**PP_WB 27**

Challenges in donor notification program

Vilasini Patil, Pratul Sinha

All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India

**Background:** Transfusion safety begins with healthy donors. Screening blood for HIV, Hepatitis B, Hepatitis C, Malaria and syphilis before transfusion are mandatory in India. Once Notification program mandates the blood bank to recall reactive donors for any of these five diseases and provide counselling and necessary health care facilities to them. Confidentiality, reliability of test results and donor satisfaction are the primary goals so as to reduce the disease burden from general population. But notification and follow-up poses a challenge due to lack of awareness about this among general population.

**Aims:** The present study was designed to assess and analyse the challenges involved in donor notification program during its initial years of implementation in Blood Bank at AIIMS Bhopal.

**Methods:** In this retrospective study from Jan 2019 to December 2020, total of 5476 donors were screened. TTI testing was performed using ELISA. All reactive donors were retested and contacted by phone calls as per the SOP of our department and were advised to visit the blood bank. Responders who visited the blood bank were counselled and referred to appropriate departments as per NACO guidelines for confirmation of their reactive status and further management.

**Results:** We evaluated 2.48 % (136 units) cases with reactive screening test results.(HIV- 0.21% HBV-1.51%, HCV- 0.18% Syphilis- 0.45%). 46.3% donors could not be contacted through their given numbers. Out of 73 donors who were notified, 33.8% (46) donors visited the blood bank and were counselled. However response to referral services and treatment follow up could not be assessed.

**Conclusions:** Donor notification is a challenging task demanding special skills from the staff involved to meet new challenges. Notification gets undermined due to communication failure with the donors. Hence more developed communication methods needs to be adopted to increase the response rate. The process of notification and disclosure of results needs to be standardised through training programs to make it more effective. Accuracy of screening performed in blood banks are questioned due to discrepant results from other laboratories done for confirmation. We therefore suggest that Notification should be done only after confirmatory test results of reactive donors are done in blood banks. A structured predonation counselling process needs to be strengthened to spread awareness and enhance the response to notification. Modifications are required to include post referral follow up of these donors. A nationally acceptable guideline for notification and follow up of reactive donors thus needs to be formulated.

**PP_WB 28**

Effectiveness of autologous transfusion in reducing the allogenic blood requirement in cardiac surgery patients

B Vinay M Arun, Archana Bajpayee, Alok Kumar Sharma

AIIMS, Jodhpur, Rajasthan, India

**Background:** Acute Normovolemic Hemodilution (ANVH) is known to reduce allogenic blood requirement. Cardiac surgery is one of the transfusion dependent branch, the requirement of blood is high in spite of using different patient blood management techniques. Allogenic transfusion is costly and carries risks. Autologous transfusion eliminates many risks associated with allogenic transfusion. The present study aims to evaluate ANVH effectiveness in reducing requirement of allogenic blood in cardiac surgery patients.

**Aims:** To evaluate the effectiveness of ANVH on reducing allogenic transfusion requirement.

**Methods:** ANVH is performed only in cardiac surgery patients with preop Hb>10 g/dl with expected intra op blood loss >500 ml. Request for blood components, cross match and issue data is collected from Department of Transfusion medicine and blood bank AIIMS jodhpur. ANVH data collected from August-2017 to February -2021 on 129 operated cardiac patients (Male- 55, Female 74).

**S26**

Asian Journal of Transfusion Science | 2021 | Volume 15 | Supplement 1
Abstracts

**PP_WB-29**

**A typology of blood donor motivations in a regional centre**

Jyotsnaa Grace

The Tamil Nadu Dr. M G R Medical University, Chennai, Tamil Nadu, India

**Background:** In view of the declining trend in number of first-time and repeat blood donors, there is a need to recruit novel strategies in blood donor motivations. Hence, an extensive typology of donor motivations is required to identify less common, yet practically important, motivations that have not been previously reported. Theoretical insights from psychology, biology, sociology, and philosophy of altruism and reciprocity have been applied in this research on donor motivations.

**Aims:** To evaluate the voluntary blood donor motivating factors through an elaborate survey.

**Methods:** This study was conducted in the Department of Transfusion Medicine, The Tamil Nadu Dr. M.G.R Medical University, Chennai from August 2020 to January 2021. 234 voluntary blood donors were asked to indicate their motivations for blood donation using a questionnaire. The motivations were further designated into eleven superordinate categories.

**Results:** Altruism/prosociality (43%) and warm glow (12%) were the most commonly cited motivation. These were associated with a positive behaviour on future donations. Social reputation (2%) and Peer pressure (2%) were the least cited. Among the superordinate categories, Donor identity (47%), Sympathy (10%), Reciprocity (15%), Moral elevation (5%) were the most cited motivations for repeated donations. Various forms of reciprocity such as Direct, Indirect and Future reciprocity were observed among the donors, among which Indirect reciprocity (a friend of the recipient repays for a transfusion that helped the recipient) was the most common motivational factor.

**Conclusions:** This study offers newer insights into donor motivations and highlights novel interventions such as donating blood in memory of the deceased or in addition to other prosociality acts. Since gratitude is predictive of all forms of reciprocity, people expressing their gratitude to transfusion services highlight the prominent role of transfusion service as the target for reciprocal payback. The sense of joy and moral satisfaction after donation was associated with a positive emotional experience. Indeed the role of voluntary blood donors and transfusion service in providing blood and blood components during the COVID-19 pandemic is an archetypal example for such moral elevation.

**PP_WB 30**

**Blood donor selection and deferral pattern - An important tool for blood safety**

K Chanasekaran, P Arumugam, Swathandran Hamsavarthini

The Tamilnadu Dr M.G.R Medical University, Chennai, Tamil Nadu, India

**Background:** The process of donor selection is an important, effective, and economical tool for ensuring blood safety and there is a need to defer blood donors to protect the recipients from getting transfusion-transmitted infections. The Drugs and Cosmetic Act 1940, supplemented by the Standards for Blood Banks and Blood Transfusion Services, provide the criteria for prospective blood donor selection and deferral in India.

**Aims:** To evaluate and analyze the blood donor deferral pattern.

**Methods:** This study was conducted in Department of Transfusion Medicine, The Tamil Nadu Dr. MGR Medical University. Potential blood donors presenting themselves at the blood bank or outdoor camps and deferred due to temporary or permanent reasons from January 2019 to December 2019 were included in study. Initially for collection of whole blood, the donor selection standard operating procedure was followed and the donors were subjected to a questionnaire followed by hemoglobin testing. If found suitable, physical examination of donors was performed. Donors were grouped into four categories based on the reasons for deferral such as 1) Low-hemoglobin-level, 2) Medical reasons, 3) Permanent deferral & 4) Others.

**Results:** 2592 prospective blood donors registered for blood donation and 1902 blood donors (73.37%) donated blood. Maximum donors deferred were among the age group of 18–28 years (54%), followed by 29–38 years (27%) and 14% were in the age group of 39–48 years. The maximum number of deferrals was due to hemoglobin below 12.5 g/dl [43.6% (303/690)], followed by an abnormal blood pressure (either high or low) (11.1%) and ongoing medications (6.9%). History of thyroid disorders and heart disease were the most common reasons for permanent deferral. Low hemoglobin was the main reason for temporary deferrals among female donors [76.8% (233/303)].

**Conclusions:** Prevention and treatment of anemia is the foremost suggested strategy, to avoid commonest reason for temporary deferral, especially among female donors.

**PP_WB 31**

**Therapeutic effect of irradiated apheresis granulocytes in hemato-oncology patients - One year study from tertiary care centre**

S Nithya, P Arumugam, Swathandran Hamsavarthini

The Tamilnadu Dr M.G.R Medical University, Chennai, Tamil Nadu, India

**Background:** Bacterial and fungal infections remain a significant cause of morbidity and mortality in severely neutropenic patients with hematological malignancies receiving dose-intensive chemotherapy & hematopoietic stem cell transplantation (HSCT). It is still under debate whether granulocyte transfusion (GT) increases survival in patients with prolonged febrile neutropenia.

**Aims:** To evaluate clinical efficacy of granulocyte transfusions in hematopoietic patients with febrile neutropenia.
**Abstracts**

The willingness or hesitance to donate plasma

The successful donation was made possible by

In this study we observed a good clinical & replacement fluids. In this case, prothrombin time and serum were done every alternate day with 1.0 volume exchange in antibiotics, steroids & protein supplements. Five TPE procedures were done with multiple primary site infection, septic shock, underlying malignancy, inadequate granulocyte dose and increments.

**Conclusions:** In this study we observed a good clinical & hematological response to GT in febrile neutropenic hematological patients with 72.5% clinical response. Overall, GT therapy is a viable adjunctive treatment option & is feasible and beneficial in febrile neutropenic oncology patients, however well designed, large scale, prospective randomized clinical trials with multivariate analysis is required to analyze other factors influencing IRM like refractory underlying disease, septic shock and pneumonia/ multiple primaryinfectionsites, inadequate granulocyte dose leading to infection control failure.

**PP_WB 32**

**A case report- Therapeupic plasma exchange in a case of alcohol induced acute on chronic liver failure**

**Amarnath Pandey, Gita Negi, Daljit Kaur, Ashish Jain, Rohit Gupta**

All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

**Background:** Acute on chronic liver failure (ACLF) has been identified as a distinct syndrome due to acute decompensation of liver cirrhosis accompanied by extra-hepatic organ failure, primarily caused by an overwhelming systemic immune response. Therapeutic plasma exchange (TPE) has been demonstrated to improve transplant free survival in acute liver failure. This case study shows effect of TPE in a case of ACLF.

**Case Report:** A 26 year old, male admitted under department of Gastroenterology, AIIMS Rishikesh with complaint of yellowish discoloration of eyeballs since 25 days associated with fatigue & malaise. Patient also complained of gradual abdominal distention with pedal edema & decrease in urine output for 3 days & altered sensorium for 1 day. Patient was chronic alcoholic consuming 100gms/day for 18 years. Initially, on admission patient had stable vitals but increased prothrombin time (not associated with any UGI bleed), with raised serum bilirubin (44mg/dl). Serum electrolytes on admission were also altered. Blood urea nitrogen was also raised (70mg/dl). Patient was managed with TPE along with diuretics, antibiotics, steroids & protein supplements. Five TPE procedures were done every alternate day with 1.0 volume exchange in each procedure with Fresh Frozen Plasma & 20% Albumin as replacement fluids. In this case, prothrombin time and serum bilirubin improved significantly after 5th procedure (PT-18 seconds & serum bilirubin -26 mg/dl). Yellowish discoloration of eyes, Urine output and sensorium were also improved. Clinically, pedal edema also got reduced along with ascites. Patient was discharged from the hospital with improved clinical symptoms and stable vitals.

**Conclusions:** TPE is useful treatment & shows improvement in a case of Alcohol induced ACLF.

**PP_WB 33**

Challenges in recruitment and characterizations of convalescent plasma donors during COVID 19 pandemic

**E Thirumagal**

Vijaya Medical and Educational Trust, Chennai, Tamil Nadu, India

**Background:** COVID 19 pandemic had a major impact on Blood transfusion services across the world. Finding an ABO matched compatible donor, significant antibody levels, complete recovery from COVID-19 symptoms, a documented negative COVID-19 PCR, and willingness to donate are only a few amongst the many challenges faced during convalescent plasma therapy donation. Hospital-based blood centers had the advantage to readily identify the potential donors for collection of convalescent plasma at a later date, which saved a lot of time and effort.

**Aims:** The purpose of this article is to analyze the challenges encountered in the collection of convalescent plasma from COVID recovered patients and their characteristics as a donor.

**Methods:** The current prospective study was carried out in a tertiary care hospital based blood centre catering to COVID patients. Data of the discharged patients were collected and contacted telephonically. After applying eligibility criteria, the reasons of deferral were assessed. Data of donors are collected and analyzed.

**Results:** The current prospective study was carried out during the period of May 2020 to October 2020. During this period, a total of 280 potential donors were found, among which only 18 (6.4%) consented for donation. All the donors were Males in the mean age group of 30 +/- 5 years with 61% in 18-35 yrs, 38.8% in the age group of 36-55 yrs. Among them the frequency of ABO blood type was a (38%), B (38%), O (16%) and AB were (5%). 88% of donors have already donated whole blood and 11% were first time donors.

**Discussion:** The willingness or hesitance to donate plasma depended on the already existing social dynamics, the impact of the disease and the enforced quarantine and uncertainty during the start of pandemic. On the positive side, the voluntary donors had a sense of social responsibility by having survived the disease and awareness of plasma donation through media. Conversely, the donors also had fear due to myths of loss in strength of antibody after subsequent donations and rumors related to sale of plasma which impacted further donation.

**Conclusions:** The successful donation was made possible by engaging actively with social barriers, improved and transparent communication, and effective follow up after donation and assuring confidentiality.

**PP_WB 34**

Hemoglobin estimation in blood donors: Hemocue system versus automated hematology analyser

Asian Journal of Transfusion Science | 2021 | Volume 15 | Supplement 1
Abstracts

Narendra Kumar Dadhich, Amit Sharma, Sunita Bundas, Keshari Singh

SMS Medical College and Associated Group of Hospitals, Jaipur, Rajasthan, India

Background: For the screening of blood donors, hemoglobin (Hb) estimation is an important pre donation screening test in order to prevent blood collection from an anaemic donor and ensure an optimum quality of blood product for the recipients.

Aims: To evaluate the performance of HemoCue system and automated hematology analyzer for hemoglobin (Hb) estimation in a blood bank setting.

Methods: This is a single centre-based analytical cross-sectional study of pre-donation screening for whole blood donors in the blood bank of SMS hospital at Jaipur, Rajasthan, India. A total of 100 consenting potential donors were screened according to the criteria laid down by Drug and Cosmetic Act of India 1940, Rules 1945 and Amendments 2020. Blood sample which is routinely collected from the blood donors for screening purpose was tested for haemoglobin estimation using two different screening methods viz., HemoCue Hb 301 system (capillary blood) and Sysmex XP-100 automated hematology analyzer (venous blood).

Results: There was no statistical difference observed between the mean Hb determined by the two methods (P>0.05). The sensitivity and specificity of HemoCue method was found to be 87.50% and 100.00%, respectively. The accuracy of HemoCue was found to be 98.00%. HemoCue method was found to be comparatively more affordable. Taking into account the time taken by the methods, we found that HemoCue took comparatively less time for screening a blood sample.

Conclusions: Taking into account the efficacy, utility, time taken and cost effectiveness; HemoCue Hb 301 system was found to be an appropriate screening method for pre-donation estimation of haemoglobin content in majority of blood donation setups. Jain, Yatendra Mohan, Amarnath Pandey, Mohan.

PP_WB 35

Effectiveness of personal communication strategy in motivating replacement donors to become voluntary blood donors

Romesh Jain, Rakesh Kumar, Poonam Coshic, Hem Chandra Pandey, Romesh Jain

All India Institute of Medical Sciences, New Delhi, India

Background and AIMS: Blood donation is very crucial for continuous supply of blood in blood banks for patient management. This study was conducted to obtain information from replacement blood donors regarding barriers of voluntary blood donation and we assessed the effectiveness of personal communication strategy to convert them into voluntary non-remunerated blood donors (VNRDs).

Methods: Prospective longitudinal interventional study with personal communication strategy as intervention, conducted on in-house replacement blood donors who never donated voluntarily and to convert them future voluntary blood donors. Enrolled blood donors were randomised into case and control arm and questionnaire regarding barrier of voluntary blood donation was administered. Personal communication strategy was applied in case arm and no intervention was done in control arm. Personal communication strategy blood donors in case arm were interviewed by a trained resident doctor who explained them about voluntary blood donation with the aim to raise awareness regarding need of voluntary blood donation in our country and benefits of regular blood donation with scientific evidence-based literature. Six months after the enrolment, donors were contacted telephonically and history of repeat donation were asked in last three months.

Results: Of the selected 769 donors, 381 and 388 donors were randomized into case and control arm respectively. Lack of awareness about voluntary blood donation, lack of time and convenience were the most common reasons for not donating blood voluntarily. In the post motivational period 23.35% and 3.35% of previous seasonal data and to analyze the effect of stress relieving maneuver.

Methods: The data of blood donations and donor reactions were collected. The data was divided in COVID-19 pandemic time from March 2020 to till date and previous year data of the same seasonal duration from March 2019 to February 2020 was collected and compared.

Results: In COVID-19 pandemic time, out of 8908 blood donations, 69 donors suffered vasovagal reactions (0.8% of total donation). On the other hand, in previous year in same seasonal duration, out of 16173 blood donations, 177 donors experienced vasovagal reaction (1.09% of total donations). In COVID-19 pandemic, duration the donor reaction was commoner in replacement donors (0.5%) as compared to voluntary donors (0.2%).

Conclusions: The percentage of vasovagal reaction in blood donors during COVID pandemic was lesser as compared prior to the emergence of COVID pandemic. Some stress relieving maneuver were adopted in the pandemic like proper education about spread of the virus, measures adopted by the staff to prevent spread of the virus during the entire blood donation process and special counseling seasons. These all measures were indirectly successful in relieving stress of the donors and resulted in lesser vasovagal reactions.

PP_WB 36

A retrospective analysis of vasovagal reactions in blood donors in COVID-19 pandemic

Dixa Kumari, Ashish Lal Bhatt

All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

Background: Vasovagal reaction are important to blood donation centers as they negatively impact the number of completed collections, perceptions of the safety of blood donation and donor retention rates. Many studies have concluded that vasovagal reaction is more commonly seen in first time young donors and less likely in repeat voluntary donors. There are multiple risk factors identified for vasovagal reaction in blood donors, one of which is stress induced. The fear of COVID-19 disease in India started in March 2020 and on 11th March 2020, WHO declared it a pandemic followed by nationwide lockdown on 24th March 2020 creating a high level of anxiety and stress among people. Some stress relieving maneuvers were adopted in the pandemic to decrease the stress in blood donors.

Aim: The aim of the study was to analyze the vasovagal reactions in blood donors in COVID-19 pandemic and to compare it with previous seasonal data and to analyze the effect of stress relieving maneuver.
the blood donors donated blood voluntarily in case and control arm respectively. The difference in the proportion of blood donors who donated voluntarily was found to be statistically significant (p<0.01) between both the arms.

**Conclusions:** This study revealed the factors for not donating blood voluntary. We believe that our results can be used to convert the existing replacement donors into voluntary donors by personal communication strategy and future study can be planned, combined with some other effective tools to bring the maximum desired results.

**PP_WB 37**

"Cup of joy" randomised control trial on effect of regional caffeinated beverage "kattankappi" in blood donors' 

**Magdelin Simon Varghese, S Mayadevi**

Government TD Medical College, Alappuzha, Kerala, India

**Background:** Donors have always been the heart of blood bank. Altruistic voluntary blood donor is the single, first & most important factor in blood safety. Donor reactions when they occur has the potential to negatively influence the donor. We have to identify effective strategies for prevention of donor reaction to reduce such unpleasant events. This still remains a challenge for Transfusion Medicine consultants. We have to look into various simple and cheap modifications or additions which can be easily implemented along with the standard operating procedures in various blood centers. Caffeine has been the most celebrated drink since its discovery. This ongoing study looks into the effect it can cause in blood donors when given before donation. If found significant it can very well improve donor retention, uphold welfare of donors & ease management of donor sessions. Kattankappi is a locally available drink, cheap and easy to make. Significance of my study lies in the fact that if a regional drink like Kattankappi could decrease adverse donor reaction and increase the return of donors, this cost effective action could be introduced in our blood centers.

**Aims:** Primary Objective: To find out effect of “Kattankappi” on adverse donor reaction in multiple and first time donors. Secondary Objective: To find out whether there is an increase in blood collection time (from initiation of donation and completion of donation) after intake of kattankappi.

**Methods:** This is a randomized control trial with the control group receiving 150 ml hot water and the intervention group receiving 150 ml "kattankappi" 20 min prior to. Allotment to each group was chosen in random. Subjects were put for evaluation, also underwent clinical evaluation. "Kattankappi" was made in the department after standardizing and defining its procedure.

**Results:** Study ongoing.

**Conclusions:** Study is expected to reveal whether there is any betterment of physical and emotional wellbeing of the blood donor. As it is crucial for the return of blood donor again for donation and improving the inventory management in the blood center.

**PP_WB 38**

Assessment of serum iron stores in regular plateletpheresis donors

**Pinjari Chinigi Sab, Gagandeep Kaur, Paramjit Kaur, Anita Tahan**

**Background:** Iron is essential for growth and homeostasis of all cells. Anaemia is the most common nutritional deficiency disorder in the world. Iron deficiency is a common complication due to repeated blood donation. The present study was conducted to evaluate serum iron stores in regular plateletpheresis donors.

**Aims:** To assess serum iron profile in regular plateletpheresis donors.

**Methods:** The present study was conducted in the department of Transfusion Medicine, Government Medical College and Hospital, Chandigarh. A total of 60 donors were included in this study, 30 were regular plateletpheresis donors and 30 were first time donors. The donor samples were collected before donation for complete hemogram, transfusion transmissible infections screening and iron studies.

**Results:** All sixty donors enrolled in the study were males. The mean age of all donors was 27.38 ± 6.39 years. The mean age of the cases and control group was 28.53 ± 6.05 years and 26.23 ± 6.61 years respectively. 85% of donors were aged between 18-32 years. Out of 60 donors, more than half of the donors (56.6%) had serum ferritin less than 30ng/ml. Out of these 34 donors, 25 were from case group and 9 donors in control group. The mean serum ferritin level in cases and controls was 21.09 ± 30.54 ng/ml and 62.12 ± 48.75 ng/ml respectively (p<0.001). The mean serum iron in cases and controls was 71.23 ± 31.32 µg/dl and 93.53 ± 33.53 µg/dl respectively (p=0.016).

The mean percentage of saturation in cases and controls was 20.09 ± 9.31% and 26.26 ± 9.03 % respectively (p=0.012).

**Conclusions:** Serum ferritin of the cases was significantly lower than the control group. Out of 30 cases, 25 (83.3%) donors had serum ferritin levels less than 30ng/ml. However, in control group, only 9 (30%) donors had serum ferritin levels less than 30ng/ml. Regular plateletpheresis donation may lead to depletion of iron stores, and therefore subclinical iron deficiency.

**PP_WB 39**

Analysis of deferrals in plateletpheresis donors in a tertiary care centre

**Salve Sharma, Meena Sidhu, Neeti Dutt, Anshu Mahajan, Zulfiqar Ahmed**

GMC Jammu, Jammu and Kashmir, India

**Background:** The demand of platelets is increasing day by day in clinical practice. Platelets are prepared either from whole blood or plateletpheresis. The plateletpheresis product comprises an important adjunct to blood bank inventory. The single donor platelet is equivalent to 5-6 random donor platelet units. However, recruitment of healthy donors for plateletpheresis plays a pivotal role in providing optimum product for the recipient as well as ensuring good health of donors.

**Aim:** The aim of the present study is to analyse the reasons for deferral of plateletpheresis donors at a tertiary care centre.

**Methods:** This retrospective study was conducted to in the Department of Immunohaematology and Blood Transfusion, GMC Jammu, over a period of 1 year from January 2020 to December 2020. The records of donor deferral was analysed for the causes of deferral. The donor selection standard operating procedures was followed.

**Results:** During the period of study, out of a total of 135 donors screened, 39 donors were deferred, deferral rate being 28.88%.
Out of donors deferred, 6 (15.38%) were females and 33 (84.61%) were males. The most common cause of deferral was low platelet count accounting for 11 donors (28.21%), followed by poor venous access found in 11 (28.21%), low hemoglobin found in 6 (15.38%) donors, 4 (10.25%) had history of NSAIDs intake, 3 (7.69%) donors refused to donate out of fear when duration and procedure was explained, 2 donors (5.13%) had dual causes of deferral that is low hemoglobin and low platelet count, 1 (2.56%) donor came HBsAg positive by rapid serology, 1 (2.56%) donor was deferred as the last whole blood donation was 2 weeks back. Temporary deferrals accounted for approximately 94.87% of all plateletpheresis deferrals.

Conclusions: The donor selection is a key factor in providing safe plateletpheresis product. The selection criteria for plateletpheresis donors should be revised to accommodate more donors and reduce deferral rate without compromising on the health of the donors. Awareness among the donors regarding safety and simplicity of the plateletpheresis procedure will further help in recruiting more donors.

PP_WB 40

Iceberg phenomenon in reporting of adverse donor reaction
Vinu Rajendran, Bemma Paonam, Shamee Shastry, Dhivy Kandasamy, Ganesh Mohan, Deepika Chenna
Kasturba Medical College, Manipal Academy of Higher Education, Manipal, Karnataka, India

Background: Donor reaction is any untoward or unpleasant event occurring to the donor before, during, and after donation. The majority of the reactions may not be notified or reported as donors may hide or fail to notify the reaction occurring to them to the blood centre. Another attributing factor may be the delayed reactions. A better understanding of the frequency, type, and cause of the under-reported reaction helps in early detection, avoid complications, and adopting mitigation strategies.

Aims:
- To determine the frequency of the under-reported donor reaction among donors
- To identify the reason, type and causal factors of under-reported reactions.

Methods: This was a prospective single center observational study. Three hundred donors who were accepted for whole blood donation at our blood centre were recruited after obtaining informed written consent. Donors who developed donor reaction in the current donation was excluded. After donation before leaving the premise, participants were interviewed based on proforma. Participants were interviewed over phone and same proforma questions were asked in the subsequent day. Proforma includes socio-demographic and donation details of the donor and set of questions on symptoms of donor reactions. Collected data were entered in Microsoft Excel and were analyzed and compared using IBM SPSS Version 21.0.

Results: A total of 90 collections, 30 from each equipment were analyzed. The mean platelet yield per unit was 3.95(±0.83) X 10^11, 3.52(±1.2)X 10^11, 3.70(±0.88) X 10^11 for A1, A2, and A3, respectively. There was no statistically significant difference in the platelet yield among the three collection system. The average collected volume of the product in A1 was 248(±13.3) ml, A2- 255(±35) ml, and A3 - 206(±20.1) ml (P=0.0001). The mean total blood volume processed was 1964.36(±349) ml for A1, 2170.46 (±432.87) ml for A2, and 2162.76 (±304.32) ml for A3. Collection efficiency was found to be 85.4(±25.4) %, 61.7(±22.5) %, and 72.4(±23.8) % (P<0.001) and average collection rate was 0.05(±0.01) ml/min, 0.04(±0.01) ml/min and 0.06(±0.02) ml/min in A1, A2, and A3, respectively.

Conclusions: Blood center shall adopt strategies to sensitize donors regarding possible reactions. Blood center team shall do a pro-active role to identify unnoticed donor reactions.

PP_WB 42

Predicting donor factors in high platelet yield platelet donations by classification and regression trees analysis
Mohandoss Murugesan, Riyas Malodan, Merline Augustine, Sangeetha K Nayanar
Malabar Cancer Centre, Thalassery, Kerala, India

Background: Collecting high dose (HD) or double dose (DD) platepheresis units from single collection offers significant benefit by improving inventory logistics and minimizing the
cost of unit produced. Platelet collection yield by apheresis is primarily influenced from donor specific variables, but procedural differences and type of cell separator used also affects platelets collection yield. Classification and Regression Trees (CART) analysis is a tree-building technique in which several predictor variables are tested to determine how they impact the outcome variable.

**Aims:** To predict cut off in donor factors resulting in HD and DD platelet yield in plateletpheresis donation between Trima/Spectra Optia and MCS+ apheresis equipment’s using CART analysis.

**Methods:** Platelet donations with target ±4.5x10^11 platelets collected using MCS+, Trima Accel and Spectra Optia were included. Donation end points were ≥6 x 10^11 platelets for DD and ≥4.5 to ≤6 x 10^11 for HD platelet products. CART analysis was carried out to predict the donor factors such as weight, age, hematocrit and platelet count resulting in high platelet yield in platelet apheresis donation among Trima/Spectra Optia and MCS+ apheresis equipment’s by R programming software.

**Results:** Out of 1102 donations, DD were possible in 60% collections and HD in 31% procedures. Trima/Spectra Optia equipments predicted higher success rates when the donor platelet count was set at ≥205x10^9/µl and ≥237x10^9/µl for HD and DD collections. MCS+ equipments predicted better success when donor platelet count was ≥286 x10^9/µl for HD and ≥384x10^9/µl for DD collections. Increased donor weight helped counter the effects of lower donor platelet counts only for HD collections in both the equipments. Donor platelet count and weight formed strongest criteria for predicting high platelet yield donations.

**Conclusions:** Selecting donors according to equipment based donor characteristics will be a key factor in retention of apheresis donors. Both Trima/Spectra Optia and MCS+ equipment’s collected high platelet yield products leading to multiple units with varied success rates. The success rates for collecting DD and HD products were higher in Trima/Spectra Optia as they require low donor platelet count and body weight than MCS+ equipment’s.

---

**PP_WB 43**

**Trends of blood donations at a tertiary care center – 13 YEARS (1989-2002) retrospective study**

Sai Lalitha, B Shanthi, V Sudhir kumar, K Mahesh kumar, B Murali Krishna

Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

**Background:** Population based data on blood donor demographics, blood utilisation by various departments arevery limited in India. Research database at our blood centre offers a unique opportunity for monitoring these changes over time in donors and their donation patterns.

**Aims:** To analyse and review the demographics details of donors, changing trends in Transfusion Transmitted Infections, commencement of component preparation and blood utilisationin various department of NIMS Hospital.

**Methods:** A retrospective observational study was done on all the donor data from the year 1989-2002.Descriptive statistics were used including graphs and tables. All the panel registers and master records available in NIMS blood centre were analysed manually.

**Results:** A total of 1,41,354 donors were analysed. Males were found to be 15 times (n value=1,16,172) more than female population. Majority of donors were between the age of 20 to 39 years(n value =1,15,782) indicating mostly were from the young and the middle ages.HBsAg showed the highest incidence amongst the blood transmitted infections around 65% (n = 4,980) of all the Transfusion Transmitted Infections.Replacement donors contributed to 92.82 % (n value = 1,24,216)of the donor population and voluntary donors made 7.17 % (n= 9,601) and whole blood transfusions accounted to 44.7% (n value = 30,090).

**Conclusions:** Despite continued efforts on blood donor safety and recruitment majority of the donor population remains unchanged with continued under representation of females and also suggest the need for improved recruitment of young and middleaged donors. Geographic location and placement of blood banks is of utmost importance to ensure donor convenience. To overcome the demand supply gap, it is essential to concentrate on promotion of voluntary blood donation.A declining trend is noticed in transfusion transmitted infections but still drastic measures are required to combat these diseases in general population.
donation are a demotivating factor that can affect donor retention. Thus, identifying donors at risk for developing an adverse reaction and providing extra safety measures can decrease the incidence of donor reactions.

PP_WB 45

Prevalence of anemia and polycythemia in individuals registered for blood donation at a blood centre in tertiary care hospital

Amita Radhakrishnan Nair, A Anju, VS Amritha, AS Subimol, Debasish Gupta

Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala, India

**Background:** Pre-donation haemoglobin estimation of donors is done to ensure quality of the collected blood unit and to prevent donation by individuals with anaemia. Anaemia was defined by the World Health Organization (WHO) as haemoglobin concentration of less than 13 g/dl in males and less than 12 g/dl in non-pregnant females, although even though minimum haemoglobin required to be eligible for blood donation in India is 12.5 g/dl for both males and females. Haemoglobin (Hb) thresholds of more than 18.5 g/dl in males and 16.5 g/dl in females were used as a surrogate marker for increased red cell mass or polycythaemia by WHO. Haemoglobin levels outside the normal levels of 12-16.5 g/dl in non-pregnant females and 13-18.5 g/dl in males are considered pathologic and needs investigation of its aetiology. Such individuals need to be educated and guided to seek medical advice for further management.

**Aims:** To estimate and compare the prevalence of anaemia and polycythemia in prospective blood donors, based on WHO criteria.

**Methods:** Data regarding age, gender, haemoglobin levels, and frequency of blood donation in the last year were obtained from blood donor questionnaire form. Retrospective data of two years was collected for this study.

**Results:** Between January 2019 to December 2020, 512 females (45.5%) and 72 males (1.68%) registered for blood donation had haemoglobin below 12 g/dl and 13 g/dl respectively. 79.88% of the anaemic females were first-time donors. The lowest recorded haemoglobin was 7.1 g/dl in a female donor aged 43 years. The prevalence of anaemia was found highest in 18-25 years in females (57.93%) and 26-35 years among males (44.44%).

**Conclusions:** Pre-donation haemoglobin estimation may be the first opportunity to identify individuals with haemoglobin values outside the normal limits. Such individuals need to be given guidance on seeking medical advice to identify the aetiology, take treatment when needed and encouraged to return back to blood donation, once the haemoglobin values normalise.

**Reference**

1. WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva, World Health Organization, 2011.
2. http://nbtc.naco.gov.in/assets/resources/policy/Letter-reg-%20guidelines-for-blood-donor-selection&referral-2017.pdf.
3. Misawa K, Yasuda H, Araki M, Ochiai T, Morishita S, Nudejima M, Hironaka Y, Shirane S, Edahiro Y, Gotoh A, Ohsaka A (2017) The 2016 WHO diagnostic criteria for polycythaemia vera renders an accurate diagnosis to a broader range of patients including masked polycythaemia vera: comparison with the 2008 WHO diagnostic criteria. Am J Hematol.
Abstracts

**Methods:** All the PRBC units irradiated for a one year period were included. Retrieved data included date of collection, irradiation, revised expiry, and issue of blood. Expiry dates were calculated for individual guidelines: AABB/DGHS - maximum expiration time of 28 days after irradiation or the original expiry, whichever is shorter, and no limit on RBC age at time of irradiation. EU- irradiated up to 28 days after collection, must be transfused no later than 14 days after irradiation, and in any case, no later than 28 days after collection. BCSH: irradiated up to 14 days after collection, and thereafter stored for a further 14 days. The concordance rates among these guidelines were analyzed. Chi-square and Kruskal Wallis test was used for comparisons between the guidelines.

**Results:** Out of 1303 PRBC units irradiated, median age for irradiation was 2 (0-36) days. Median DFE for these units transfused was 26 (0-28) days. 2.8% units expired as per DGHS standards. Units irradiated after 14 days and 28 days of collection in nine and one event respectively. Units not transfused within 14 days of irradiation in 85 events and >28 days of collection in five events. AABB/DGHS practice was not concordant with EU standards for 86 (6.6%) events and with BCSH 94 (7.2%) events. Overall discordance between the present practice against EU and BCSH was seen in 130 (10%) events.

**Conclusions:** Median PRBC irradiation age and DFE was two and 26 days respectively at our centre. Only 90% concordance observed between AABB/DGHS and EU/BCSH guidelines.

**POSTER_BCS 3**

**Utilization of blood and blood components in a tertiary care hospital**

Arati Ghate, Ramesh Chavan

Jawaharlal Nehru Medical College, Belagavi, Karnataka, India

**Background:** Blood is the most valuable and unique gift that anyone can give to another person. Blood transfusion is the most vital component of healthcare system. Blood donor is of crucial importance as till date we are not able to prepare whole blood artificially and no substitute is available. It is a primary responsibility of blood transfusion services to provide safe, sufficient and timely supply of blood and blood components. The emphasis is now shifted to the use of blood component therapy instead of whole blood as the blood is a limited and valuable resource.

**Aim and Objective:** To study pattern of utilization of blood and blood components in a tertiary care hospital and indications for transfusion during the study period.

**Methods:** This is a observational study of 2 years (August 2018 – August 2020) on pattern of utilization of blood and blood components carried out in the Blood Bank of KLES Dr. Prabhakar Kore Hospital and Medical Research Center, Belagavi.

**Results:** There were total 12468 transfusions during the study period. Whole blood as well as component utilization was calculated in all these transfusions.

**Conclusions:** The pattern of utilization of blood and blood components is of great significance with respect to quality management, transfusion practice and cost analysis. Periodic review and audit of blood component usage is essential to improve patient care.

**POSTER_BCS 4**

**A comparative analysis of hemolysis and potassium levels in pre-storage leucocyte depleted RBC units with and without gamma irradiation**

Vedika Gaikwad, Minal Rane, Ujwala Dmello, Rajesh B Sawant, Varsha Vadera

Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India

**Background:** There is a constant debate between clinicians and Transfusion Medicine physicians about the efficacy and safety of stored blood. Less data is available regarding the effects of gamma irradiation on pre-storage leucocyte depleted packed RBC units.

**Aim:** To study the trend of hemolysis and potassium accumulation in pre-storage leucocyte depleted packed RBC units with and without gamma irradiation.

**Methods:** Plasma free hemoglobin was measured using the Hemocue Plasma/low hemoglobinometer in N=230 packed RBC units each with and without gamma irradiation. Serum potassium was measured using an automated biochemistry analyzer (Ion selective electrode method) in N=276 units. The data was analyzed after grouping the results at an interval of 7 days.

**Results:** The mean percentage hemolysis in non-irradiated PRBC units was 0.25 and in irradiated PRBC units was 0.27. The extent of hemolysis percentage at outdate for non-irradiated units was 0.48 % whereas, hemolysis upto 0.3% was noted in units stored for 14 days after gamma irradiation. 6/460 units studied for hemolysis showed >0.8 % hemolysis. Two of these units were returned back after being issued for transfusion and the other 4 units were tested on their date of expiry. The mean potassium level in stored PRBC units was 4.13 mmol/L. The mean potassium level in non-gamma irradiated units (N=143) was 3.98 mmol/L and the same in gamma irradiated units was 4.25 mmol/L. In gamma irradiated PRBC units, potassium levels were found to increase significantly when tested on Day 14 after gamma irradiation (9.78 mmol/L).

**Conclusions:** This data establishes the safety of stored PRBC units without and after gamma irradiation in terms of acceptance level of hemolysis and extracellular potassium. Multi-centric data of this type can be used to establish benchmarks for optimal practices.

**POSTER_BCS 5**

**Comparing cold stored platelet v/s room stored platelet**

Saneha Shaikh, Farzana Kothari, Heena Pagi

Goverment medical college and hospital, vadodara

**Background:** Our practice is to store platelet components at 20°C to 24°C ("room temperature"), but US FDA approved a statement “The cold stored platelet products will be used to treat actively bleeding patient when conventional platelet products are not available, or their use is not practical”. To minimise wastage, to prevent bacterial contamination which occurs at room temperature, platelets can be stored at 2°C to 6°C.

**Aims:** To evaluate quality indicators of cold stored platelet and to maximise platelet availability up to 14 days.

**Methods:** Our study was prospective analytical study in which four units of platelet with same blood group were pooled and stored at 2°C to 6°C without agitation; second group of pooled platelets with same blood group were stored at 20°C to 24°C with constant agitation.
All units were tested for in vitro quality periodically over 14 days.

**Results:** Mean platelet concentration for all units at day 1 was 1311 ± 100*/103/mm3. Average volume of platelet was 352 ± 10 ml. While platelet count in both units decreased by 30%, and there was no significant difference between two groups in platelet counts. Platelet swirl was absent in cold stored platelet after 1 to 2 hour of storage. MPV was increased in cold stored platelet but it was not statistically significant.

**Conclusions:** Cold stored platelet has been proposed as an advantage to overcome many disadvantage of RT stored platelet. From this study we can conclude that cold stored platelet characteristics are comparable to conventional room stored platelet.

**POSTER_BCS 6**

To study the incidence of donor reactions and determine common reactions among the blood donors in a blood center of tertiary care hospital

Nirupama Sahoo, Smita Mahapatra, Pankaj Parida, Sabita Palai, Binay Bhusan Sahoo

SCB MCH, Cuttack, Odisha, India

**Background:** Plasma is the cell free part of blood consisting of various labile and stable coagulation factors. Fresh frozen plasma (FFP) is a crucial substitute therapy in management of bleeding. Plasma produced from Whole Blood stored overnight offers operational flexibility.

**AIMS:** To compare the labile and stable coagulation factors levels between plasma prepared within 8 hours after phlebotomy (FFP) and plasma frozen within 24 hours after phlebotomy (FP24)

**Methods:** 100units of whole blood collected in 350/450ml triple bags from eligible blood donors. Out of 100 whole blood units 50 units were stored at 40C for 16-20 hours after phlebotomy and then FP24 were prepared. Rest 50 units were processed to prepare FFP within 8 hours after phlebotomy. 2ml of plasma FFP and FP24 were collected and coagulation parameters were estimated in semi-automated coagulometer. The plasma units were alliquoted and stored below -300C for 3 and 6 months and coagulation parameters were estimated after thawing.

**Results:** The maximum number of Plasma units was from ‘O’ Blood Group (46%) and Rh-D Positive (95%) individuals. In FP24, the mean PT, INR and APTT level increased by 6%, 7%, 6.6% respectively whereas the mean FV, FVII, FVIII and Fibrinogen level decreased by 13%, 10%, 30%, 2.5% respectively on the day of preparation. The mean FV and FVIII level decreased significantly (p<0.05) in FP24 in comparison to FFP whereas the mean FVII and Fibrinogen level showed no significant change. In FFP, ‘O’ Blood Group individuals had significantly lower levels of mean PT, INR, FV, FVII, FVIII and Fibrinogen (p<0.05) in comparison to non ‘O’ individuals whereas no correlation was found in FP24. Upon storage for 3 and 6 months period, the mean FVII and FVIII levels decreased significantly whereas the mean PT and INR levels increased significantly in both FFP and FP24 groups.

**Conclusion:** Most of the coagulation factors were well maintained in FP24 in comparison to FFP except FVIII which decreased significantly. So FP24 would be used for FFP indications except conditions requiring replacement of FVIII such as in Hemophilia.

**POSTER_BCS 7**

Green color donor plasma: What to do with it?

Rajeev Ranjan Singh, MV Mallya, Romesh Jain, Sangeeta Amoncar, Sachin Palyekar, Sanjay Korgaonkar

Goa Medical College, Goa

**Background:** Plasma, the noncellular component of blood comprises
Abstracts

The plasma from each of 25 voluntary donors was processed and centrifuged. Two products prepared as same day pooling while four same group buffy coats of plasma were pooled and BCP-PCs were prepared by manual separation after overnight hanging and were pooled next day. The supernatant plasma is straw yellow in color. The color of the plasma varies considerably from one unit to another from barely yellow to dark yellow. Occasionally, plasma from hemolyzed samples appears reddish. The soft spin. Two products prepared as same day pooling while four same group buffy coats were pooled and BCP-PCs were prepared by manual separation after automated component separator. These four same group buffy coats to 120 ml buffy coat product was hanged after the first hard spin by quadruple 450 top and bottom blood bag were processed and 100 pump platelet concentrates. This product has more infectious risk but offers good yield product defined in literature that is commonly used in Europe as compared to India. As compared to apheresis platelet concentrates; Experience of a tertiary care center in north India

Ashish Jain, Gita Negi, Daljit Kaur, Yatendra Mohan, Manoj Kandwal

AllMS, Rishikesh, Uttarakhand, India

Background: Now a day, there is need of a platelet product that is more efficacious e.g. good quality with less storage changes, minimal risk of transfusion transmitted infection with a standard dose, low cost and adequate corrected count increment (CCI) after transfusion. Buffy coat pool platelet concentrates (BCP-PCs) is a good yield product defined in literature that is commonly used in Europe as compared to India. As compared to apheresis platelet concentrate, this product has more infectious risk but offers advantage of good yield as compared to individual platelet units.

Aim: The aim of the study is to analyze the quality of buffy coat pool platelet concentrates.

Methods: Four Buffy coat pool platelet concentrates were prepared as per the protocol. For preparation of a pooled product, four quadruple 450 top and bottom blood bag were processed and 100 to 120 ml buffy coat product was hanged after the first hard spin by automated component separator. These four same group buffy coats were pooled and BCP-PCs were prepared by manual separation after the soft spin. Two products prepared as same day pooling while two prepared after overnight hanging and were pooled next day.

Results: The mean volume, platelet count, WBC count, pH, PCO2, PO2 and bicarbonate of the same day prepared BCP-PCs was 293 ml, 3.15 x 1011/unit, 2.8 x 107/unit, 7.28, 33.3, 113.5 mm Hg, 17.75 mmol/L respectively while of next day prepared (after overnight hanging) was 255 ml, 2.83 x 1011/unit, 26.75 x 10 7/unit, 7.07, 31.35, 116.9 mm Hg, 8.8 mmol/L respectively. All units passed the Drug and Cosmetic act quality criteria of 2 x 1011/unit. The mean platelet counts of the donors of thesame prepared BCP-PCs was 200.5 /ul/while of next day prepared was 193.5 x 103/ul.

Conclusions: Buffy coat pool platelet concentrates can be prepared easily and in this study pool of 4 buffy coat was prepared and resulted in good yield of the product. The overnight storage did not offer any advantage over same day prepared and pH was better maintained in same day prepared product.

POSTER_BCS 9

Comparative study of the activities of coagulation factors in filtered and unfiltered fresh frozen plasma at various time intervals

Femela Muniraj, Vijayashree Raghavan

Chettinad Hospital and Research Institute, Kelambakkam, Tamil Nadu, India

Background: Plasma is required for transfusion in cases of coagulopathies. For various causes of acute bleeds, factor replacement is considered as the mainstay of treatment. In Indian population, Hemophilia A is the commonest of the inherited bleeding disorders, comprising 42.4% of cases; Von Willebrand disease, deficiencies of factors IX, X, XIII, V, VII, XI, XII, afibrinogenemia comprising 8.5%, 5.1%, 1.8%, 0.8%, 0.6%, 0.2%, 0.2%, 0.1%, 0.5% of cases respectively. Management of Hemophilia A and B needs lifelong supplementation of coagulation factors. The leukocytes in the plasma are filtered to reduce the adverse transfusion reactions. Thoughactivation of the coagulation system by the filter material can not be excluded, in the study by Heiden M et al, there were no significant differences between the coagulation factor activities of unfiltered and filtered FFP. OBJECTIVE: The aim of this study is to analyze and compare the levels of factors I, II, V, VII, VIII, IX, X, XI in unfiltered (UF-FFP) and leukodepleted FFP (LD-FFP) at various time intervals.

Methods: The plasma from each of 25 voluntary donors was separated into two groups. Group-1 includes FFP freshly separated within 6 hours, frozen immediately after separation and not filtered; group-2 includes FFP which is leukodepleted by filtration.

The levels of the factors I, II, V, VII, VIII, IX, X, XI were estimated 5 times in each sample in both the groups, that is, on 1st and 6th days, at 1, 3 and 6 months.

Results: The activities of factors Fibrinogen and FVII did not show any difference in both groups. Factors II, V & VIII decreased constantly in both groups. Factor IX decreased after 1 month only in group-2. Factor X decreased constantly from the beginning in group-2 only after 3 months in group-1. Factor XI decreased from 6th day in both the groups.

Conclusions: Factors Fibrinogen & FVII were stable in both groups. Factors II, V, VIII, X & XI decreased in both groups and factor IX only in LD-FFP.
**POSTER_BCS 10**

**Comparision of platelet yield among random donor platelets prepared by buffy coat and prp methods**

Ankit Gupta, Sunita Bundas, Amit Sharma, Sarita Sharma, Ankit Sharma

SMS Medical College and Associated Group of Hospitals, Jaipur, Rajasthan, India

**Background:** Routine manual method of blood component separation is PRP method (preparing platelet concentrates from Platelet Rich Plasma). The novel CompoMat G5 Automated Blood Component Separator is designed for automated preparation of fresh frozen plasma and platelet concentrates from whole blood bags through Buffy coat method.

**Objective:** To compare the platelet yields of platelet concentrates (Random Donor Platelets) prepared using routine manual PRP method and CompoMat G5 system.

**Methods:** Donors were selected as per donor selection criteria laid by Drug and Cosmetic Act 1940, Rules 1945 and Amendment 2020. 30 CompoMat units (buffy coat method) and 30 control units (routine PRP method) were prepared from the whole blood bags collected and analyzed for platelet yields with the help of Sysmex XP-100 automated hematology analyzer and weighing scale followed by further computation of platelet yields. Associations were tested statistically by using Student's t-test on SPSS version 22.0.

**Results:** The mean volume of RDPs prepared by CompoMat was calculated to be 61.17±5.36 ml/U (ranging from 40 to 65 ml/U) and that of those prepared by routine manual PRP method was 46.90±5.87 ml/U (35 to 60 ml/U). The difference was observed to be statistically significant (P=0.0001). The mean platelet concentration was observed to be significantly high among the bags prepared by CompoMat system (674.60±464.65 x10e3/µl/U; ranging from 41 to 1787 x10e3/µl/U) when compared with those prepared by routine manual PRP method (207.53±154.51 x10e3/µl/U; ranging from 30 to 646 x10e3/µl/U) (P=0.0001). Difference between the mean platelet yields of the bags prepared by the two systems was observed to be statistically significant (P=0.0001) (CompoMat system 4.16±2.96 x10e11/U ranging from 0.25 to 11.62 x10e11/U and control 0.99±0.76 x10e11/U ranging from 0.11 to 3.23 x10e11/U).

**Conclusions:** RDPs prepared from whole blood by buffy coat method on the CompoMat G5 automated component separation system showed better volume, platelet concentration and platelet yield compared to the RDPs prepared manually by routine PRP method.

**POSTER_BCS 11**

**Evaluation of quality parameters of packed red cells in sagm prepared by two different methods**

P Nagaraju, S Ojha, V Patle, S Sawant, S Hiregoudar, S Saha, M Poojary

ACTREC - Tata Memorial Centre, Navi Mumbai, Maharashtra, India

**Background:** Blood component preparation was developed to separate components and preparation of packed red blood cells (PRBC) is possible either by platelet-rich plasma (PRP) or Buffy Coat (BC) method. PRP method of preparation is usually done by relatively light spin, whereas BC method uses heavy spin centrifugation. PRP method is simple, less time consuming and easy to perform using manual expressers, while BC method needs more time and require automated component extractor. Quality parameters are not adequately defined for PRBC in SAGM (PCS) prepared by PRP (PRP-PCS) and BC (BC-PCS) method separately in literature. Evaluation of quality of PCS is critical for ensuring optimal benefit in transfused patients.

**Objective:** To compare quality parameters of PCS prepared by PRP versus BC method.

**Methods:** Randomly collected PRBC(N=128) between January 2018 to January 2020 were retrospectively analyzed for several factors-donor hemoglobin prior to donation (PHB) and Whole Blood volume collected using 450ml Triple/quadruple bags and PCS, processing methods either by PRP (for Triple bags) or BC (Quadruple bags) using refrigerated centrifuge. Hematological parameters- hematocrit (HCT), per unit total hemoglobin (UTHB), red cell mass (RBC), percent hemolysis and White Blood Cell count (WBC) were evaluated. Comparisons between two PCS were performed using independent-T-test or Mann Whitney-U test based on data distribution, whereas correlation was performed using spearman-rho-correlation-coefficient and p value<0.05 was considered significant.

**Results:** PRP-PCS (N=114) had a higher mean volume of 356ml (range:330-368) than BC-PCS (N=14) 268ml (range:256-280.2) and was differed significant (p=0.001). PRP-PCS had significantly more HCT (p=0.0039), UTHB (<0.001), total RBC mass (p=0.001) and WBC (p<0.001) than BC-PCS. Although unit HB was comparable between the two (p=0.058), no significant difference was found (p=0.141792) in percent hemolysis on day12 for both PCS. A positive correlation was observed between PHB versus UTHB and HCT in both methods. The study results were comparable with data from other studies available in literature.

**Conclusions:** PRP-PCS contains more volume and UTHB than BC-PCS, which may reduce the number of transfusions requirements and improve clinical outcome in terms of post transfusion rise in HB. If leucoreduction (LR) is being performed then it results further volume reduction in BC-PCS. Hence, PRP-PCS can be considered as a better choice for LR.

**PP_IH 1**

**Intrauterine and exchange transfusion in hemolytic disease of fetus and newborn due to high titer saline reacting igg anti-d; A case report**

Balu B Nalukettilla, B Amit Ajay Pawar, C Ajay Kumar Baranwal, Amit Kumar Biswasd, Ujjwal Dimrie

Armed Forces Medical College, Pune, Maharashtra, India

**Background:** Hemolytic disease of the fetus and the newborn is the consequence of destruction of the fetal and neonatal red blood cells by IgG antibodies acquired by transplacental route from the mother. Stimulation for production of these alloantibodies can be either previous pregnancy or transfusion. Anti-D titer above the critical level of 32 necessitates constant monitoring of the fetus using Color Doppler imaging studies. One such case of high titer anti-D requiring both intrauterine and exchange transfusion of the fetus is presented.

**Case Report:** We present a high titer, saline reacting, IgG anti-D...
Abstracts

RBC Alloimmunization was detected in 3.5% of a primi post-IVF pregnancy patient presented with multiple crossmatch incompatibilities and delayed hemolytic transfusion reaction: A case report

Sujay Bhowmik, U Dimri, AA Pawar, AK Baranwal, AK Biswas
Armed Forces Medical College, Pune, Maharashtra, India

Background: Antibody screening of all antenatal women must be made mandatory during routine antenatal tests. Irregular RBC alloantibodies if present can cause hemolytic transfusion reaction in mother leading to anemia particularly important in multiparous and multiply transfused women. We report a case where multiple red cell alloantibodies were formed in a thalassemia intermedia patient due to previous transfusions and resulted in multiple crossmatch incompatibilities and delayed hemolytic transfusion reaction.

Case Report: A primi post-IVF pregnancy patient presented with features of dysuria and spotting which on evaluation was diagnosed to be a case of UTI. She also had easy fatigability which on evaluation revealed Microcytic Hypochromic Anemia, Hb-6.8g/dl with hepatosplenomegaly. Hb electrophoresis revealed Thalassemia Intermatica. Patient was transfused with 02 units of crossmatch compatible, PRBCs at a different centre. Initial improvement was followed by a rapid fall of Hb levels after around 2-3 weeks of transfusion. Repeat demand for transfusion was given in our centre where on cross match multiple bags were found incompatible. IHL workup showed ICT positive and DCT mixed field. Both 3 and 11 cell panels showed the presence of multiple alloantibodies and negative auto control. Multiple alloantibodies anti C, E, Jka, S were identified. Extended phenotyping could not be done due to history of recent transfusions, the patient also had previous history of transfusion 02 years ago. Out of 372 O Rh D positive units phenotyped only 34 units were found matching, and out of these only 02 units were found to be antigen-negative and crossmatch compatible. Hematological workup revealed features of Hemolytic anemia with elevated unconjugated bilirubinemia, LDH and PBS showed reticulocytosis and spherocytes. The patient was transfused with compatible units and managed with Inj IVig, Steroids and Inj erythropoietin. The patient delivered healthy twins by LSCS at 30 weeks POG.

Discussion: Multi-transfused patients and multiparous patients have high chances of irregular antibodies. Patients who develop clinically significant antibodies should be provided with IHL report mentioning specificity of antibody along with advisory of transfusion with only antigen negative blood in the future. In this patient thalassemia intermedia, which was not evaluated before was causing anemia in periods of stress like pregnancy and infection hence the need for transfusion. More effective communication between clinicians and Transfusion services are important in cases of previous transfusion history which can avoid delayed hemolytic transfusion reactions due to amnestic response and prevent delay in providing compatible blood to such patients.

PP_IH 2

Multiple red cell antibodies in a pregnant thalassemia intermedia patient resulting in multiple crossmatch incompatibilities and delayed hemolytic transfusion reaction: A case report

Shallu Rani, Naveen Akhtar, Meena Sidhu, Neeti Dutt, Salve Sharma
GMC, Jammu, Jammu and Kashmir, India

Background: Development of alloantibodies against the foreign red blood cell is a well-known complication in chronically transfused thalassemia patients. These antibodies not only pose problems in pretransfusion compatibility testing but also shorten the post-transfusion survival of transfused RBCs ultimately increasing the need for blood and intensify transfusion complications. Therefore, regular antibody identification tests need to be carried to make timely intervention to minimize transfusion complications in these patients.

Aims: The current study was to assess the frequency and types of alloantibodies in chronically transfused patients with β-thalassemia major.

Methods: This study was conducted in the Department of Transfusion Medicine, GMC Jammu. A total of 226 multi-transfused β-thalassemia major patients were included in this study. Alloantibody screening and identification was done using three cell and 11 cell panel (Ortho Clinical Diagnostics, USA) respectively.

Results: Eight patients out of total 226 patients (3.5%) developed alloantibodies. Out of 8 patient with alloantibodies, 75% (6) belonged to Rh blood group system with alloantibodies being Anti-E = 50%(4), Anti-D = 12.5%(1), Anti-C = 12.5%(1) and 25%(2) belonged to Kell blood group system with alloantibodies being Anti-K=25%(2).

Conclusions: RBC Alloimmunization was detected in 3.5% of multi-transfused β-thalassemia major patients. Rh and Kell blood group system antibodies accounted for 100% of alloantibodies. Thus, it is advisable to phenotype these patients for Rh and Kell Blood group systems before imitating transfusion therapy and provide Rh and Kell crossmatched the red cells as far as possible.

PP_IH 3

Evaluation of red blood cell alloimmunization in multi-transfused β-thalassemia major patients’ tertiary centre in north India

Sujay Bhowmik, U Dimri, AA Pawar, AK Baranwal, AK Biswas
Armed Forces Medical College, Pune, Maharashtra, India

Discussions: Although the RhIG was introduced way back in 1968, Rh isoimmunization due to anti-D still is a cause of grave concern in developing countries like India. In our case, it appeared that it was a combination of an IgM and a high titer IgG anti-D which showed agglutination in saline phase at room temperature. A high degree of suspicion is warranted while dealing with such cases, as a reaction in saline phase at room temperature can easily be labeled as being due to IgM antibody without further investigating for the presence of a potentially fatal hemolyzing IgG antibody.

PP_IH 4

A case report of spontaneous recurrent early pregnancy loss

Sherin S John, Aboobacker Mohamed Rafi, Deepak Charles, Susheela J Innah
Jubilee Medical Mission College and Research Institute, Thrissur, Kerala, India

A 30-year-old female patient, married for 10 years with history of 4 consecutive pregnancy loss came to our hospital for workup.
On detailed history she gives history of consanguinity in her parents. Two brothers and one sister have died soon after birth due to unknown cause and one abortion in her mother. Presently she has only one elder brother. She had a history of umbilical stump bleeding at 4–5 days of life, CNS bleed at 4 years of age following trauma for which she was transfused with FFP. She gives history of recurrent episodes of easy bruisability, but normal wound healing following injury. Normal menstrual history. All abortions were during the early first trimester soon after missing her periods and after confirmation using urine pregnancy test.

**Aims:** A case of recurrent early pregnancy loss with suspected congenital fibrinogen disorder.

**Results:** On evaluation, Hb was 13.0gm/dL, Platelet - 3,74,000 cells/cu mm, BT-3 min 30 sec, PT - >180 sec, INR – >1.5, aPTT – >180 sec. Urea Clot Solubility: Could not Interpret as no primary clot formation was seen. Mixing study – Prolonged aPTT & PT which gets corrected with Pooled Normal Plasma (PNP). Fibrinogen level was 24 mg/dl. All other tests for RPL were normal. ROTEM showed no clot formation (straight line) in INTEM, EXTEM & FIBTEM. Peripheral Smear showed no abnormal cells.

**Conclusions:** Coagulation defects comprises the most common causes for RPL. Fibrinogen and Factor XIII defects being the most common. Congenital fibrinogen defects can be quantitative (afibrinogenemia or hypofibrinogenemia), qualitative (dysfibrinogenemia), or a combination of both. Early consultation and proper diagnosis is the major factor which decides successful pregnancy in such patients.

**PP_IH 5**

**Prevalence of weak RH D antigen expression in healthy voluntary blood donors of a tertiary care hospital in eastern India: A pilot study**

Aditi Khanna

IMS and SUM Hospital, Bhubaneswar, Odisha, India

**Background:** Rh is the second most important blood group system, after ABO system. Antigens of Rh blood group system are D, C, c, E and e. Among these antigens, D antigen has the highest immunogenicity. Rh D antibodies are produced only after exposure to non-self RBC containing Rh D antigen. When the quantity of D antigen or specificity of D antigen epitopes show variations, it results in a weaker reaction with anti-D reagents in serological methods. Then it is said to be a weak Rh D expression. Weak Rh D typing is recommended to be done on donors to prevent Rh D immunization in recipients.

**Aims:** This study aims to estimate the prevalence of weak Rh D antigen expression in our donors.

**Methods:** This retrospective study was conducted in the blood centre of IMS & SUM Hospital, Bhubaneswar from January 2020 till January 2021. Details were collected from the records in the Transfusion Medicine department. Testing of the ABO grouping and Rh typing were done by SPRCA (NEO, Immucor Inc.) while the weak Rh D typing was done by Gel card CAT method (Tulip Diagnostics, India).

**Results:** Out of a total of 9950 donors, 9627 (96.7%) were Rh D positive and 323 (3.3%) were Rh D negative. Inclusive of the ABO system, A Rh D negative were 84 (26%), B Rh D negative were 102 (31.6%), O Rh D negative were 115 (35.6%) and AB Rh D negative were 22 (6.8%). Out of the 323 Rh D negative donors, 3 (0.9%) donors turned out weak Rh D positive.

**Conclusions:** The prevalence of Rh D negative donors in our donor pool is 3.3%. Out of them, 0.9% turned out weak Rh D positive. These units were not transfused to Rh D negative patients to prevent alloimmunisation for Rh D antigen. The respective donors were advised to receive Rh ‘D’ negative blood in the future so as to avoid risk of developing anti-D antibodies. Sensitivity of weak Rh D testing can be improved by molecular testing of Rh D gene.

**PP_IH 6**

**Prevalence of red cell antigens in ABO, RH, kell blood group systems in the blood donor population: Experience from a tertiary centre in north India**

Faisal Ashraf, Meena Sidhu, Naveen Akhtar, Annu Radha Rajwal, Devinder Pal Singh

GMC, Jammu, Jammu and Kashmir, India

**Background:** Blood group antigens differ in their distribution among different ethnic populations. Knowledge of the antigen frequencies is important to assess risk of antibody formation and to guide the probability of finding antigen-negative donor blood, which is especially useful when blood is required for a patient who has multiple red cell alloantibodies. The most important red blood cell alloantibodies are directed towards the Rh (anti-D, -C, -E, -c and -e) and KELL (anti-K).

**Aims:** This study was carried out to determine the frequencies of the red cell antigens in ABO, Rh and Kell (K) blood group systems among blood donors.

**Methods:** A total number of randomly selected regular blood donors in the Department of Transfusion Medicine Government Medical College & Hospital, Jammu were tested for red cell antigen typing of ABO, Rh (D, C, E, c and e) and Kell (K) blood group systems. Each sample was tested using Ortho Biovue System ABD-Rh gel card and Extended Rh (C,E,c,e) + Kell (K) gel card (Ortho Clinical Diagnostics, USA).

**Results:** Study included a total of 227 regular blood donors of which ABO blood group distribution was (A-23%, B-33.3%, AB-12.3%, O-31.4%). Rh antigen was found positive in 94.6% and negative in 5.4%. Amongst Rh antigens, e was the most common (96.5%) followed by C (88.2%), c (68.2%) and E (22%). For the Kell System, only 2.6% was K positive.

**Conclusions:** Knowledge of red cell antigen phenotype frequencies in a population with different ethnic groups can help in creating donor data bank and database for the distribution of blood groups for preparing in-house cell panels and providing proper antigen compatible blood for patients with multiple alloantibodies and also reduce the risk of RBC antigen alloimmunization along with their complications.

**PP_IH 7**

**Antibody screening and identification in donors and general patients at a tertiary care hospital**
Abstracts

**Abhinav Verma**

Max Super Speciality Hospital, Ghaziabad, Uttar Pradesh, India

**Background:** Antibody screening is designed to detect clinically significant antibodies including those associated with hemolytic disease of the fetus and newborn (HDFN), hemolytic transfusion reactions or notably decreased survival of transfused red cells. When unexpected antibodies are present, as indicated by positive antibody screening tests, they must be identified.

**Aims:** The main aim of this study is to highlight the importance of antibody screening combined with phenotyping and identification in all transfused patients and blood donors.

**Methods:** The study was conducted in the Department of Transfusion Medicine for a period of 59 months from January 2015 to November 2019. Patients who need blood transfusion and blood donor samples were processed for ABO and Rh "D" grouping as well as antibody screening with 3 cell screening panel on fully automated immuno-haematology analyzer.

**Results:** A total of 14,809 patients samples and 24,613 donor samples were processed for antibody screening out of which 107 patients (0.72%) and 9 donors (0.04%) were found to be positive for antibody screening. In 36 patients and 3 donors only autoantibodies were identified leading to 0.48% alloimmunization among patients. Out of 71 alloantibodies among patients most common antibodies were among the Rh blood group system Anti-D (24, 33.8%), Anti-E (13, 18.3%), Anti-C (7, 9.9%), Anti-c (4, 5.6%) and Anti-Kell (3, 4.2%). Among MNS blood group system most common antibody was Anti-M (18, 25.4%). One antibody was found to be from Duffy blood group system (Anti-Fya, 1.4%) and one antibody from Kidd blood group system (Anti-Jka, 1.4%). Out of 6 alloantibodies among donors most common antibodies was among the Rh blood group system Anti-D (3, 3.5%). Among MNS blood group system most common antibody was Anti-M (2, 33.3%). In one donor alloantibody could not be identified.

**Conclusions:** Antibody screening combined with phenotyping and identification should be done in all transfused patients and blood donors. In our study antibodies against Rh and Kell blood group antigens were the most frequent amongst donors and general patient population requiring blood. So we suggest that at least Rh and Kell matched blood should be given to all patients for safe blood transfusion and prevent alloimmunization.

**PP_IH 8**

**Cold agglutinin disease: A case series of 18 patients**

Mangesh Pawar, Minal Rane, Ujwala Dmello, Rajesh Sawant, Varsha Vadera

Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India

**Background:** In India, the prevalence and severity of AIHA, as well as patient transfusion needs, are not well documented. We therefore planned a retrospective review of patient data.

**Objective:** To study the clinical and laboratory parameters of patients presenting as cold agglutinin disease and note their response to transfusion and medical therapy.

**Methods:** Retrospective analysis identified 18 patients from our institution with cold agglutinin disease from January 2020 through December 2020.

**Results:** Age at symptom onset was 45 years (range, 2 to 79 years). The most common symptom was breathlessness/Pneumonia and many had symptoms triggered by cold or other factors. The median haemoglobin value at onset was 6.2 g/dl (range, 3.5-13.1 g/dl), with half of the patients presenting with a severe clinical picture. Lactate dehydrogenase was increased in 6/18 cases (median 515 U/L; range, 164-2053 U/L) indicating some intravascular haemolysis. The severity of haemolysis only correlated significantly with a positive DAT result. Reticulocytopenia was present in 7/18 cases, and thrombocytopenia (Evans’ syndrome) in one patient. An underlying hematologic disorder was detected in 3/18 patients. 8/18 patients received transfusions during their disease course, and 10/18 received drug therapy (Rituximab). DAT was positive in 5 cases and negative in one case (not done in rest of the cases). IgG was detected in 5/5 and C3d in 1/5 DAT positive cases. Cold agglutinin test was positive in all cases at 4 degrees and 11/18 cases at RT. Cold agglutinin titer ranged from 4 to 256 and was > 64 in 6 cases. Auto-control at 4 degree was negative in three cases and was positive at RT in 9/18 cases. All cases were treated with steroids (mostly parenteral), eight patients received transfusions, and ten patients required second-line treatment (7-immunosuppressants/rituximab and 3 splenectomy). Rituximab was associated with the longest response duration (median, 4 months) and the lowest proportion of patients needing further treatment (14/18).

**Conclusions:** Though phenotyped and best-matched blood units were transfused to these patients, the survival of these red cells needs to be studied. Our institution’s experience and review of the literature confirms that early diagnostic evaluation and treatment improves outcomes in CAD.

**PP_IH 9**

**Diagnosis of cold agglutinin disease with a multidisciplinary approach**

DRA Shanmugha Priya, K Jayaraman

Fortis Healthcare Limited, Chennai, Tamil Nadu, India

**Background:** Cold agglutinin disease (CAD) is a rare autoimmune disease characterized by the presence of IgM, rarely IgA or IgG antibodies directed against polysaccharide antigens on red blood cell surface. Symptoms of cold agglutinin disease (CAD) are often triggered or made worse by cold temperatures or infections. Here we report a rare case of Cold agglutinin disease due to IgG autoantibodies which was first suspected through pre transfusion work up and eventually diagnosed.

**Case Details:** Blood centre received requests for 2 units of Packed red cells for transfusing an hospitalised 71 years’ male in view of low haemoglobin. Blood Grouping and Rh typing by Column agglutination technology revealed discrepancy with unexpected reaction in reverse grouping. Case history was obtained. Patient was a known case of TB cervical adenitis on treatment since 15 days. Further work up was initiated. Result was intimated to primary consultant and subsequent lab tests were ordered to support the diagnosis.

**Methods:** Blood grouping and Rh typing, Autocontrol, Antibody screening. Compatibility test, Direct Antiglobulin test were done using Column agglutination method in different thermal amplitudes (4°C, room temperature and 37°C) for comparison. Cold antibody titre was performed.

**Results:** The blood grouping discrepancy was resolved using pre warm technique. Direct Antiglobulin test (DAT) was positive and Monospecific DAT gel card revealed antibodies against IgG only. Coomb’s crossmatch was done successfully and one unit of packed...
cell was issued to patient. It was advised from the blood centre to administer blood slowly by keeping the patient in warm condition as a precautionary measure. The transfusion was uneventful and patient is on regular follow up.

**Conclusions:** Serological discrepancies observed in Blood centre and timely communication of results to the treating physician can help not only in patient’s transfusion management, but also aid in the diagnosis of cold agglutinin disease.

**PP_IH 10**

**Subgroup of B: Bx and ITS detection**

Aditi Srivastava, Mohit Chowdhry, Soma Agrawal

Indraprastha Apollo Hospital, New Delhi, India

**Introduction:**
The risk of acute hemolytic transfusion reaction (HTR) due to transfusion of ABO-incompatible blood components is high and can lead to life-threatening complications in the recipient. Determining the ABO group requires both red blood cell (RBC) antigen typing for A and B (forward type) and testing for anti-A and anti-B in the plasma (reverse type). An ABO discrepancy exists when the result of the forward type does not agree with that of the reverse type and vice versa. We report a rare case of a subgroup of B, i.e Bx accompanied by anti-B antibody, incidentally discovered during routine donor blood grouping.

**Case report:**
A 27-year-old male blood donor with no history of blood transfusion, any disease, or medication visited our department of transfusion medicine. The fully automated immunohematology analyzer (Neo Iris; Immucor) reported his sample as “No Type Determined” (NTD). Further tube testing was initiated and on forward grouping, the blood group was B Rh D positive (Table 1) and on reverse grouping, the blood group was O Rh D positive (Table 2). These results were discrepant, so further evaluation was done. Cold Adsorption and Elution was done. The elute was reactive (+) in B cell and nonreactive with A and O cells. On testing with Anti-H antisera, it showed a 4+ reaction implying low B antigen concentration. This pattern of reaction is suggestive of blood group Bx subtype with Anti-B antibody.

**Conclusions:** Careful testing of subgroups is necessary to prevent serious transfusion reactions. Such individuals need to be informed and given a special donor card which mentions that as donors their blood group is B but when they need to receive blood, they should receive blood group O with the corresponding Rh group for PRC.

**Table 1:** Forward grouping - tube technique at room temperature shows B positive blood group

| Anti-A | Anti-B | Anti-AB | Anti-D | Remarks                  |
|--------|--------|---------|--------|--------------------------|
| 0      | w      | w       | 4+     | Without centrifugation   |
| 0      | 2+     | 2+      | 4+     | After centrifugation at 1000 RPM |
| 0      | 3+     | 3+      | 4+     | With washed RBCs         |

RBCs=Red blood cells, RPM= rotation per minutes

**Table 2:** Reverse grouping shows O positive blood group

| A cells | B cells | O cells | Temperature |
|---------|---------|---------|-------------|
| 3+      | 3+      | 0       | Room temperature |
| 3+      | 1+      | 0       | 37°C        |
| 4+      | 4+      | 0       | 4°C         |

**PP_IH 11**

**Study of red cell alloimmunization in**

Asian Journal of Transfusion Science | 2021 | Volume 15 | Supplement 1

**repeatedly transfused patients**

Vikram C Rojasara, Jitendra H Vachhani, Shweta B Upadhyay

Shree M.P.Shah Government Medical College, Jamnagar, Gujarat, India

**Background:** Repeated blood transfusions can result in the production of alloantibodies against one or more red cell antigens, which complicates subsequent transfusions.

**Aims and Aims:** The study was done to find incidence of various red cell alloantibodies; to determine the type of alloantibody; to identify the factors such as frequency of transfusion, splenectomy status, donor ethnicity and gender and their association with the development of antibody in repeatedly transfused patients.

**Methods:** This study was carried out in Dept. of IHBT, Shree M. P. Shah Medical College, Jamnagar, Gujarat. Blood sample was taken from the patients of Thalassemia major, Sickle cell disease, chronic renal failure, post-partum haemorrhage, Aplastic anemia, with more than 10 red cell transfusions. The serum was used for antibody screening and antibody identification test. Three cell antibody screening was performed using AHG gel cards and three cell panel (ID-ReacCell I, II, III). Those with positive antibody screening were analyzed further for antibody identification test using eleven cell panel (ID-ReactellPanel).

**Results:** Antibody screening and identification was done in 300 patients which showed, 10 patients (3.33%) were alloimmunized. A total of 12 alloantibodies were detected in 10 out of total 300 patients. The present study showed low rate of alloimmunization 3.33%.

**Conclusions:** Alloantibodies should be identified in repeatedly transfused patients and should be given corresponding antigen negative blood unit which will minimize the antibody mediated destruction of transfused red cells.

**PP_IH 12**

**A retrospective study of an acute renal injury case following packed red blood cell transfusion in a peripheral centre**

G Saranya, V Shanthini Gilda, M Sintha,

Government Rajaji Hospital, Madurai, Tamil Nadu, India

**Background:** Correct blood typing and labeling of a donor is essential to prevent ABO incompatibility and acute haemolytic transfusion reactions in case of weaker subgroups of A and B.

**Aims:** The aim of this study was to make awareness regarding weak B antigens and to concentrate more on reverse grouping and cross matching by tube technique and gel card method.

**Methods:** A 45 year old female, was diagnosed as acute renal failure, on her first post operative day following Wertheims abdominal hysterectomy with pelvic lymph node dissection for Carcinoma cervix stage 2B at a peripheral centre. She underwent 2 cycles of hemodialysis and was referred for transfusion reaction workup to our blood bank. Past history revealed she was O positive and was transfused with three units of O positive packed red cells in the perioperative period. Approximately 180 minutes after transfusion, dark urine collected in the urobag. She was shifted to the intensive care unit of a tertiary care hospital and treatment was initiated to maintain hemodynamics. Post transfusion patient blood sample was positive for direct Coombs test. Regrouping of
patient and all three donor samples was done. Patient and the first
two donor segments were confirmed to be O positive. There was an
ABO discrepancy of the third transfused donor segment. Donor cell
grouping was consistent with group ‘O’ and serum grouping was
consistent with group ‘B’. Donor was called retrospectively, saliva
collected. Saliva inhibition test done and the presence of both B
and H substances detected.

Results: The acute renal injury was due to immune mediated
haemolysis caused by transfusion of weak Bm subgroup to group O
patient. Patient underwent 4 cycles of hemodialysis and recovered.

Conclusions: Laboratory technicians should be aware of weak
subgroups of A and B. Both forward and reverse grouping by tube
technique should be done meticulously.

PP_IH 13

Investigation of rare subgroups of ‘A’ blood group antigen phenotype: A case report from a regional blood transfusion centre of south Gujarat

Keyuri Jariwala, Sumit Bharadva, Avani Shah

Surat Raktadan Kendra and Research Centre, Surat, Gujarat, India

Background: Weak subgroups of A can be defined as those of
group A subjects whose erythrocytes give weaker reactions or are
nonreactive serologically with anti-A antisera. Weaker subgroups
of A blood group that have been reported so far include A_x, A_y,
A_, A_x, A_y, and A_. These weaker subgroups cause discrepancies
between forward and reverse grouping and create difficulty
in routine blood bank procedures. Such subgroups can be
differentiated serologically using adsorption-elution experiments
with different monoclonal-polyclonal antiserum and by checking
the secretory status of ‘A’ antigen in saliva.

Objective: To detect the weaker sub-group of ‘A’ antigen by
resolving blood group discrepancy.

Methods: Discrepant donor’s packed cells were incubated and
adsorbed with 5 different antiserum that is Anti-A (polyclonal,
Arkay Healthcare Pvt. Ltd), Anti-AB (polyclonal, Arkay
Healthcare Pvt. Ltd), Anti-A (monoclonal, Tulip Diagnostics), high
titre ‘O’ donor plasma and high titre ‘B’ donor plasma. Adsorption
and elution technique was carried out using standard procedure
mentioned in AABB. Elute of each antiserum was tested with
known A1 cells and agglutination reaction was recorded. Saliva of
donor was tested. Family members were also tested for the same.

Results: Agglutination titers of all the antiserum were decreased
after adsorption and elute of all the antiserum showed varying grade
of agglutination with known A1 cells at different temperatures and
in IAT as well of donor and his mother, whereas his father and
sister found as ‘O’ positive. Saliva of donor and his mother were
secretory for ‘H’ and non-secretory for ‘A’ antigen.

Conclusions: As per the results, it is assumed as the case of A_x
or A_y subgroup of ‘A’ blood group and will be confirmed by molecular
study. These weaker phenotypes of group ‘A’ may cause hemolytic
reactions however not at severe extent but can decrease survival
of transfused red blood cells in recipient. In this case donor should
be types as group ‘A’ individual as after adsorption antiserum’s
titers were decreased and elutes agglutinated known A1 cells.
Discrepancies in blood typing can be avoided through detailed
serological tests and analysis in combination with molecular study.

PP_IH 14

A retrospective study of association of blood groups with hematological malignancies

Kirana Palloor, Ashwin Mathew

Father Muller Medical College, Mangaluru, Karnataka, India

Background: The pattern and distribution of Hematological
malignancies vary depending on age, sex and geographical location.
Studies on the association between Hematological cancers and ABO
blood types have been largely conflicting. The AIMS of our study
was to determine the distribution of ABO blood groups among
patients with Hematological malignancies and to correlate with
age and gender.

Methods: This was a chart based observational descriptive study
involving review records of 85 patients with various Hematological
malignancies in Father Muller Medical College Hospital for a period
of two years from July 2017 to June 2019. Age, gender, malignant
condition, ABO and Rh blood group were collected for each case.
Data was analyzed statistically by frequency and percentage.

Results: The peak age incidence for various Hematological malignancies
was in the fifth and sixth decades of life with a mean age of 47. The
male to female sex ratio was almost 1:1. Majority of the patients were
of O blood group with various hematological malignancies with male
preponderance was noted. Altogether, Leukemias were the most
common Hematological malignancy observed in this study.

Conclusions: The distribution, age and sex ratio of Hematological
malignancies in our study was comparable to those reported by
other authors with Acute Myeloid Leukemia being the most
common Hematological malignancy in our environment. There
was no significant association between Hematological cancers and
ABO blood type of the patients, but probably individuals with O Rh
positive blood group are more prone to Hematological malignancies.

PP_IH 15

Maternal allo anti-m antibody induced hemolytic disease of new born: A case report

Ashlyn Monson Mathew, Sangita Shah, Nidhi Bhatnagar,
Tarak Patel, Mamta Shah

B.J. Medical College, Ahmedabad, Gujarat, India

Background: Hemolytic disease of foetus and newborn is a syndrome
associated with immune destruction of fetal and newborn red cells
by maternal red cell alloantibodies that are specific for inherited
paternal red cell alloantigens. Anti-M antibodies are naturally
occurring, cold reactive saline agglutinins and are mostly clinically
insignificant as it only reacts at temperatures below 37°C. The
detection of anti-M in antenatal screening is a rare finding. High
titers of IgG anti-M are responsible for neonatal red cell aplasia.
Maternal RBC alloimmunisation occurs by previous pregnancy
and previous transfusion.

Case Report: A 32-hours old full term female neonate, with an
Apgar score of 9/10 and birth weight of 2.7kg developed
inconsolable cry and mild fever. Laboratory tests showed
that infant’s hemoglobin was 11.4 g/dl on day 2 and 7.6 g/dl on day 3
and total serum bilirubin was 9.4 mg/dl on day 2 and 19mg/dl on day 3.
Abstracts

The peripheral blood smear showed evidence of hemolysis. Other causes of neonatal hyperbilirubinemia were ruled out. Reticulocyte count was 0.5% suggestive of decreased erythropoiesis. Intensive phototherapy and antibiotics were started and advanced red cell serology workup was done. The neonate’s blood group was O Rh D positive and mother’s blood group was A Rh D positive. Direct Antiglobulin test in the patient was negative whereas Indirect antiglobulin test was Grade III positive in both mother and baby. Antibody screening and identification was suggestive of presence of Anti-M antibody in both mother and baby. Intravenous immunoglobulin and red blood cell transfusions were given. On day 8, patient’s haemoglobin level raised to 10.4 gm/dl and serum bilirubin concentrations decreased to 5.7 mg/dl.

**Conclusions:** Anti-M is capable of causing HDFN as well as prolonged anemia due to its ability to destroy the erythroid precursor cells. It is recommended that the baby be monitored for symptoms of late-onset anemia up to 2 months of age. Newborns with anemia should be evaluated for all the possible causes to establish a diagnosis and its efficient management. Mother should be closely monitored for future pregnancies as well.

**PP_IH 16**

**Characteristics of antibodies of mns system**

J Gurupriya, Meenu Bajpai

Institute of Liver and Biliary Sciences, Vasant Kunj, New Delhi, India

**Background:** MNS blood system antibodies are frequent during antibody identification. Antibodies to S and s blood groups are clinically significant, whereas antibodies to M and N blood group systems are associated with

**Aims:** The aim of this study is to classify MNS system antibodies based on their thermal amplitude and potential clinical significance.

**Methods:** We retrospectively analyzed antibody screening tests over a period of 4 years, January 2017 to December 2020 of both patients and donors. Antibody screening (3-cell) was performed using IH-500 Automated immunohematology instrument (Bio-Rad) as well as manually using Bio-Rad IH card (IgG+C3d) by column agglutination technology (CAT). Thermal amplitude of the antibodies was determined by testing at three different temperatures: 4°C, room temperature (22 ± 2°C) and 37°C.

**Results:** A total of 196 irregular antibodies were identified in the study period of January 2017 to December 2020. 58 antibodies were identified belonging to the MNS system; 67.2% antibodies were of anti-M specificity, 21.1 were of anti-S (big) specificity and 8.6% were of anti-N specificity. We did not encounter any antibody with anti-s specificity. 41% of Anti-M antibodies were of IgM type, followed by 35.8% IgM antibodies with broad thermal amplitude (4-37°C) and/or an IgG component and 20.2% IgG antibodies (37°C). 40% of Anti-N antibodies were IgM reacting at 4-22°C, 40% were IgM antibodies with broad thermal amplitude (4-37°C) and/or an IgG component and 20% of anti-N antibodies were of IgG type. 78.5% of Anti-S antibodies were of IgG type, followed by 14.3% IgM antibody reacting at 4-22°C and 7.1% IgM antibodies with broad thermal amplitude (4-37°C) and/or an IgG component.

**Conclusions:** Majority of Anti-M and Anti-N IgG antibodies were associated with a history of transfusion or transplantation. However, Anti-M, Anti-N and Anti-S, IgM antibodies with broad thermal amplitude (4-37°C) and/or an IgG component, were also seen in healthy blood donors without history of transfusion or transplantation. Our study highlights the importance of detecting the thermal amplitude of MNS blood system antibodies in order to identify clinically significant ones and providing appropriate blood for transfusion especially in a post-transplant setting.

**PP_IH 17**

**Hemolytic disease of newborn due to anti-e born to a covid positive mother**

Suhasini Sil, Daljit Kaur, Davood Bava, Indu Parmar, Ashish Jain

AllIMS, Rishikesh, Uttarakhand, India

**Background:** With the advent of Anti-D prophylaxis for Rh-negative pregnant females, other Rh & non-Rh Alloantibody have become relatively more important. We report a case of mild HDFN due to Anti-E Antibody in a full-term baby born to a Covid positive mother. Initial Indirect Antiglobulin test of mother came negative which demanded detailed IH workup in this case.

**Methods:** We report a case of mild HDFN, where the neonate had anemia and hyperbilirubinemia on day1 of life and was admitted in pediatric Covid ICU of our Tertiary care Center. The Mother’s & Baby’s sample were processed in our Biosafety cabinet after wearing Personal protective Equipment. After mother & baby turned Covid negative on RT-PCR testing, elution and titration techniques were performed.

**Results:** Blood group came to be A Rh D positive in both mother and Neonate; Baby’s Sample was strong DAT positive (strength–4+ by CAT) and mother was IAT negative by CAT method. Elution of baby’s red cell elicted Anti-E Antibody. 11-cell panel of mother’s sera revealed Anti-E antibody with a titre of 32 by Serial Tube dilution technique. On Red cell phenotyping using Rh Antisera, mother came R1R1 (DCe/DCe) and father came R1R2 (Dce/dce). Baby was phenotyped as R1R2 (Dce/dce).

**Conclusions:** E Antigen frequency is rare in Indian Population (20%). It was concluded that baby is suffering from Hemolytic disease of newborn due to Allo-Anti-E IgG Antibody of mother. There appears to be increased occurrence of HDFN due to Rhesus Antibody other than Anti-D. In this case, both mother and baby came Covid negative on repeat RT-PCR sampling and further IH workup could be proceeded. The baby was treated by phototherapy & had a favorable outcome in terms of Hb rise and decline in TSB. Antibody screening of all pregnant females during antenatal check-ups can enable early detection of Allo-antibody to initiate close monitoring of mother & fetus in HDFN.

**PP_IH 18**

**Blood group discrepancies in donor population in a tertiary care hospital in eastern India**

Niladri Das, Somnath Mukherjee, Satya Prakash, Ansuman Sahu

All India Institute of Medical Science, Bhubaneswar, Odisha, India

**Background:** Cell and serum grouping are done for determining ABO group. ABO discrepancies occur when forward and reverse
Abstracts

**PP_IH 20**

**A study on rarest b subgroup (BX) detected at life blood centre, Rajkot, Gujarat**

Monali Valera, Sudha Chauhan, Jyoti Bhatt, Nishith A Vachhani, Sanjeev Nandani

Life Blood Centre, Rajkot, Gujarat, India

**Background:** ABO blood group is the first system of blood grouping that still remains the most important one in transfusion medicine. There are subgroups of these principle groups also, but we come across them infrequently as their prevalence is very low. Most of the laboratories are doing blood groups only by forward grouping and these results are not counter checked by doing reverse grouping. The weak B subgroups are: B3, Bx & Bel. B3 shows a mixed field of agglutination with anti B. Bx shows a weak agglutination and weak anti-B is found in the serum. Bel is not agglutinated with anti-B but is only adsorbed anti-B. BX (subgroup of B) is a very rare phenotype of blood. It is wrongly typed as ‘O’ because the B antigen is very weakly present on red cell membrane, which cannot be detected if low titre anti-B grouping sera is used in cell typing.

**Case Report:** Life Blood Centre received samples of a mother and her son, from other blood bank for blood grouping. In LBC, routine forward & reverse blood grouping was carried out; the results were throwing up some challenges. Extensive Immunohaematological work-up like Blood grouping by CTT at 40°C and 37°C also had been performed. Then Cold adsorption and heat elusion techniques were carried out to arrive at the correct blood groups of both the persons. Finally, salivary grouping was also done for the confirmation. To our surprise, the blood groups turned out to be blood group BXNegative, showing weak agglutination with Anti-B & AB as well weak clumps with B cells. Adsorption and elusion confirmed the presence of B antigen. Results of saliva differentiated Bx from other subtypes. This is the first time ever in 39 years’ history of LBC; we have come across a rarest of rare blood group BX Negative.

**Conclusions:** Usually this subgroup is wrongly labelled as group “O” which may lead to hemolytic transfusion reactions. To avoid this, cell & serum grouping must be done meticulously.

**PP_IH 19**

**Study of prevalence of autoimmune hemolytic anemia**

Sangeeta Samad

SCB MCH, Cuttack, Odisha, India

**Background:** Autoimmune hemolytic anaemia (AIHA) is characterized by autoantibodies against RBC antigens, which leads to shortened RBC survival. AIHA can be primary (idiopathic), secondary to infection or other hematologic malignancy diseases or in reaction to drugs. There are subtypes of AIHA: i) warm AIHA (react optimally at 37°C), ii) cold AIHA (react optimally below 37°C) (which includes cold agglutinin disease, CAD and paroxysmal cold haemoglobinuria or PCH), iii) mixed-type AIHA (both warm and cold) and 4) drug-induced AIHA.

**Aims:** To calculate incidence of different types and subtypes of AIHA cases.

**Methods:** Data of 159 patients admitted with AIHA or presented to outpatient department with AIHA conducted in between March 2017 and December 2020 in the department of Transfusion medicine, SCB MCH Cuttack. Diagnosis is based on clinical or laboratory evidence of hemolysis and the detection of autoantibodies by means of the direct anti-globulin test (DAT).

**Results:** A total of 159 patients were identified, with 63 (40%) males and 96 (60%) females. 18 (11%) of patients were in the age range of 18-25 yrs and 70% (113) of the patients were within the age range of 26-40 yrs, 45 (28%) patients were in the age range of 41-60 yrs, 45 (28%) patients were in the age range of 61-80 yrs, 42 (26%) of the patients were within the age range of 18-25yr and 31 (20%) of the patients were <18yrs. Out of total, primary AIHA cases were 120 and secondary AIHA cases were 39. Out of 159 patients, 13 (8%) of patients had warm AIHA, 12 (8%) cold AIHA, and 134 (84%) mixed AIHA. AIHA was considered primary in 7.5% of patients with warm AIHA, 7.5% with cold AIHA, 85% with mixed AIHA.

The proportions of patients with autoimmune disease (81%), hemolagic malignancy (4.4%), sepsis (4%), thalassemia major/95 (4.4%) and other secondary causes (10.4%) were similar in patients with cold and warm antibody AIHA.

**Conclusions:** These results demonstrate the high frequency of primary autoimmune hemolytic anaemia. Mixed AIHA cases was associated with higher prevalence than warm and cold type of AIHA cases. The complex diagnostics and treatment of AIHA require an individual approach for treatment.
Blood grouping dilemma!!
Sarika Agarwa, Ashish Maheshwari, Meenu Bajpai
Institute of Liver and Biliary Sciences, New Delhi, India

**Background:** To determine the correct ABO group is of utmost importance as incorrect determination may lead to an immediate haemolytic transfusion reaction. Most of ABO discrepancies are resolved by immunohematological methods. Rarely, molecular methods are required for genotyping to identify definite blood group. Transfusion management is challenging in such cases. We encountered an ABO discrepant case showing the discrepancy between cell and serum grouping.

**Case Details:** A blood sample of a forty-four-year male diagnosed with ethanol related–chronic liver disease was sent to Blood Centre for ABO grouping and antibody screening. On laboratory testing, we observed a discrepancy in cell grouping (AB group), and serum grouping (A group) as type 4 group discrepancy and antibody screening was negative. The possibility of antibodies against Acriflavine dye components used in anti-B antisera and antibody against low-frequency antigen were ruled out. Cell and serum grouping was performed at different temperatures, cold allo-adsorption followed by elution was done, and Anti-B antibody titers and thermal amplitude of anti-B was determined. The blood group was reported as AB Rh D positive with the anti-B antibody of broad thermal amplitude (4-35°C). Possibility of cis-AB with anti-B antibody was still kept. O Rh D positive/A Rh D positive PRBC compatible at AHG phase and AB group plasma/platelets components were advised with special precautions for transfusions.

**Discussion:** Similar cases have been reported earlier where AB individual had anti-B antibodies because of abnormal galactosyl transferase enzyme, resulting in lack of conversion of H sites while another case had cold anti-B autoantibody in AB with normal B antigen. Anti-B antibody in cis-AB individuals because of weaker activity of B transferase enzyme has also been reported. This case highlights the importance of cell and serum grouping and role of pre-transfusion testing to manage patients whose final blood group cannot be determined without molecular genotyping.

**Conclusions:** In such scenarios of non-availability of molecular methods, still, transfusion support can be met with the available immunohematological tests without delaying transfusion in patients.

PP_IH 23
First report of rare s-s-u- blood group phenotype from India
Swati Kulkarni, Seema Jadhav, Harita Gogri, Manisha Madkaikar
ICMR-National Institute of Immunohaematology, Mumbai, Maharashtra, India

**Background:** The MNS blood group system consists of 49 antigens of which S, s and U antigens are clinically very important. The S-s- phenotype is typically found in people of African origin and presents a challenge in transfusion setting, especially when they develop anti-U. U is a high incidence antigen, occurring in more than 99.9% of the population. The anti-U antibody is usually IgG type and has been implicated in hemolytic disease of the fetus and newborn with varied clinical outcome from asymptomatic disease to stillbirth.

**Aims:** To investigate a case of Rh D negative antenatal woman suspected of having multiple red cell alloantibodies.

**Methods:** A 26 year old ‘A’ Rh D negative multiparous antenatal woman was referred to ICMR-NIHH for Rh D antibody titre. She delivered twins at full term, with one Rh D positive and other Rh D negative baby. In both babies DAT was positive and developed HDN. Antibody screening and identification was performed to know the specificity of antibodies.

**Results:** Rh D antibody titre of patient was 1:32 by IAT. The serum showed weaker strength of reaction with O Rh negative cells suggesting presence of another alloantibody along with anti-D. Antibody identification showed panagglutination reaction. Minor blood group typing showed the patient’s phenotype as: cde/cde, Fy (a+b-), Kk, Jk (a-b-), Js (a-b+), Lu (a-b+), Kp (ab+), Do (a-b+), NN, Lu (a-b+). The S and s antigens were absent, but no antibody was produced against them. Exchange transfusion was given with least incompatible O RhD negative blood. The sample was sent to IBGRL, UK for further workup and was identified to have a very rare S-s-U- phenotype. Serum showed presence of anti-D and anti-U. DNA sequencing was performed for different exons of GYPB and GYPA gene. Absence of all exons suggests homozygous deletion of GYPB gene associated with M-N+S-s-U- phenotype.

PP_IH 22
An interesting experience of b subgroup (b⁺) detected during preoperative testing at life blood centre, Rajkot, Gujarat
Nikunj Chav, Manali Ramoliya, Jyoti Bhatt, Nishith A Vachhani, Sanjeev Nandani
Life Blood Centre, Rajkot, Gujarat, India

**Background:** The first system of blood grouping that still remains the most important one in transfusion medicine is ABO. It has subgroups also, however we encounter them occasionally as their frequency is very low. In India till date most of laboratories are performing only cell grouping for blood grouping and the results are not counter checked by doing serum grouping. The weak B subgroups are: B₁, B₂ & B₃. These groups are wrongly typed as ‘O’ because the B antigen is very weakly present on red cell membrane, which cannot be detected if low titre anti-B grouping sera is used in forward grouping and reverse grouping is not done.

**Case Report:** A 42 year old female admitted at gynaecology hospital for hysterectomy with complaint of menorrhagia having iron deficiency anemia. Her Hb was only 8 gm%. LBC received blood request for three units of LR-RCC. Routine forward & reverse blood grouping were carried out; the results were throwing up some challenges. Extensive Immunohaematological work-up like Blood grouping by CTT at 4°C and 37°C was performed. Then Cold adsorption and heat elusion techniques were carried out to arrive at the correct blood group of the patient. To our surprise, the blood group turned out to be blood group B3-Positive, showing weak agglutination with Anti-B & no agglutination with anti-AB. Adsorption and elusion confirmed the presence of B antigen. Results of reverse grouping differentiated B₃ from other subtypes. As requirement of RBC was urgently required so we communicated with treating clinician and after taking her consent we issued three units of O group LR-RCC. Hb increased up to 11.5 gm% and no evidence of BTR.

**Conclusions:** It is absolutely imperative to do cell as well as serum grouping of the recipient & donor to identify such subgroups and thereby avoiding haemolytic transfusion reactions.
Conclusions: A very rare first case of S-, s-, U- RhD negative individual was identified in India producing anti-D and anti-U responsible for causing HDFN. This reciprocates the need for large scale screening to identify rarer phenotype donors for transfusion management of such patients.

PP_IH 24

Acute hemolytic transfusion reaction due to mismatched blood transfusion in a patient with cold auto-antibody: A case report

Jagannath sahoo
SCB MCH, Cuttack, Odisha, India

Background: Acute hemolytic transfusion reaction occurs within 24 hour and lead to intravascular hemolysis due to ABO and other blood group incompatibility. Sometimes autoantibodies may interfere with blood grouping and cause acute hemolytic transfusion reaction.

Case History: A 50 year old female previously transfused with 2 units of AB positive whole blood in a local hospital for correction of anemia. After transfusion she was presented with fever, chills, rigor and signs of tachycardia. On Laboratory investigation Hemoglobin showed decreased level and hematuria was noticed inspite of transfusion. The patient was refered to our hospital for further management.

Results: We encountered a discrepancy in blood grouping and cross-matching, which was subsequently resolved. On investigation direct antiglobulin test was positive(C3d only) and auto-control at 4°C was positive. Antibody screening and antibody identification showed pan positivity which established cold auto-antibody. Subsequently, grouping discrepancy was resolved by pre-warm technique. After that, correct blood group unit with crossmatched compatible unit was transfused which accounted for improvement in anemia in the patient.

Conclusions: Patients with Cold reactive auto-antibodies may cause group discrepancy and sometimes transfused with wrong blood causing hemolytic transfusion reaction. In such type of patients blood grouping should be done cautiously and patients should be transfused with blood unit in warm condition. To our knowledge a careful communication between transfusion services and clinicians can avoid wrong blood transfusion in such cases which can be life saving.

PP_IH 25

A intermediate (A\textsubscript{int}) blood group with warm ANTI-A\textsubscript{c} antibody: A case report

Saurabh Lahare, Minal Wasnik, Ramesh Chandrakar
All India Institute of Medical Science, Raipur, Chhattisgarh, India

Background: A\textsubscript{1} and A\textsubscript{2} are the two most commonly encountered subgroups of blood group A. A\textsubscript{1} represents the majority of group A (approx. 80%) followed by A\textsubscript{2} (approx. 20%). A\textsubscript{1} can be distinguished from A\textsubscript{2} by anti-A\textsubscript{1} lectin, which agglutinates A\textsubscript{1} red cells but not A\textsubscript{2} red cells. Plasma from A\textsubscript{int} individuals contain different enzyme (UDPGalNAc: 2 fucosylgalactoside 3N-acetylgalactosaminy transferase), which is different from the enzyme in A\textsubscript{1} and A\textsubscript{2} plasma. A\textsubscript{1} organ can be transplanted to O recipient but not A\textsubscript{int}.

Case Report: We encountered a case of a 54 year old female (having Pneumonia and chronic kidney disease) whose sample came at the department of transfusion medicine and blood bank. On routine grouping, her blood group came out to be a positive with anti-A\textsubscript{c} antibody reacting at room temperature which got enhanced at 37°C.

Results: On testing further, antiA\textsubscript{c} lectin gave 2+ reaction, antiH lectin and anti-AB antisera gave 4+ reaction. [Table 1] The saliva inhibition studies showed the presence of A and H substances. [Table 2] Based on these results, it was typed as an A intermediate (A\textsubscript{int}) group with warm type anti-A\textsubscript{c} antibody.

Conclusions: We have previously encountered A\textsubscript{int} case in this region but it’s the first time ever we encountered any such A\textsubscript{int} case with warm type anti-A\textsubscript{c} antibody. Here O group packed red cells are the suitable blood units to transfuse. It is recommended to always test any anti-A\textsubscript{c} antibody encountered in various temperatures so that any hemolytic transfusion reaction could be prevented.

Table 1: Forward and reverse grouping

| Ant-A | Ant-B | Ant-H | Ant-AB | A\textsuperscript{b} | B\textsuperscript{b} | O\textsuperscript{b} | Temperature |
|-------|-------|-------|--------|-----------|---------|---------|-------------|
| 4+    | 0     | 4+    | 4+     | 4+        | 3+      | 4+      | Room temperature |
| 4+    | 0     | 4+    | 4+     | 4+        | 4+      | 0       | 37°C         |
| 4+    | 0     | 4+    | 4+     | 4+        | 4+      | 1+      | 37°C         |

Table 2: Inhibition testing result on saliva testing

| Test tube with | Test tube | Test tube with |
|---------------|-----------|---------------|
| anti-A\textsubscript{c}+saliva | A\textsubscript{c}+ | anti-AB+saliva | B\textsubscript{c}+ |
| O\textsubscript{c}+       |           |               |               |

Reactivity with test sample: 0, 1+, 2+

PP_IH 26

Analysis of incompatible crossmatch in a tertiary care center

Bhuvandeep Dhawan, Ravneet Kaur, Paramjit Kaur, Tanvi Sood, Kshitija Mittal
Government Medical College and Hospital, Chandigarh, India

Background: Incompatible crossmatches present a challenge in finding compatible blood for patients. Increasing awareness about blood safety along with increasing use of blood components necessitates a deeper understanding as to the etiology of incompatibilities. Sometimes, this work-up also helps in reaching the diagnosis of the patient.

Objective: To analyze the etiology of incompatible crossmatch.

Methods: This study was conducted in the Department of Transfusion Medicine of Government Medical College and Hospital, Chandigarh from January 2019 to December 2020. Blood grouping was performed by tube technique, and crossmatching was performed by tube technique or column agglutination technology (CAT) using Anti-Human Globulin (AHG) or polyspecific (IgG+C3d) gel cards, respectively. All incompatible crossmatches were worked up. Direct Anti-globulin Test (DAT), Auto-control,
Abstracts

The identification of proper ABO blood group

We received 2 blood samples (one EDTA & one negative for both were found compatible on crossmatching by CAT red cell units were phenotyped for c & Kidd antigens and those c alloantibodies were identified. Her autocontrol was negative. The Direct Antiglobulin Test was further demand for PRBC transfusion. Her LDH was 700 Hb started showing a decreasing trend from 9.6 to 6.1 and there was further demand for PRBC transfusion. Her LDH was 700. Two units were crossmatched & all came incompatible in (A) Antigen in O positive blood donors.

Indirect Anti-globulin Test (IAT) and antibody screen and identification by CAT technique were done. Donor unit DAT was performed to rule out donor related causes of incompatibilities. Clinical and laboratory data of patients was obtained.

Results: A total of 88 incompatible crossmatches were identified. Incompatibility rate was higher in females as compared to males (78.2% vs 21.8%). Fifty percent (n=44) of patients had a history of previous transfusion and 31% (n=27) of cases were due to Auto Immune Hemolytic Anemia (AIHA) and presented with pan-agglutination. Antibody could be identified in 72% (n=63) of cases. Anti-E antibody was the most common (20.7%, n=18) followed by anti-c and anti-M (16%, n=14, each). Special immunohematology cards, detailing antibody specificity were issued to patients.

Conclusions: Incompatible crossmatch poses a challenge in the field of transfusion medicine. The present study emphasizes the importance of the Rh group of antigens in compatibility testing. In multi transfused patients, Rh and Kidd phenotype matched red cell units should be given. In this study, many patients with autoimmune diseases were also recognized. Root cause analysis of incompatibility and a logical stepwise approach to it will enable the provision of safe blood.

PP_IH 27

Delayed hemolytic transfusion reaction due to ANTI- JKa and ANTI-C specificity

Joyisa Deb, Daljit Kaur, Ranjan Mukherjee, Gita Negi, Om Prakash Negi

Department of Transfusion Medicine, AIIMS, Rishikesh, Uttarakhand, India

Background: Delayed hemolytic transfusion reactions (DHTR) occur following a secondary immune response, mostly within 3-15 days. Here, we report a case of DHTR resulting from multiple alloantibodies following an anamnestic response.

Methods: A 28 years old woman, P1L1 with cervical polyp, a known case of chronic kidney disease with previous history of seizure was admitted in the department of Obstetrics & Gynaecology. She presented with generalized oedema for past 10 days and hemodialysis was been planned for her. She had multiple transfusions in the past. And the recent most transfusion happened 10 months back. No significant history of fever, bone pain, hematuria was present. On admittance, her lab parameters included- hemoglobin (Hb) level- 9.6g/dl, hematocrit- 19%, total serum bilirubin- 4.56 & direct bilirubin- 2.07. In view of haemodialysis & moderate anemia, Packed Red Blood Cell transfusion was requisitioned. All the serological tests were performed on the patient’s sample as part of routine pretransfusion testing. Her blood group was B Rh D positive and one unit was crossmatched and issued after routine testing. After one day, her Hb started showing a decreasing trend from 9.6 to 6.1 and there was further demand for PRBC transfusion. Her LDH was 700 units/L. Two units were crossmatched & all came incompatible in (A) Antigen in O positive blood donors.

Results: In both tube and CAT, no blood group discrepancy was found with either A or B antigen in forward typing; however, 4+ agglutination was observed with B cell and no agglutination with A cell in reverse typing. Blood Grouping and Rh typing after incubation at room temperature for 30 minutes revealed 1+ reaction with anti-AB and anti- H in forward grouping. The auto-control, direct Coombs’ indirect Coombs’ and antibody screening tests were performed with negative results. Since Anti-H showed a weaker reaction and reverse grouping suggested the patient to be of A blood group, adsorption and elution was performed using “Lui Freeze Thaw” method which confirmed the presence of A antigen on patient’s red cell. The patient was reported to be of A Rh D positive and was advised Coombs’ Cross Match Compatible blood for transfusion.

Conclusions: The identification of proper ABO blood group essentially aids in compatible blood transfusion in acute leukemia. Also, as loss of ABO antigens indicates underlying hematopoietic malignancy, search should culminate in identifying the same.

PP_IH 28

Blood group discrepancy in acute leukemia
-A case report

J Lavanya, P Arumugam, Swathanandram Hansavardhini

The Tamilnadu Dr M.G.R Medical University, Chennai, Tamil Nadu, India

Background: Blood group antigens are either sugars or proteins found attached to the red blood cell membrane. ABO blood group antigens are the most clinically important antigens because they are the most immunogenic. Red blood cell (RBC) antigens are inherited traits and, as such, their expression is constant throughout the life of an individual. RBC antigen change has been occasionally described in association with hematological malignancies. These modifications of blood group antigens usually revert to normal after remission is attained.

Case Report: We received 2 blood samples (one EDTA & one -plain) of a 53-year-old female patient diagnosed to be case of acute leukemia from a tertiary care centre for resolving the grouping discrepancy. Baseline investigations at their centre: Hb- 5.2gm/dl, MCV- 99.4 fl, PCV-15.8%, MCH-32.4 pg, MCHC-32.6, total WBC-11500/µl, Platelet count- 24,000/µl. Peripheral smear: Acute Leukemia with Monocytic differentiation and 70% Blast. Immunohematological workup was done by tube and column agglutination technology (CAT). Antibody screening was performed using 3-reagent red cell panel (BioRad).

Results: In both tube and CAT, no blood group discrepancy was found with either A or B antigen in forward typing; however, 4+ agglutination was observed with B cell and no agglutination with A cell in reverse typing. Blood Grouping and Rh typing after incubation at room temperature for 30 minutes revealed 1+ reaction with anti-AB and anti- H in forward grouping. The auto-control, direct Coombs’ indirect Coombs’ and antibody screening tests were performed with negative results. Since Anti-H showed a weaker reaction and reverse grouping suggested the patient to be of A blood group, adsorption and elution was performed using “Lui Freeze Thaw” method which confirmed the presence of A antigen on patient’s red cell. The patient was reported to be of A Rh D positive and was advised Coombs’ Cross Match Compatible blood for transfusion.

Conclusions: The identification of proper ABO blood group essentially aids in compatible blood transfusion in acute leukemia. Also, as loss of ABO antigens indicates underlying hematopoietic malignancy, search should culminate in identifying the same.

PP_IH 29

The frequency of anti-in (A) antibody in multi-transfused thalassemia patients and in (A) Antigen in O positive blood donors

D Singh, S Pahuja, G Sharma, M Singh, R Vilash
Abstracts

**Background:** The Indian blood group system (ISBT: IN/023) consists of one low prevalence antigen, In(a) (IN:1) and five high-prevalence antigens: In(b) (IN:2), INFI (IN:3), INJA (IN:4), INRA (IN:5), and INSL (IN:6). In(a) is present in approximately 10% of some Arab populations and in 3% of Bombay Indians.

**Aims:** To find the frequency of anti-In(a) antibody in multi-transfused thalassemia patients and the frequency of In(a) antigen amongst O positive blood donors in a Regional Blood Transfusion Centre of a tertiary care hospital in North India.

**Methods:** The patient’s plasma was screened for presence of antibody by Indirect Coomb’s Test (ICT) using 3-cell & 11-cell panel (ID-DiaCell I-II-III Asia and ID-Diapanal, Diamed). The anti-In(a) antibody screening was done by using red cell suspension of In(a) positive red blood cells (RBCs) procured from Lok Samarpan Kendra Blood Bank in Surat, Gujarat. The donors were screened for presence of In(a) antigen on their RBCs by using anti-In(a) serum procured from the same Blood Bank.

**Results:** A patient was referred to the Blood Bank with cross-match incompatibility with some units of blood. However, the ICT using antibody screening and identification panels was negative suggesting a low prevalence antibody. Further immunohematological work-up with papain and DTT was done. Patient’s plasma showed reactivity with In(a) positive RBCs suggesting Anti-In(a) antibody. The plasma was sent to Gujarat for confirmation. Furthermore, 477 thalassemia patients receiving transfusion support from our Blood Bank, were screened for presence of anti-In(a) antibody using the same In(a) positive cells. Also, 483 O positive donors were screened for presence of In(a) antigen on RBCs by using anti-In(a) serum.

**Conclusions:** The study highlights that many cases of anti-In(a) antibody are not picked up by routine antibody screening and identification panels. Hence, there needs to be a better representation of Indian blood group antigens on commercial panels to avoid false low incidence of anti-In(a). Also, it was found that In(a) antigen has a low prevalence in general population. Therefore, most patients with anti-In(a) antibody are not compatibles units by random cross-match.

**PP_IH 30**

**Resolution of blood group discrepancy in a leukaemia patient with decreased antigen expression**

**Ranjita Sarma**

Dr B Baruah Cancer Hospital, Guwahati, Assam, India

**Background:** Loss of antigen expression is rarely seen in routine ABO grouping. In some case reports, haematolymphoid malignancy have shown the potential to alter A,B, and H antigen expression due to genetic instability.

**Case Report:** A 8 years old male leukaemia patient admitted at Dr B Baruah Cancer Institute with historical group A negative was advised for blood transfusion prior to chemotherapy as the haemoglobin was 7g/dl. On routine blood grouping by card (Ortho Bio Vue), forward group came as O negative and reverse as A .

**Methods and Results:** For reconfirmation, 5ml of fresh EDTA sample was collected and standard tube testing was repeated with monoclonal Anti A, Anti B and Anti D.(Tulip diagnostics and method). The result was inconclusive. Finally, an adsorption elution test was done by incubating the patients cells with B Group plasma(Anti-A). After 1hr incubation at 4°C, Anti-A got adsorbed into patient cells which was further eluted at 56°C for 10 min. The eluate showed positive reaction with A cells and no reaction with B and O cells. Hence after 4 hrs of testing, the final group was confirmed as A negative.

**Conclusions:** Leukaemia patient requires multiple blood transfusion and correct blood group transfusion is the utmost need both for the success of the treatment as well as to prevent hemolytic transfusion reactions.

**PP_IH 31**

**Complement activating allo anti m simulating red blood cell autoantibody**

Fathima Urooj1,2, Divyha Khandasamy1,2, Shamee Shastry1,2, Deepika Chenna1,2, Ganesh Mohan1,2, Vinu Rajendran1,2

1Kasturba Medical College, 2Manipal Academy of Higher Education, Manipal, Karnataka, India

**Background:** Naturally occurring antibody Anti-M are usually of the IgM class but sometimes it is present along with IgG class making it clinically significant reacting at 37degree. Here we discuss a case of clinically significant naturally occurring Anti-M activating complement and which posed diagnostic challenge to the immunohematologist.

**Case Report:** A 75-year-old patient, post Nephro lithotripsy with history of hematuria, developed anemia of 4.5g/dl for which two units PRBC transfusion was requested from outside hospital. The pretransfusion testing showed incompatibility in their centre. Patient has no significant medical or drug history and no history of previous transfusion.

Blood grouping done in Column Agglutination Technique (CAT) showed a type 4 discrepancy with additional reaction in O cell which resolved in tube technique and patient’s blood group was typed as O Rh D Positive. On further Immunohematological workup, Polyspecific Direct Agglutination test (DAT) containing IgG and C3d was strong positive (3+). However, Monospecific DAT was negative. Antibody screening and identification showed the presence of Anti-M antibody. Minor phenotyping of patient’s red cells showed absence of M antigen. On reviewing the other lab investigations, there were no signs of hemolysis and the peripheral smear was normal. Elution study was negative. There was no history of previous transfusion. Hence, M antigen negative AHG phase crossmatch compatible units were issued to the patient. The DAT, IAT was positive and incompatible crossmatches were suggestive of red cell autoantibodies. However, the extended immunohematological work up revealed that, this patient had naturally occurring allo anti M, which activated complements leading to positive DAT result.

**Conclusions:** This is a rare case of complement activating alloantibody leading to DAT positive result. Appropriate interpretation of immunohematological tests will help in better patient care.

**PP_IH 32**

**Evaluation of an automated microplate technique in the immucor galileo system for ABO AND RH (D) blood grouping**

Asian Journal of Transfusion Science | 2021 | Volume 15 | Supplement 1
Abstracts

**discrepancy at tertiary care blood centre in central Gujarat**

Esha Shah, Yogesh Vastani, Manthan Patel, Kirti Rathod
A D Gorwala Blood Centre, Pramukh Swami Medical College, Anand, Gujarat, India

**Background:** Several automated devices for pretransfusion testing have recently become available. This study evaluated the Immucor Galileo System, a fully automated device based on the microplate hemagglutination technique for ABO/Rh (D) determinations.

**Aims:** (1) To find out ABO blood group discrepancies not solved in Immucor Galileo system. (2) To find out Rh D typing discrepancies not solved in Immucor Galileo system.

**Methods:** Routine ABO/Rh typing tests were performed on 15,307 samples using the Immucor automated instruments. Conventional Tube Technique (CTT) was used to resolve ABO forward and reverse grouping discrepancies. D-negative test results were investigated and confirmed manually by the indirect antiglobulin test (IAT).

**Results:** 11 samples were read as “No-type-determined” due to ABO forward and reverse grouping discrepancies in Galileo system which were resolved by CTT. We found 4 tests with cold autoantibodies and were solved by 37 °C incubation. 3 tests were attributable to weak A and/or weak AB antigens and were resolved using anti-A1 lectin. 2 tests were reverse group discrepancy with multiple myeloma diagnosis and were solved by saline replacement technique. I patient with the historical blood group of B positive had massive transfusion with O group red cell units and was solved by increased incubation time. 1 case was suggestive of Ax group solved by heat elution and adsorption technique. For D typing, out of 922 Rh (D) negative results 1 weak D positive samples missed by Galileo system which gave a negative result, but weak-positive reactions were observed in the IAT.

**Conclusions:** The Immucor Galileo System is reliable and suited for ABO and D blood groups, some reasons may cause a discrepancy in ABO/D typing using a fully automated system. Combining clinical features with serology findings of the automation system and conventional tube technique is critical to optimal patient and donor care.

**PP_IH 33**

Frequency of alloimmunization in a tertiary referral center in eastern India: Retrospective study

M Sree Bhagavathi, Somnath Mukherjee, Satya Prakash, Ansuman Sahu, Gopal Krushna Ray, Niladri Das

AllIMS, Bhubaneswar, Odisha, India

**Background:** Red blood cell alloimmunization is a common phenomenon in patients especially in transfusion dependent patients like Sickle cell disease, Thalassemia. However the knowledge of its prevalence and importance of providing safe transfusion support is still lacking in many centers.

**Aims:** To determine the prevalence of red cell alloantibodies and its specificities with respect to age, gender and diagnosis in a tertiary referral center of Eastern India.

**Methods:** This retrospective study was conducted in All India Institute of Medical Science, Bhubaneswar from January 2019 to January 2021. Blood samples sent from different departments for Coombs test and pre transfusion testing samples with incompatible crossmatch or blood group discrepancy were screened for alloantibodies and specificity were identified using commercial identification panel (BIO-RAD) and minor blood group. Frequency of alloimmunization was assessed in terms of percentage.

**Results:** Among 1616 cases of antibody screening, 96 cases (5.94%) of allo-antibodies were identified including 66 females (68.75%) and 30 males (31.25%). The mean age of alloimmunization was found to be 31.79 years (SD = 16.74). Of all the allo-immunised individuals, 58 (60.42%) were hemato oncology patients and 38 (39.59%) were other patients. Among hemato oncology patients, sickle cell disease, thalassemia, and malignancy cases were 17 (17.71%), 11 (11.46%) and 4 (4.17%) respectively. Single specificity was observed in 49 (51.04%) and multiple specificity in 47(48.96%) cases. Anti-E was the most common allo antibody followed by 12 anti-D (12.5% in Rh negative pregnancy), 8 anti-c and 4 anti-M cases. 13 (13.54%) were antibodies with unknown specificity. Antibodies against Lewis-a, Lewis-b, Kidd-a, Kidd-b, Duffy-b, Duffy-a, Kpa were found in one case each. More than 2 antibodies were identified in 13 cases (13.54%).

**Conclusions:** Red cell alloimmunization is more prevalent in multiple transfused patients and hence routine antibody screening before each transfusion and issuing of phenotype matched blood units must be incorporated for them.

**PP_IH 34**

A case series of weak a and b subgroups in a tertiary hospital blood centre in western India

Pallavi Singh, M Arun, Archana Bajpayee, Puneeth Babu Anne

All India Institute of Medical Sciences, Jodhpur, Rajasthan, India

**Background:** The ABO blood grouping system remains the most important in transfusion practices. Presence of anti-A, anti-B or both the antibodies in the serum is capable of causing red cell destruction if the corresponding antigen is present on the red cell. This makes it necessary to crossmatch every transfused blood or blood component with patient’s blood sample. There exist some rare phenotypes of blood due to subgroups of A or B. These are wrongly typed as ‘O’ because the A/B antigen is very weakly present on red cell membrane and cannot be detected by routine cell grouping using anti-A and/or anti-B. The phenotypes of A can be classified based on expression of A antigen on red cell membrane. Most of them can be classified under $A_y, A_x, A_{el}$, $A_{x+y}$, $A_{x+el}$, and $A_{y+el}$ where $A_y$ has higher expression of A antigen and $A_{el}$ has the least. Subgroups of B are very rare and much less frequent than A subgroups. Phenotypes of B can be classified based on expression of B antigen on red cell membrane. Most of them can be classified under $B_y, B_x, B_{el}$, and $B_{x+el}$ where $B_y$ has higher expression of B antigen and $B_{el}$ has the least.

**Objective:** To detect the prevalence of weaker ABO subgroups among the blood donors in a tertiary hospital of western Rajasthan during the period of 2017 to 2020.

**Methods:** Criteria used for differentiation of weak A/B phenotypes includes:

- Strength and type of agglutination with anti-A, anti-B, anti-AB, and anti-H
- Presence or absence of ABO isoagglutinins in the serum
- Adsorption-elution studies with anti-A/anti-B
- Presence of A/B substance in saliva

**Result:** 3 subgroups of A and 2 of B were detected during the study.
period. A⁺ in 2017 (0.04% of total donations), A⁻ in 2019 (0.02%), A⁺A⁻, B⁺, B⁻ and B⁺ in 2020 (0.07%). The PRBC prepared from these blood units were issued to respective ABO blood groups and FFP were issued to O group patients.

**Conclusions:** Detection of these subgroup made it possible to avoid ABO mismatch transfusions in patients.

**PP_IH 35**

**Evaluation of incompatible crossmatch at blood bank-tertiary care center**

**Tejal Ahuja, Nidhi Bhatnagar, Tarak Patel, Mamta Shah, Sangita Shah**

B.J. Medical College, Civil Hospital, Ahmedabad, Gujarat, India

**Background:** The Compatibility testing is performed to ensure maximum safety of blood transfusion. The transfused RBCs will have acceptable Survival Rate, and there will be no significant destruction of recipient’s own RBCs and it ensures ABO Compatibility between Donor and Patient blood as well as most clinically significant RBC alloantibodies that react with Antigen on donor RBCs.

**Objective:** To evaluate the incidence and causes of incompatible cross match in patients, by Column Agglutination Method.

**Methods:** A total of 240 incompatible cross matches were reviewed out of total 85400 cross matches performed by column agglutination technique in a period of a 1 year. A root cause analysis protocol was formulated to resolve the Incompatibility, which would help to ensure safe transfusion to patients.

**Results:** The overall incidence of incompatible cross matches was found to be 0.28%. The Major cause for incompatibility found in patients was autoimmune hemolytic anemia (40%). Other Causes of incompatibility were multiple transfusions (17%), Hemolytic Disease of Newborn (12%), Infections (10%) and incompatibility due to DAT positive PCV (10%). Majority of incompatible cross matches in patients were found in females than Males. Clerical and technical error accounted for 2%.

**Conclusions:** The commonest cause of incompatibility was autoimmune hemolytic anemia. Incompatibility was found more in females than males. Clerical and technical error has a low incidence (3%). The root cause analysis protocol involves a thorough evaluation of Patient’s clinical condition and underlying pathology identify the cause. A logical stepwise approach was enable provision of safe transfusion to the patient.

**PP_IH 36**

**Prevalence of phenotype frequency of rh and kell antigen among blood donors of north India**

**Rajesh Kumar, Sonia Gupta, Amajit Kaur, Priya**

Dayanand Medical College and Hospital, Ludhiana, Punjab, India

**Background:** Transfusion of ABO compatible but unknown phenotype blood may result in alloimmunization especially in patients who require multiple transfusions in haematological disorder and malignancies. The alloantibodies, which frequently develop and are encountered during compatibility testing, are primarily against antigens related to Rh, Kell, Kidd, Duffy and MNSs blood group systems. The Rh & Kell blood group system is the next most highly immunogenic blood group system, to ABO blood group system. Among all the minor blood group systems prevalence of alloimmunization is found to be highest against Rh & Kell antigen. This study was aimed to provide data regarding the frequency of RH and Kell antigens and with their phenotypic expression in the blood donors, and to compare with other ethnic groups/populations.

**Methods:** Samples from blood donors coming for blood donation during January 2018 to June 2019 were tested for Rh and Kell antigen. The antigen typing of donors was performed using the NEO fully automated Immuno-haematology analyzer (Immucor, Roedermark, Germany) that uses the micro-plate haemagglutination technique for typing with IgM monoclonal antisera. Donors typed as D negative were confirmed using an antiglobulin weak D test in an automated solid phase test using Novacline anti-D. To establish the validity of results of the automated system, the initial samples were typed manually using the tube method in parallel to the study.

**Results:** A total of 10650 blood donors were type during the study period. 91.04% of the donors were found to be Rh D positive while 8.96% were found to be Rh D negative. The most common Rh antigen observed in the study was e (98.71%), followed by D (91.04%), C (82.42%), c (63.29%) and E (21.46%). The commonest Rh phenotype was R1R1 constituting (37.51%), followed by R1r (30.99%), R1R2 (13.33%), r (8.69%), R2r (6.75%), R2R2 (1.31%), R0r (1.05%), r r (0.23%), R1R1 (0.09%), and r^r (0.04%). The most common Rh Phenotype among Caucasians was R1r (34.9%) and that in black was R0r (45.8%). The frequency of the Kell antigen (K) was 3.15%; while that of cellano (k) was 100%. The most common Kell phenotype was K-k+ (96.85%). Kell antigen reported for Caucasian was 9% and that in black was 2%.

**Conclusions:** Phenotype and probable genotype showed wide range of variations in different races. Antigen typing and transfusion of ABO and all other antigens is not practically possible. But, typing and transfusion of Rh and Kell phenotyping matched blood have proven to be a good practice to all patients who require multiple transfusions. This intervention will not only reduce the rate of alloimmunization in patients but will also save time and resources.

**PP_IH 37**

**Erythrocyte autoimmunization in covid19 patients: Interesting immunohematological findings**

**Deepthi Sachan, Deepthi Krishna, G Shanthi**

Rela Institute and Medical Centre, Chennai, Tamil Nadu, India

**Background:** Multiple clinical manifestations have been described in relation with coronavirus disease 2019 (COVID-19). However, very few reported cases of autoimmune hemolytic anemia (AIHA) associated to SARS-CoV-2 have been described. Here we present our experience of red cell autoimmunization in COVID19 infected patients admitted at the Covid unit at our hospital.

**Methods:** This retrospective review of COVID19 patients pretransfusion testing records from July 2020 to Dec 2020 admitted at our hospital during the period was assessed for blood grouping discrepancies and workup results, antibody screening, crossmatching, minor crossmatching results in case of covalescent plasma transfusion, Coombs Tests and Cold antibody detection when indicated during routine pretransfusion tests in COVID19 patients. The patients with autoimmunization were reviewed for
laboratory evidence of AIHA and blood or Convalescent plasma transfusion details

**Results:** During the study period, Out of total 2962 patient blood grouping requests and 3912 blood requests received at the blood centre for various blood components in which 46% requests were from COVID Unit including 138 requests for Convalescent plasma. Out of Total, 11 patients (8 males, 3 females, mean age 59 years (46-77) which includes 10 COVID19 patients during hospitalization and 1 post covid19 plasma donation, showed autoimmune reactivity in form of blood group discrepancy (reaction with O cells in reverse grouping) with presence of cold antibodies in 3 cases, Direct Combs test Positive in 8 patients (1-3- reactions) which on further testing with Monospecific DAT showed IgG positive in 4 and C3d Positive in 4 patients. There were no case of presence of warm antibody in serum. On cold antibody detections, 6 patients showed pan-reactive results at 4°C in while only 3 reacted at 22°C and weakly reactive at AHG phase. All Cold agglutinins showed <1: 16 titre. 2 patients (Blood group- A positive) with positive cold agglutinin showed specificity of Anti-IH antibody and DCT negative and crossmatch compatible but panreactive only with O cells. Convalescent plasma transfusions were done in 6 cases and minor crossmatch incompatible was found in 4 patients. While one minor crossmatch was incompatible in saline phase due to cold agglutinins in plasma donor who donated 48 days of recovery period. 3 out of 11 patients showed high LDH, D-Dimer and CRP Levels however, only one patient required one unit of blood transfusion (Hb 5.7 gm/dl)

**Conclusions:** While many haematological complications of COVID-19 infections have been reported, the finding of AIHA is novel and the exact mechanism of the AIHA associated with the novel coronavirus is not known and needs further evaluation.

**PP_IH 38**

**Positive direct antiglobulin test in healthy blood donors- Our experience**

Rajbir Kaur, Tanvi Sood, Paramjit Kaur, Kshitija Mittal, Ravneet Kaur

Government Medical College and Hospital, Chandigarh, India

**Background:** The direct antiglobulin test (DAT) is used to determine whether the red blood cells are coated in vivo with antibodies such as immunoglobulin, complement or both. Literature reports DAT positivity in 1:1000 to 1:14,000 blood donors. Donors with positive DAT are usually identified in laboratory when respective red blood cell (RBC) unit is incompatible with patient sample.

**Aim:** To evaluate the DAT positivity in healthy blood donors

**Methods:** This retrospective study was done in Department of Transfusion Medicine of Government Medical College and Hospital, Chandigarh over a period of four years (from January 2017 to December 2020). All blood units incompatible in the AHG (anti human globulin) phase were evaluated. If DAT and IAT (indirect antiglobulin test) of patient sample was negative and other causes of incompatibility were ruled out, the donor unit was subjected to DAT. All DAT positive blood donors were telephonically called back to department for detailed history and repeat sampling for repeat DAT, autocontrol and IAT and complete blood count. IAT positive sample was further subjected to antibody screening.

**Results:** Total 17 donors (0.0002%) among 79270 blood units collected showed positive DAT (weak positive to 4+) with or without IAT positivity. Among these 17 donors, 15 were male and 2 female. Mean age of blood donors was 37.29 years. 8 donors out of 15 responded to telephonic calls. None of the donors gave any clinically significant history. 2 out of 6 donors presented with low Hb (11.9 g/dL and 10.4 g/dL). Both donors were referred to hematology clinic and were provided required medical treatment. On follow-up, both donors became DAT negative after 2 months of treatment.

**Conclusion:** Worldwide there are no clear cut guidelines for deferral of DAT positive donors and referral of such donors to physician. So, an established policy for reinstatement of such donors in donor pool is need of the hour.

**PP_IH 39**

**Retrospective analysis of prevalence of abo and rh d blood group discrepancies among blood donors at a tertiary care center**

Aruna Sahu

IMS and SUM Hospital, Bhubaneswar, Odisha, India

**Background:** ABO and Rh D blood grouping is the most important pre transfusion testing done in the blood center. ABO discrepancies occur when forward and reverse grouping do not corroborate with each other. Rh D testing for weaker variants is important when reporting the blood group of a donor.

**Objective:** To determine the prevalence of ABO and Rh D discrepancies in the donor population in our region and resolve it before releasing the donated unit to the inventory.

**Methods:** It was a retrospective study in the Department of Transfusion Medicine in SUM Hospital. The donor test reports were analyzed from January 2020 to January 2021. The blood grouping was done with Column Agglutination Technology. Whenever a discrepancy was encountered, errors due to technical problems was ruled out first, followed by a repeat test using washed red cells. A detailed serological workup was done to solve the problem.

**Result:** Out of the total number of 9882 donors, discrepancies were detected in 4. One in forward grouping was typed as O group. In reverse grouping, reaction was seen A cell, B cell and O cell. Bombay phenotype (O) was confirmed by demonstrating absence of H antigen on red cells using anti-H lectin. Second case showed A group in forward grouping, in reverse grouping, B cell showed a 1 plus reaction due to weak anti-B antibody. The grade of agglutination increased after incubation at 4°C for 15 minutes. Third case was typed as A positive in cell grouping. In serum grouping A cell, B cell and O cell showed reaction. Auto control was negative. The alloantibody identified was Anti-M. Fourth one was a Rh- D discrepancy. The donor was B negative. The sample was tested in AHG phase. A weak D positive result was obtained.

**Conclusions:** The prevalence of donor discrepancies in our setup was 0.0406 %. It is imperative to resolve discrepancies to issue compatible blood unit.

**PP_IH 40**

**Catching the evil in the bud: Rare blood group**

Kajal Khajuria

MMIMS and R, Ambala, Haryana, India
Background: Blood group discrepancies are of the common occurrence which must be promptly resolved for safe transfusion practices. Weaker subgroups of ABO blood group system give rise to discrepancies between forward & reverse grouping and causes diagnostic difficulties in routine blood testing. Discrepant results were reported for cell & serum grouping in 2 cases.

Case 1: A healthy 30 years aged male with unremarkable history for any disease and medication came to our department for donation. There was no h/o any transfusion in past. The forward grouping revealed O positive but reverse grouping showed B group. No clerical error and reagent problems were observed. We performed a detailed serological investigation on the donor’s red cells with both tube technique and gel method (DiaMed card). The discrepancies existed even after increasing incubation of both cell and serum grouping to 30 mint at room temperature & 4°C & changing cell to serum ratio. Failure to resolve discrepancies afterward, led to further adsorption elution studies and adsorption elution technique indicating presence of weaker variants of B group. Saliva secretor test indicates the presence of both B & H antigen. These samples were sent to reference laboratory at Delhi to confirm our result and they also endorsed weak subgroups of B. Now this samples has been sent to NIIH (Mumbai) for molecular study through our regional center (PGIMER, Chandigarh).

As a blood recipient: they should be transfused with gp. O red cell component & should receive group matched/ compatible plasma & platelet components.

As donors: Their blood should be taken for research work and transfused to the patient of same blood group after molecular confirmation.

Case 2: A healthy male came to our blood center for donation having no h/o any transfusion & medication. While grouping there is a discrepancy between forward and reverse grouping. Forward grouping showed O positive group but reverse grouping showed A blood group. Detailed & serological investigation is done by both tube & card method. Then adsorption & elution technique revealed it a weaker subgroups of A. Saliva secretor test indicates the presence of both A& H antigen. Samples sent for molecular study to NIIH (Mumbai) through our regional center (PGIMER, Chandigarh).

Clinical Significance: As a blood recipient: Transfused with group O red cell component & group matched/ compatible plasma & platelet components.

As donors: Their blood should be transfused to A2 recipients after confirmation from molecular study.

PP_TTI 1

Seroprevalence transfusion transmissible infections among replacement and blood donors: A 10 year comparative study

Naveen Akhtar, Meena Sidhu, Shallu Rani, Anshu Mahajan, Faisal Ashraf

GMC, Jammu, Jammu and Kashmir, India

Background: Blood transfusion saves millions of lives each year worldwide. Transfusion-transmitted infections (TTIs) are the major problem associated with blood transfusion, especially in developing countries, including India. In India blood is screened for five diseases which could be transmitted through blood and produce serious illness - HIV, Hepatitis B, Hepatitis C, Syphilis, and Malaria. Serological testing can help to reduce, but not eliminate occurrences of TTIs. Continuous & accurate estimates of risk of TTIs among different blood donor groups are essential for monitoring and ensuring the safety of blood supply.

Aims: The aim of this study was to determine the Seroprevalence of various TTIs in voluntary and replacement blood donors.

Methods: This retrospective study was conducted in the Department of Transfusion Medicine, GMC Jammu. Blood Donors data for their age, gender, type of blood donor-replacement and voluntary, TTI screening status was collected and compared for a 10 year period from January 2010 to December 2019. Screening for HIV, HBsAg and HCV were done by using 3rd generation ELISA Technique. VDRL and Rapid Immunochromatographic tests were used for screening of Syphilis and Malaria, respectively.

Results: A total of 320,914 apparently healthy blood donors donated blood and were screened for TTIs during the study period. Among them 27,7169 (86.4%) were Replacement donors and 43,745(13.6%) were Voluntary donors. 308,399(96.1%) were male donors and 12,515(3.9%) were female donors. The overall prevalence of TTIs among all donors was found to be 1.30% with prevalence of HIV, HBsAg, HCV, Syphilis and Malaria being 0.07%, 0.50%, 0.15%, 0.56% and 0.001% respectively. The Prevalence of all TTIs among Replacement and Voluntary Donors were found to be 1.35% and 0.95% respectively. The seroprevalence of HIV, HBsAg, HCV, Syphilis and Malaria among replacement blood donors being 0.08%, 0.52%, 0.16%, 0.58% and 0.001%; and among voluntary blood donors being 0.05%, 0.37%, 0.09%, 0.43% and 0.0%.

Conclusions: Our study showed that the Seroprevalence of TTIs for all the markers tested was less among the voluntary blood donors as compared to the Replacement blood donors. There is a need to increase the recruitment and retention of voluntary blood donors’ to enhance safety of blood supply.

PP_TTI 2

Sero-prevalence of tti among donors in a blood bank situated in rural region of Salem, Tamilnadu- A retrospective study

Suraj Sasidharan, B Vignesh, R Thamil Selvi

Vinayaka Missions Kirupananda Vairayar Medical College Hospital, Salem, Tamil Nadu, India

Background: Transfusion Transmitted Infections (TTIs) are a growing concern in blood transfusions throughout the history. Even though, several measures are being introduced in transfusion medicine, many sporadic incidences are reported from all over the world. So it is inevitable to update the sero-prevalence among the donors in all regions, to modify the methods and approach towards the identification and management of positive donors. Anyhow, it is mandatory to ensure the donor blood is free from five TTIs as Hepatitis B, C, HIV, Syphilis and Malaria (according to NACO guidelines in India).

Objective: This study mainly focuses on the prevalence of TTIs among the voluntary blood donors in rural area of Salem, Tamilnadu.

Methods: This is a retrospective study upon post donation tests conducted in the blood bank of Vinayaka Missions Kirupananda Medical College Hospital in Salem, Tamil nadu, during the period of August 2020 till January 2021. Samples were screened using rapid card tests and ELISA tests.

Results: During the study period of six months, our center received
974 donors from various donors, which is a very less number due to the restrictions in the pandemic situation of covid-19. The data of 974 donors were analysed which includes voluntary and replacement donors, where majority was from replacement donors. Out of these samples 2 (0.2%) was turned to be positive for HBsAg and 2 (0.2%) were detected as VDRL positive. Those results were confirmed by ELISA tests. There was no positive samples for HIV, Malaria and HCV.

**Conclusions:** This study reflects that the prevalence is much lesser than the national level, and also emphasizes the importance of being vigilant to elute the absolute risk of transmitting these diseases through blood transfusion.

**PP_TTI 3**

**Response rate of donors for counselling, notification and referral at university level blood center of north India**

Simranjeet Kaur, Kusum Thakur, Nirmal Singh, Shubham

Maharishi Markandeshwar Institute of Medical Sciences and Research, Ambala, Haryana, India

**Background:** Blood donor screening and TTI testing ensures blood safety, so is more stringent all over the world. But just screening of the collected blood is not a solution. Test done in blood center are only screening tests and if found reactive, have to be repeated and for confirmation donor is referred to respective departments. So donors should be informed, notified, counselled and referred properly. Response rate to notification is often poor. Previous studies showed that donors continued to donate blood despite being notified. Response rate of reactive donors helps us to frame guidelines to track non responding donors who pose major threat to the healthy donor pool.

**Aims and objective:** The main aim of this study was to assess the response rate of seroreactive donors at our Centre.

**Methods:** It was an observational and prospective study done from May 2019 to May 2020 at blood center of Hospital of Medical University in North India. The study was done to evaluate the response rate of reactive donors after notification of their reactive test results as per the existing protocols.

**Results:** During the study period, total 7901 units were subjected to TTI screening by ELISA & other methods. Out of these 7901 units, 130(1.6%) units were found to be seroreactive. Among these 130 sero-reactive cases, 7(5.3%) cases were HIV reactive, 48(36.9%) reactive for Hepatitis B surface antigen, 62(47.6%) reactive for Hepatitis C, 13(10%) reactive for VDRL and none of them were reactive for Malaria. TTI reactive donors for various markers were contacted telephonically. Out of these 130 reactive donors, 90 donors (69.2%) were contacted and remaining 40 donors (30.7%) could not be reached. Among 90 contacted donors, 51(56.6%) donors responded for notification call and attend counselling and refer to other departments for treatment.

**Conclusions:** Universal guidelines, protocols and confidentiality is maintained by every blood center for donor notification. Pre donation counselling is backbone of good response rate by donors. Counsellors should be well trained and so competent. To improve response rate, it is required to educate the donors at the time of donation about various TTI screening tests done and importance of informing the test results.

**PP_TTI 4**

**Prevalence of transfusion-transmitted infections at a tertiary care blood centre in central Gujarat – 5 years retrospective study**

Anjana Patel, Falguni Patel, Archana Patel, Swati Katrodiya, Kirti Rathod

A.D.Gorwala Blood Centre, Shree Krishna Hospital, Anand, Gujarat, India

**Background:** Donor blood product safety and effectiveness are primary concerns of blood collection centres worldwide. In India, donor blood units are screened for HIV, HBV, HCV, Syphilis & Malaria. An accurate estimate of the risk of Transfusion Transmitted Infections (TTIs) in donor samples gives an idea of the epidemiology of these diseases in the community.

**Aims:** To determine the prevalence of TTI in voluntary blood donors.

**Methods:** This retrospective study was conducted in Shree Krishna Hospital- A.D.Gorwala Blood Centre, Gujarat from Jan 2016 to Dec 2020. A total of 34,030 blood units from blood donors were tested for TTI by ELISA. The test was performed according to manufacturer's instructions. All the reactive samples were tested in duplicate before labelling them seropositive. The donor units were discarded when found positive for any TTI.

**Results:** A total of 34,030 donors were included in the study. Male donors 32691 (96%) outnumbered female donors 1339 (4%). A total 182 (0.53%) of the 34,030 donors tested reactive for TTI of which male donors were 179 (98.35%) and female donors were 3 (1.65%). The overall seropositivity for HBV was 75 (0.22%). HIV had seropositivity of 57 (0.16%). HCV constituted 18 (0.05%). Seropositivity of syphilis was 32 (0.09%). None tested reactive for malaria.

**Conclusions:** Data shows that the seropositivity rate of TTIs in our blood donors was lower than national guidelines of India. Adherence to donor screening criteria, motivation for voluntary donation and retention of voluntary donors play an important role in safe blood transfusion.

**PP_TTI 5**

**Analysis of grey zone samples for transfusion transmitted infectious disease in enhancing blood safety**

B Laavanya Sree, C Megala, R Thamil Selvi

Vinayaka Missions Kirupananda Vairayar Medical College Hospital, Salem, Tamil Nadu, India

Elisa is a commonly used serological assay for screening of donated blood units for transfusion transmitted infections (TTIs), which includes HBV,HIV,HCV, but it can fail to detect blood donors who are recently infected [or] possessing the low strength of pathogen. Repeat testing of these samples can help in reducing the risk of TTIs.

**Aim:** To analyse the effect of grey zone testing of tti’s of apparently healthy blood donors.

To study its role in enhancing the sensitivity of current elisa technology in our blood bank.

**Objective:** To study the prevalence of TTI in blood donors.

To assess prevalence of sero reactivity in grey zone samples. To assess the effect of grey zone calculation in overall TTI screening by Elisa

**Methods:** Retrospective analysis of grey zone samples for
transfusion-transmitted diseases in Vinayaka mission kirupananda variyar medical college, blood bank donors. Grey zone was calculated by multiplying the OD of the cut off with 0.9. All donor samples falling under the grey zone where retested in duplicate.

**Results:** Out of the total 8695 donors were tested, 29 (0.33%) donor samples were in grey zone for HBV, 15 (0.17%) donor samples for HIV, 7 (0.08%) donor samples for HCV. 8 (27.5%) out of 29 HBV grey zone donor samples, 3 (20%) out of 15 HIV grey zone samples were reactive on repeat testing. No HCV samples were reactive on repeat grey zone testing. Grey zone evaluation was able to prevent 11 probable transfusion transmitted viral infections.

**Conclusions:** Proper donor screening, sensitive screening assays and effective pathogenic inactivation procedures can minimize the risk of TTI's. Repeat testing of grey zone samples can further enhance the safety of blood transfusion.

**PP_TTI 6**

The impact of video-interviewing on the response rate of serology reactive blood donors during COVID-19 pandemic

Manish Raturi, Anuradha Kusum

Swami Rama Himalayan University, Dehradun, Uttarakhand, India

**Background:** Disclosure of infection result [IR] to the serology reactive blood donors [SRBD] is a crucial issue of public domain. Due to COVID-19 and the associated travel restrictions [TR], it was nearly impossible for many SRBD to come to the blood centre [BC] for a face-to-face post-test discussion [PTD] with our blood centre physician [BCP].

**Aims:** Our primary aim was to assess whether video-interviewing [VI] through digital approach was an effective tool under the aegis of telemedicine program [TMP] to notify, counsel and assess the response rate [RR] as against the traditional face-to-face PTD.

**Methods:** This was a cross-sectional retrospective study of 18 months [July'19 to Dec'20]. SRBD were telephonically notified of their IR and called to the BC supporting a 1200-bedded multi-speciality tertiary care academic hospital in the Dehradun district of North India. The study was divided into two phases namely, phase-I (the pre and initial pandemic phase [Jul’19 to Mar’20]) and phase-II (the full-blown pandemic phase [Apr’20 to Dec’20]). The notification process included making two telephonic communication attempts. Those who expressed their inability to come either due to TR and/or far distance were given a viable option of using VI. Their confidentiality was maintained throughout the whole process.

**Results:** Among 15944 donors [95.5% males] almost 15.5 % [n=2472] donated blood for the first time. Total 1.74% [n=277] cases were reactive with IR [0.70% HCV, 0.65% HBV, 0.22% Syphilis; 0.15% HIV and 0.0% Malaria] were evaluated. Overall 47% SRBD [n = 129/277] responded. All the VI- opted SRBD preferred a WhatsApp call. Amongst the responders, around 65.7% [n=46/70] opted for VI during phase-II as against 1.7% [n=1/59] during phase-I [p > 0.001]. Even the RR was markedly increased to 57% in phase-II as against merely 38% in phase-I. During phase-II, inaccurate donor demographics [wrong / no phone number] resulted in our inability to notify 19.6% [n = 24/122] cases.

**Conclusions:** VI through digital approach has definitely improved the RR of our notification process. With so many healthcare aspects benefiting from the TMP, the BC must confidently facilitate to utilize virtual platforms to improve the overall SRBD compliance in the long run.

**PP_TTI 7**

The prevalence of transfusion transmitted infections in blood donors and possible correlation of transfusion transmitted infections with ABO and RH blood groups in blood donors in blood bank, tertiary care center of sms hospital, Jaipur

Ankit Sharma, Sunita Bundas, Ashokpal, Ankit Gupta

SMS Medical College and Hospital, Jaipur, Rajasthan, India

**Background:** Hepatitis B, Hepatitis C and HIV infections represent global health problems of significant magnitude. There are studies and hypothesis which suggest that genetic predispositions like ABO and RH blood group may affect occurrence of these diseases. Proper screening and donor selection can minimize these hazards.

**Aim:** To find out seroprevalence of hepatitis B, hepatitis C, HIV, syphilis, and malaria infections in healthy blood donors and to determine any association between different blood groups and seroreactivity, in the SMS hospital blood bank, Department of IHTM at SMS Medical College & Hospital, Jaipur during the period from 1 Jan 2019 to 31 DEC 2020.

**Methods:** This retrospective study was carried out over a period of 24 months from 1 Jan 2019 to 31 Dec 2020.Serum sample were screened for HbsAg by 4th Gen ELISA kit. For HIV I and HIV II detection, 4th Gen HIV Ag and antibody kit were used. Anti HCV antibody were detected by 3rd generation HCV ELISA kit. For malaria Rapid visual Malaria Antigen card and for Syphilis One step Rapid card test was used. Blood group was determined by forward and reverse grouping of donor sample using tube method.

**Results:** Of total 91089 donors, male donors were 89814 (98.6%), and female donors were1275 (1.4%). A total of 1533 seropositive cases were present (1.68). Highest seropositivity was found in HBV (1.03%), for syphilis it was 0.37%, for HCV it was 0.20%, for HIV it was 0.075%, for malaria it was 0.01%. In Group wise seroreactivity it was found that the highest percentage of HBsAg and HCV reactivity was found in B positive donors and highest percentage of HIV reactivity was found in O-positive donors. Amongst Rh-negative donors, highest seroreactivity for HBsAg and HCV was found in B-negative donors.

**Conclusions:** These study results reflect the prevalence of these infection in the healthy blood donors. Hence, screening of all Transfusion Transmitted Infection is a must and must be done routinely. This study also addresses the need of properly detailed history taking of the donors. Does particular blood group predispose to Transfusion Transmitted Infection? A finding which makes us ponder.

**PP_TTI 8**

The Prevalence of HIV, HCV, and HBV among hemodialysis patients attending gims hospital

Kirthi S Patil, Jagadish M Kattimani, Mamata V Patil, Rajasheer J Ingin, PK Ashwin

Gulbarga Institute of Medical Sciences Hospital Blood Centre, GIMS Campus, Kalaburagi, Karnataka, India

**Background:** Blood-borne viral infection is a public health problem,
especially in high-risk patients, including those with renal failure. High prevalence of these infections in hemodialysis patients reflects the increased presence of common risk factors like high number of blood transfusion, prolonged vascular access, high exposure to infected patients and contaminated equipment and cross contamination from circuits.

Objective: The aim of this study is to evaluate the prevalence of HIV, HBV, and HCV in patients on hemodialysis.

Methods: This is retrospective study of one year (Jan 2020-Dec 2020). The patients’ demographic characteristics, including age, gender, duration of dialysis and frequency of blood transfusion were noted. Serological markers were determined by ELISA method. The prevalence of each virus was also determined.

Results: All the cases are Chronic Kidney Diseases (CKD). There are total cases of 77, consisting of 67 (87%) male and 20 (23%) female. Out of 16 (20.7%) cases, 13 patients were reactive for HBV, 1 patient was reactive for HCV. One patient had co-infection for HBV and HCV. 1 patient was reactive for HIV. Significant correlation was found between the cases and positivity.

Conclusions: This study brings to light that viral infections, though less common, continue to remain as important causes of infection in hemodialysis patients. Vaccination is recommended for pre-end-stage renal disease patients before they become dialysis dependent. Since blood transfusion remains an important risk factor for transmission of viral infection, screening of blood products by Real-Time PCR may be recommended.

PP_TTI 9

Seroprevalence of transfusion transmitted infections among blood donors in Rajasthan

Prem Chand Malakar, Amit Sharma, Sunita Bundas,
Sarita Sharma, Keshri Singh

SMS Medical College and Associated Group of Hospitals, Jaipur, Rajasthan, India

Background: Transfusion transmitted infections is major problem associated with blood transfusion. Being a blood banker, it is our moral and legitimate duty to supply safe blood.

Objective: Present study was carried out to find out seroprevalence of various transfusion transmitted diseases in donated blood.

Methods: This retrospective study was conducted during the period of one year from 1 January 2020 to 31 December 2020. Total number of blood donors in this time duration was 34156. Data regarding sex, screening test results and type of donors were collected from the blood bank records. Screening tests used for HIV type 1 and type 2 (simultaneous detection of p24 antigen and antibodies against HIV 1 & 2), Hepatitis B (detection of HBsAg) and Hepatitis C (detection of anti HCV antibodies) were based on Enzyme Linked Immuno Sorbent Assay (ELISA). For malaria and syphilis, rapid screening card tests were used (Immunochromatographic tests for the detection of antibodies against Treponema Pallidum and Malaria Pv/Pf-Antigens).

Results: A total of 34156 blood donors were screened with a male: female ratio of 164.8:1 (99.4% male donors). 62.50% of the total subjects (21348/34156) were replacement and 37.50% (12808/34156) were voluntary donors. Overall seroprevalence of all the five transfusion transmitted infections was 2.0%. Out of all transfusion transmitted infections, seroprevalence of HBV (50.51%) was highest followed by Syphilis (29.43%), HCV (14.95%), HIV 1&2 (4.54%) and Malaria (0.59%). Transfusion transmitted infections were observed more in replacement donors (2.38%) as compare to voluntary donors (1.37%) (Chi-square test; P = 0.0001) and showed male predominance but the difference was not observed to be statistically significant (Chi-square test; P=0.491).

Conclusions: Safe blood transfusion is basic prerequisite for blood transfusion services and need of the hour for the recipients and community as well. For that, we must know the seroprevalence of various TTIs in our area for better donor selection.

PP_TTI 10

Seroprevalence of infectious markers and their trends in blood donors in a hospital based blood centre in Chattisgarh

Prerna Mohan, Shraddha Pathak, Kiran Singh, Revati Sharma,
Rupma Daimond, Ranjeet Yadav

Apollo Hospitals, Bilaspur, Chattisgarh, India

Background and AIMS: Hepatitis B virus (HBV), human immunodeficiency virus (HIV), hepatitis C virus (HCV), syphilis and malaria infections pose a great threat to blood safety. This study was undertaken to investigate the seroprevalence of serologic markers for transfusion transmitted infections (TTIs) among blood donors at a hospital based Blood Centre in Chattisgarh over a period of ten years.

Methods: The results of serologic markers for TTIs (HBsAg, anti-HCV, anti-HIV, syphilis and Malaria of all blood donations (both voluntary and replacement) at our hospital from January 2010 to December 2020 were screened. Additional analysis was conducted to examine the prevalence trends associated with each of the positive marker.

Results: The data of 48639 donors, 95% males and 5% females were analyzed. HbsAg topped the list for TTI which was most feared, 394 total cases detected (0.81%), followed by HbcAb (357 cases= 0.73%). This was followed by 210 cases of VDRL positive bags (0.43%), followed by 103 cases of HCV (0.21%), and 76 cases of HIV detected by 4th generation Elisa (0.15%). A total of only 4 cases of malaria positive donors were found (0.008%). The risk of blood being reactive was three times higher in male donors when compared with the female donors. The risk of blood being reactive for one or more infectious markers was 2.1 times higher in replacement donors when compared with the voluntary donors. Seropositivity of HIV, HBsAg, HCV, and HbcAb, showed a significant decreasing trend (p<0.05) while there was a uniform trend in VDRL infection which was dangerous. Most of the donors with HBsAg seropositivity were between 30 to 50 years of age (56.12%), followed by donors who were between 20-30 years of age (32.65%). HIV infected donors in majority belonged to 20-30 years of age (68.85%), followed by 29.50% falling into 30—50 years of age. A similar trend was seen in HCV positive donors who generally (68.42%) belonged to younger age group (20—30 years). VDRL positive donors usually belong to 30 — 50 years of age (65.03%), followed by 27.27 % donors into 20—30 years age. HbcAb followed the same pattern as HBsAg.

Conclusions: This study reflects that the risk of TTIs has been decreased over time with respect to HIV, HBV HCV, but the trends for VDRL infection remains almost the same in blood donors. Blood transfusion remains a risk factor for the spread of blood-borne infections. Therefore, improvements are needed to strengthen both safety and availability of blood. Age wise, 20—50 years of age remains vulnerable for Chattisgarh population as far as TTI is concerned.
Abstracts

PP_TTI 11

An analysis of transfusion transmissible infections reactivity pattern during COVID-19 pandemic

Zikra Syed, Ashish Jain, Jyotsna Bhateja, Anju Kurup, Bhanu Pratap Chauhan

All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

Background: Ensuring blood safety is quintessential to blood services, which may be reflected by the stringent policies adopted to reduce the possibility of transfusion transmissible infections, ranging all the way from donor deferral criteria to infectious marker reactivity. On 11th March 2020, WHO declared COVID-19 a global pandemic, instilling a sense of fear and apprehension among the masses and resulting in a fall of blood donors, which only worsened when a complete lockdown was declared on 24th March, 2020. Even though our blood centre organised several blood camps in an effort to maintain the inventory as well as disseminate information and alleviate donor anxiety, this study hypothesises that the current pandemic may have led to a change in donor demographics, inadvertently affecting the TTI reactivity pattern.

Aim: To analyse the TTI reactivity pattern during the COVID-19 pandemic.

Methods: Departmental data of donation and TTI reactivity was collected for the duration of the pandemic and for the corresponding period in the previous year.

Result: Since March 2020, 9507 blood donations have been done till date of which 311 blood donors (3.27%) were reactive while in 2019, for the same duration, 498 donors (2.91%) were reactive of 17092 blood donations. The TTI reactivity was more in voluntary donors (including family donors) as well as replacement donors (1.22% and 2.05% respectively) during the pandemic when compared to the previous year (0.98% and 1.92% respectively). HCV turned out to be the most common TTI reactive marker (2.1%) as compared to HBV (1.01%) and HIV (0.09%) during the pandemic.

Conclusions: The TTI reactivity showed a rise during the COVID-19 pandemic in comparison to the previous year even though there was a proportional increase in the number of voluntary donations while a sharp fall was observed in the total number of blood donations.

PP_TTI 12

Impact of nucleic acid testing for donor blood screening in a tertiary care hospital in Kerala

Joseph Chandy, Susheela J Innah, Ramesh Bhaskaran, Aboobacker Mohamed Rafi, Nithya M Baju

Jubilee Mission College & Research Institute, Thrissur, Kerala, India

Background: Nucleic acid testing (NAT) is a molecular technique involving amplification and detection of genetic material (DNA/RNA), NAT has the advantage of detecting Transfusion Transmitted Infections (TTIs) like HIV, HBV and HCV in the window period before seroconversion (antibody production) has taken place. The investigation of NAT yield helps to estimate the utility and impact of NAT in the corresponding donor population.

Aims: To study the Impact of using Mini Pool-donor nucleic acid testing (MP-NAT) in addition to serologic tests for the identification of hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) among blood donors.

Methods: A total of 15507 samples were analysed during the duration of this prospective observational study. All blood donors consenting to be part of the study were included. The samples were tested for Transfusion Transmitted Infections (TTI: HIV, HBV & HCV) using ELISA method. All the non-reactive samples underwent MP NAT testing using PCR technology on Roche Cobas s 201; a fully automated NAT equipment. NAT yield was obtained and cost effectiveness analysis was performed by calculating ICER (Incremental Cost effectiveness Ratio) and comparing with cost effectiveness threshold for healthcare intervention in India.

Results: At the end of the study, 15507 samples were tested by MP- NAT and 6 samples were found to be NAT reactive. All the NAT reactive samples were Hepatitis B virus positive. HIV and HCV were not detected. The NAT yield in this study is 1.2584. Cost effectiveness of NAT was analysed and the Incremental cost effectiveness Ratio (ICER) was found to be within the cost effectiveness threshold.

Conclusions: NAT yield obtained in this study is comparable to other studies from India. All the NAT reactive samples were Hepatitis B indicating high rate of seronegative hepatitis B in the donor population tested.

PP_TTI 13

Transfusion transmitted infection averted by nucleic acid test in a tertiary hospital in coastal Karnataka

S Sangthang, Dhiyva Kandasamy, Shamee Shastry

Kasturba Medical College, Manipal Academy of Higher Education, Manipal, Karnataka, India

Background: Transfusion transmitted infections (TTI) screening is one of the most important laboratory tests in transfusion medicine. A highly sensitive nucleic acid testing (NAT) decreases the window periods and increases the safety of blood transfusion. We aim to evaluate the utility of NAT in detecting residual risk of TTI.

Aims: To determine the yield of transfusion transmitted infections using nucleic acid amplification test.

Methods: The study was conducted in a transfusion center catering 2030 bedded tertiary care hospital for a period of three year, from 2018 through 2020. ELISA (EVOLIS, Bio-Rad Laboratories, Inc.) and Chemiluminescence Assay (Vitros EGI, Orthoclinal Diagnostic) were used for the initial screening for TTI. Mini pool NAT was performed using an automated (Cobas s201, Roche Diagnostic) real-time multiplex polymerase chain reaction based technology. NAT yield is defined as any TTI serological negative but reactive for NAT. Demographic details of the blood donors were obtained from hospital blood bank database.

Result: Out of 40159 donations screened, 440 (1.09%) were reactive on serology. The serological yield for HIV, HBV, HCV were, 98 (0.2%), 171 (0.42%) and 67 (0.16%) respectively. The NAT yield was 6 (0.01%) all were reactive for HBV (CT value ranges from 29 to 36). Considering the 100% component therapy at our center, NAT screening had prevented the possible transmission of TTI for 18 patients.

Conclusions: NAT has improved the blood safety by detecting the pathogens in their pre-seroconversion phase.
PP_TTI 14

**Blood donor notification and counseling: an experience from a tertiary care hospital in south India**

Sudhir Kumar Vujhini, Mahesh Kumar Kandukuri, Murali Krishna Bogi, Shanthi Bonagiri

Nizam's Institute of Medical Sciences, Hyderabad, Telangana, India

**Background:** Supply of safe blood and blood components is a vital part of blood bank services. TTI reactive donors are informed of their abnormal result and are requested to come to blood bank for counselling. Informed donors may not respond at all. The present study was undertaken to determine the response of blood donors after notification of their reactive status by a telephone call.

**Methods:** This is a retrospective study conducted in the Department of Transfusion Medicine, in a tertiary care hospital, Hyderabad, South India over a period of one year. We have evaluated the response of TTI reactive donors after notification of their abnormal test results during the year 2020.

**Results:** A total annual blood donation of 10,565 units were collected from voluntary and replacement donors and were subjected to routine TTI screening during the study period. Among these, 212 (2.0%) donors were found to be seroreactive for TTI diseases. 27 cases were HIV positive, 102 donors were reactive for HBsAg, 45 donors were HCV positive and 38 were VDRL positive. 128 donors (60.37%) were in the age group of 26-35 years. 120 donors (56.6%) were contacted telephonically and the remaining 84 donors could not be contacted as either their number could not be reached or switched off. Among the contacted, 34 donors (26.5%) responded by attending the counselling in the blood bank.

**Conclusions:** Donor notification and counseling is an important tool in minimizing the risk of TTIs. Blood bank staff should be alert and take necessary precautions as per the guidelines in dealing with blood in the blood bank as some of the reactive donors wanted to donate blood.

PP_TTI 15

**SERO –Positivity of transfusion transmitted infections in blood donors at blood bank, institute of raumatology and orthopaedic, SMS hospital, Jaipur (trauma centre): A retrospective study**

Durgesh Tiwari

Sawai Man Singh Medical College and Hospital, Jaipur, Rajasthan, India

**Aims and Aims:** The aim of this study is to assess the trends and sero-prevalence of TTIs among voluntary and replacement donors in the blood bank, Institute of Traumatology and Orthopedic, Department of IHTM at SMS Hospital, Jaipur during the period from 1st January, 2020 to 31st December, 2020.

**Methods:** A retrospective study was carried out over a period of 12 months from 1st January, 2020 to 31st December, 2020. Serum samples were screened for hepatitis B surface antigen (HBsAg) by 4h Gen. Elisa, simultaneous detection of p 24 antigen and antibodies to Human immunodeficiency virus (HIV I & II) by 4th Gen. Elisa, antibodies for HCV by ELISA method by 3rd gen Elisa, rapid card method for syphilis and rapid malaria antigen card for malaria parasite.

**Results:** A total of 11628 healthy donors were included in the study. The overall seroprevalence for TTI was 184 (1.58%). Out of which HIV was 17 (0.15%), HBsAg was 110 (0.94%), HCV was 38 (0.16%), seropositivity for syphilis was 19 (0.40%), no case was found positive for malaria. Seroprevalence of TTI was more in replacement donor 130 (1.11%) in comparison to voluntary donors 54 (0.46%). Most common age group of blood donors 7290 (62.7%) was 18 – 30 years.

**Conclusions:** Methods to ensure a safe blood supply should be encouraged for that screening with a better selection of donors and use of sensitive screening tests including NAT technology should be implemented.

PP_TTI 16

**Eight years’ experience of nat positivity in seronegative voluntary blood donors from Surat Raktadan**

Apexa Trivedi, Kanchan Mishra, Sumit Bharadva

Surat Raktadan Kendra and Research Centre, Surat, Gujarat, India

**Background:** Nucleic acid testing (NAT) is a molecular technique for screening blood donations to reduce the risk of transfusion transmitted infections (TTIs). This study was undertaken to determine the response of blood donors over a period of eight years from Apr 2013 to Dec 2020. The blood units were tested by routine serological test ELISA and mini-pools donor nucleic acid testing (MP-NAT). NAT yield was calculated for HIV, HBV and HCV.

**Results:** Out of 2,32,802 seronegative blood units, 104 units (0.04%) were found to be reactive for transfusion transmitted viruses by NAT. Of these 104 units, 93 (89.4%) were reactive for HBV, and 8 (7.69%) were reactive for HCV, and 3 (2.88%) for the HCV. This gives a total NAT yield of 1: 2238, which is comparable to yields in previous Indian studies.

**Conclusions:** NAT testing has successfully identified pre seroconversion infectious blood units. NAT is more sensitive than ELISA and it decreases window period and detects occult infection. It has made a significant contribution towards ensuring safe blood transfusion by helping in reduction of window period transmission of HBV/HV/CV viruses. It is important to implement NAT in developing countries like India to enhance transfusion safety.

PP_TA 01

**A rare case of bickerstaff encephalitis**
Abstracts

**PP_TA 02**

**Adverse donor reaction among donors of plateletpheresis in a tertiary health care in north India**

Anshu Mahajan, Meena Sidhu, Neeti Dutt, Salve Sharma, Annu Radha Rajwal

Government Medical College, Jammu, Jammu and Kashmir, India

**Background:** Plateletpheresis is a technique by which blood is processed by an apheresis machine that uses the principal of centrifugation to extract a desired component of the blood and returns the rest of the components to the donor. Platelet transfusion can be a life-saving procedure in preventing and treating serious complications from bleeding and haemorrhage in patients having disorders manifesting as thrombocytopenia like in dengue patients, ITP, aplastic anemia, and patients undergoing chemotherapy. Apheresis procedures are usually safe and well tolerated, but adverse reaction in donors can occur in few cases. Adverse reactions that occur in Donors are divided into local reactions and systemic reactions.

**Aims:** The purpose of this study was to observe the adverse donor reaction during Single donor platelepheresis.

**Methods:** This retrospective study was carried out for a period of 1 year i.e. From January 2020 to December 2020 in the Department of Immunohematology and Blood Transfusion, GMC Jammu, which is a tertiary health care hospital. A total of 73 platelepheresis procedures were performed during this study period.

**Results:** The age period that include in our study varied from 19 years to 48 years. Platelet counts of the donors ranged from 1.6 to 4.5 lac/ dL. A total of 13.7% (n = 10) adverse events were recorded in 73 platelepheresis donors, of which 50% (5) of were hypocalcemia in nature followed by hematoma in 30% (3), vasovagal reaction 10% (1) and kit related adverse events in 10% (1) . Among the donors who suffered adverse events, 8(80%) were first-time platelet donors and 2(20%) were repeat donors. Most common cause of donor reaction among platelepheresis donors was hypocalcemia which was due to anticoagulant used in the procedure. Increase in the amount of Anticoagulant used was associated with increased duration of the procedure and low donor platelet count.

**Conclusions:** Platelepheresis procedures are relatively safe without any serious adverse reaction. Most common adverse reaction was hypocalcemia which was because of citrate. Pre donation calcium levels of the donors should be included as the eligibility criteria. Precautions and close monitoring in such cases helps in decreasing the effect of citrate on donors.

**PP_TA 03**

**Therapeutic plasma exchange in a COVID19 patient with drug (dabigatran) induced hyperbilirubinemia**

Deepi Sachan, G Deepthi Krishna, Dinesh Jothimani, Mukul Vij, Prof Mohamed Rela

Dr. Rela Institute and Medical Centre, Chennai, Tamil Nadu, India

**Background:** COVID-19 causes hepatic dysfunction in a considerable proportion of patients, particularly in those with severe disease. Thromboembolic complications are increasingly reported in COVID-19 patients, anti-coagulation has been used extensively to reduce these complications. We present a case where a post COVID 19 patient was admitted with drug induced hyperbilirubinemia and was successfully treated with Therapeutic plasma exchange along with medical treatment.

**Case Report:** 51-year old diabetic gentleman presented to our institute with severe jaundice on 30th August 2020. On 8th July 2020, he presented to his local hospital with fever, cough and myalgia for 6 days. An RT-PCR was positive for SARS-CoV-2. His RR was 22/min, BP 130/70, pulse O2 Sat 97% on air and HR 110/min. His CT chest revealed bilateral peripheral ground glass appearance. His blood tests revealed Hb 13.2 g%, WBC 6430 cells/mm3, platelet 236 x109/L, creatinine 0.7 mg/dl, albumin 3.5 g/dl, bilirubin 0.9 mg/dl, AST 63 U/L, ALT 41 U/L, ALP 132 U/L, GGT 37 U/L, PT 12.2 seconds, INR 1.10, CRP 15 mg/dl and ferritin 324 ng/ml. He received vitamin C, zinc supplements, esomeprazole, intravenous methyl prednisolone and subcutaneous enoxaparin...
for 3 days. He was discharged home on day 4 following his clinical recovery. His discharge medications included a novel oral anticoagulant, dabigatran 110 mg BD for 4 weeks. On 30th July 2020, he presented to his local health centre with jaundice, pruritus, poor appetite, and yellowish urine for 5 days. His bilirubin was 6.7 mg/dL, and subsequently his bilirubin increased to 12.5 mg/dl on 14th August 2020. His dabigatran was stopped on 3rd week August. On admission to our centre on 30th August 2020, he was deeply jaundiced, complained of intense pruritus but had no hepatic encephalopathy or ascites. His bilirubin was 39.1 mg/dl, AST 36 U/L, ALT 41 U/L, ALP 298 U/L, GGT 243 U/L, and INR 1.2. His abdominal ultrasound showed no features of chronic liver disease. He was negative for HBsAg, HBCIgG, HCVAb, Anti-HAV IgM and Hepatitis E IgM, COVID-19 IgG and autoantibody profile were negative. Patient was started on cholestyramine for pruritus. Therapeutic Plasma Exchange was performed using centrifugal Cell separator (Optia Spectra, Terumo BCT) and 1.3 volume exchange was done using isovolumic replacement with normal saline, 5% albumin and fresh frozen plasma. His clinical symptoms started showing improvement with reduction in jaundice from one procedure itself and did not require repeat TPE. In his recent follow up his bilirubin was 10.01 mg/dl, with a reversing trend. 

Conclusions: In COVID19 patients, hepatic dysfunction may occur as part of ‘cytokine storm’ syndrome associated with COVID-19 or as a result of drug induced liver injury. Based on the literature search, this is the first report of dabigatran induced acute liver injury in a post COVID-19 patient where TPE helped as a part of supportive therapy in reduction of hyperbilirubinemia and patient recovered well.

**PP_TA 04**

**Therapeutic benefit of plasmapheresis in stiff person syndrome cases**

Parwatma Prasad Tripathi, Vijay Kumawat, Vani Santosh

NIMHANS, Bengaluru, Karnataka, India

**Background:** Stiff person syndrome (SPS) is a rare autoimmune neurological disorder frequently associated with antibodies against glutamic acid decarboxylase (GAD). It is classically characterized by persistent skeletal muscle stiffness with prevalence of 1–2 case per million and Incidence of 1 case per million per year. Recognizing the disease is important to provide appropriate therapy, as SPS can be debilitating and deforming. Because of the autoimmune etiology, therapeutic plasma exchange (TPE) has been demonstrated to be of clinical value in the treatment of SPS. TPE is typically only used as a second-line therapy in patients who fail to respond to conventional medications including immune therapies (IVIG, rituximab, and tacrolimus), antianxiety, muscle relaxant, anticonvulsant and pain relievers.

**Aim:** The aim of our study was to review our centre’s experience of patients with a presumptive diagnosis of SPS undergoing TPE and evaluate their response to treatment, with special attention to the presence of adverse effects.

**Results:** Four cases had been enrolled in this study with diagnosis of stiff person syndrome. Their age ranged between 34 to 61 years with male to female ratio was 3:1. Most of the patients presented with stiffness and intermittent muscle spasm. GAD65 antibody was present in 75% of cases (n=3). EMG showed continuous motor unit activity in 75% of cases (n=3). TPE was initiated for all patients along with adjuvant therapy. Plasma exchanges were performed using Hemonetics machine (1 to 1.5 plasma volume alternatively).

**Conclusions:** TPE has a potential application in the management of hematotoxic snake bites when ASV coverage is not useful.

Adequate replacement fluids like normal saline (0.9%) and fresh frozen plasma were given with no adverse reported during exchanges. By the time of discharge from hospital, all four of these patients responded well to the treatment with TPE and other adjunct therapies by showing rapid clinical improvement. Two of the patients had GRADE III improvement and the other two had GRADE II improvement in terms of power grading.

**PP_TA 05**

**Management of hypnale hypnale envenomation with therapeutic plasma exchange in the absence of anti snake venom -Case series from coastal parts of southern Karnataka**

Ganesh Mohan, Freston Sirur, P Isha, Shamee Shastry, MB Jayaraj

Kasturba Medical College, Manipal, Karnataka, India

**Background:** Hypnale hypnale (Hump nosed pit viper, HNPV) and Trimeresurus malabaricus (Malabar pit viper) are two common hematotoxic snake species found in Western ghats whose venom is not neutralized by Anti snake venom (ASV) available now. We present three cases where confirmed envenomation with HNPV was managed by therapeutic plasma exchange (TPE) as a primary mode of treatment in the absence of ASV.

**Case 1:** 60 year old female with no premorbid conditions was admitted following HNPV bite on left lower limb had stable vitals at presentation. She had VICC on day 1, developed anemia (Hb -7.8) and thrombocytopenia (32,000/µL) with AKI. Peripheral smear suggested MAHA and LDH was 4412 IU/L. She underwent 4 cycles of TPE for VICC + SATMA, on alternate days replacing 1.3TPV with 8 FFPs each cycle. She had under-went 6 cycles of Hemodialysis and 4 units of PRBC transfusion during Patient improved after a 11 day stay in hospital and discharged without any complications.

**Case 2:** 40 year old female patient was referred from a local hospital following HNPV bite and VICC. Her PT and aPTT was >120 sec, fibrinogen <50mg/dl and altered renal functions. She underwent 1 cycle of TPE on day 1 of admission for VICC following which her coagulopathy improved. AKI was treated conservatively. Her peripheral smear was normal and lowest platelet count reported was 115,000 cell/µL. 1.2 TPV was exchanged with FFP and NS. She was discharged after 17 days, during which she had received treatment for cellulitis of right lower limb and AKI.

**Case 3:** 51-year-old male patient was referred from a local hospital for the management of HNPV on day 2 of bite. Patient was stable, with VICC, AKI and MAHA on the day of admission. LDH was 2799 IU/L, Fibrinogen <10mg/dl, platelets 79,000/µL. Patient underwent 4 cycles of TPE for VICC + SATMA started on day 2 of admission with 1.2 TPV replacing with 8 units FFP and 2 units of 5% Albumin. Coagulation improved after the second procedure. Patient underwent 12 sessions of SLED for AKI and acidosis. He was discharged after 21 days in hospital with improved renal functions and no signs of VICC or SATMA.

**Conclusions:** Our study showed clinical improvement in all four patients, thus we recommend the use of TPE as an adjunct to other conventional therapies to obtain better results. However, the use of TPE as a solitary treatment needs further investigation.
Role of therapeutic plasma exchange in the treatment of atypical hemolytic uremic syndrome - A case report

S Sreelekshmi, Shamee Shastry, B Poornima Baliga
Kasturba Medical College, Manipal, Karnataka, India

Background: Hemolytic Uremic Syndrome is a thrombotic microangiopathy, characterized by intravascular hemolysis, thrombocytopenia and acute renal failure. HUS is classified as typical (caused by Shigatoxin producing E.Coli), atypical (due to uncontrolled complement activation) and HUS secondary to a co-existing disease. Although the general understanding of HUS has increased recently, physicians tend to resort to pharmacological therapy initially, and as the patient’s condition deteriorates, TPE is initiated. In this case report, we would like to review the effect of TPE in a patient with atypical HUS.

Relevant Case Presentation: A 12 year old male child, admitted with fever, elevated blood pressure, thrombocytopenia, anemia, laboratory evidence suggestive of hemolysis such as elevated LDH, schistocytes on peripheral blood smear, derived renal function tests, high anti factor-H antibody titre, was diagnosed as atypical HUS. Patient was started on Prednisolone, Azathioprine, Enalapril and hemodialysis. As there was no improvement after 2 days, TPE was initiated. Ten TPE procedures were done for the patient, starting from 3rd to 12th day of admission. Plasma was the replacement fluid used and replacement was done with 1-1.5 total plasma volumes. Patient tolerated the cycles well and no adverse events were recorded. Relevant laboratory investigations done is shown in Table 1.

Discussion: Diagnosis and management of atypical HUS is a challenge as it is a rare disease entity, with lack of specific confirmatory test. TPE is considered as empirical first line treatment for aHUS and when combined with immunosuppressive drugs, has dramatically altered the course of disease and improved survival rates significantly. Treatment decisions are mainly based on platelet count and serum LDH. Early initiation of TPE, tremendously improves the outcome.

Table 1: Pre and Post –TPE Laboratory Investigations

| Platelet count | Hemoglobin | LDH | Serum creatinine |
|---------------|------------|-----|-----------------|
| Pre-TPE 70 × 10^9/microliter | 8 g/dl | 1025 IU/L | 5.2 mg/dl |
| Post-TPE 170 × 10^9/microliter | 11 g/dl | 230 IU/L | 1.8 mg/dl |

Discussion: TPE=tremendously improves the outcome, LDH=Lactate dehydrogenase

Therapeutic plasma exchange in a COVID-19 patient with thrombotic thrombocytopenic purpura; a case report from a tertiary care centre

Yatendra Mohan, Gita Negi, Pandeep Kaur, Saikat Mandal, Jagdamba Prasad
All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

Background: Therapeutic plasma exchange (TPE) has been employed to remove pathogenic antibodies, immune complexes, paraproteins, complements and cytokines from the blood for the treatment of autoimmune neurologic diseases. TPE is a standard treatment regimen indicated by American Society of Apheresis (ASFA) for neurologic diseases such as Guillain-Barre syndrome (GBS), Myasthenia Gravis (MGS), Multiple Sclerosis and Transverse Myelitis (TM).

Objective: To assess the safety and efficacy of therapeutic plasma exchange in patients with autoimmune neurological disorders.

Methods: This is a cross sectional study done in a tertiary care hospital from November 2020 to January 2021. It includes 4 patients, viz., MGS (1 patient), GBS (2 patients), TM-seropositive AQP4 IgG (1 patient) who were treated with TPE. Intermittent flow- cell separators were used. Each patient had 5 cycles of plasma exchange on alternate days. One plasma volume was exchanged in each cycle with replacement fluid consisting of FFP (80%) & normal saline (20%).
**Results:** Out of 4 patients 3 were male (75%) & 1 female (25%). The median age of the patients was 35 years. The AQ4-1G status was positive in one patient (n=1, 25%). TPE led to significant improvement in these cases. Patient with TM had a baseline Expanded Disability Status Scale (EDSS) Pre-TPE score of 9 and improved Post-TPE score of 7. In MGS patient, the Quantitative Myasthenia grade score (QMGS) was 18 on admission, after TPE it improved to 5.In GBS patients the Hughes GBS disability scale at admission was 3 &4 respectively, which improved to 2 post exchange. Following TPE (n=3, 75%) patients regained their ability to ambulate. This procedure had minimal, manageable complications like hypocalcaemia & hypotension.

**Conclusions:** Plasma exchange is effective in treatment for patients experiencing neurological autoimmune disorders. Since TPE is a safe and cost effective therapy, early initiation of treatment along with supportive therapies would result in complete resolution of disability and aid in early rehabilitation of these patients.

---

**PP_TA 09**

**Donor and procedural factors predicting peripheral blood stem cells mobilization and collection in allogenic donors**

Veena Shenoy

Amrita Institute of Medical Sciences and Research Institute, Kochi, Kerala, India

**Background:** Adequate dose of CD34+ stem cells is essential for the early engraftment and success of a stem cell transplantation. Obtaining an adequate dose depends on various donor, procedure and patient related factors.

**Aims:** To determine the factors predicting adequate CD34 cell mobilization and collection in allogenic donors.

**Methods:** Allogenic stem cell donors who donated between 2014 to 2020 at a tertiary care hospital in South India were included in the study. Stem cell mobilization performed with Granulocyte colony stimulating factor (GCSF) for 5 days. Apheresis was performed on fifth day using Spectra Optia (Terumo) or CobeSpectrum (Terumo) apheresis system. Complete blood counts before mobilisation, on Day 5, in the product and peripheral blood CD34+ count on Day 5 were performed. Procedure related parameters were also studied.

**Results:** A total of 183 donors were included. Mean age was 28.3±9.8 years. Males: females ratio was 3.5:1. Mean weight, height and BMI were 65.48±15.6 kg, 165.58±11.9 cm and 23.68±4.43 kg/m² respectively. Mean pre-procedure CD34 count was 114±58 cells/µL. The mean counts after mobilisation were 41.33±11.1 k/µL (WBC), 14.3±1.5 g/dl (hemoglobin), 43.1±4.3 (Hct), 231±59 K/µL (platelets). In the product, mean wbc count was 245±76 K/µL, median CD34 count was 2036 cells/µL (IQR: 1289-3089). CD34 dose per kg recipient weight was 14.73±6 K/µL. Median collection efficiency was 44.73±18.9 %. Mean blood volume processed was 10.7±5.3 Litres. Factors predicting a CD34 of >50 cells/µL after mobilisation were studied. Younger donors (age <40years) were more likely to have CD34 count >50 cells/µL (p value: 0.04 OR: 3.145; 95% CI (1.04-9.55). Donors with post mobilisation WBC count >40 K/µL were more likely to have CD34 count >50 cells/µL (OR: 2.429; 95% CI 0.91-6.47). Platelet count >200 K/µL also predicted CD34 count >50 cells/µL (OR: 1.41; 95% CI 0.55-3.6). Factors predicting an adequate CD 34 dose/kg recipient weight > 5 x10^6/Kg were female sex, donor weight>55kg, height>160 cm and hemoglobin >14g/dl. CD34 cells obtained per litre of blood processed is more when blood volume processed >10 litres (OR: 5.24; 95% CI (1.84-15.1).

**Conclusions:** Achieving a good peripheral blood CD34 count is influenced by donor age, WBC count and platelet counts. Female sex, donor weight, height, hemoglobin and blood volume processed are the predictors of adequate CD34 cell collection.

---

**PP_TA 10**

**Role of therapeutic plasma exchange in patients with anabolic steroids induced hepatotoxicity: Emerging indications of TPE**

Deepti Sachan, Vaibhav Patil, Dinesh Jothimani, Kayva Harika, Mohamed Rela

Dr. Rela Institute and Medical Centre, Bharath Institute of Higher Education and Research, Chennai, Tamil Nadu, India

**Background:** Anabolic androgenic steroids (AAS) are surreptitiously used by athletes and body builders for cosmetic purpose due to its anabolic effects on muscle mass and strength. The unsurveilled use of AAS subjects these users to various side effects involving multiple organ systems AAS induced Hepatotoxicity ranges from asymptomatic liver enzyme elevation to life threatening subacute liver failure and require medical treatment or may require liver transplantation. We share our experience of role in Therapeutic plasma exchange in two cases of AAS related D associated with AAS abuse.

**Case 1:** A 31-year-old diabetic gentleman presented with fatigue, jaundice with intense pruritus and pale stools for 4 weeks. Patient had been taking oxymetholone 50 mg twice a day for two months to promote body building. With peak bilirubin increasing to 51 mg/dl from 36 mg/dl, he underwent 10 sessions of therapeutic plasma exchange (TPE) over a period of 6 weeks for hyperbilirubinemia with intractable pruritis. Additionally Patient was treated with anti-HE measures, terlipressin, human albumin along with TPEs. From the end of 8th week there was gradual decline in total bilirubin over the next three weeks. Patient recovered with medical management without the need for liver transplantation.

**Case 2:** A 36-year-old patient presented with right hypochondrial pain, jaundice and reduced appetite. There was a significant transaminismin on baseline LFTs with INR 1.8, however his viral serology, autoimmune markers and Wilson’s screen were negative. Patient revealed that he was taking intramuscular Nandrolone decanoate once a week for 2 months with dietary supplements for gaining muscle mass. Over 8 weeks of hospitalization, there was progressive cholestasis and transaminisis, which improved after patient received 6 sessions of TPE. On outpatient follow-up at 3 months, there was significant improvement in LFTs.

**Methods:** TPE was performed using Optia Spectra Cell separator and CVC catheter. One plasma volume TPE was performed with 100 % volume replacement using normal saline, 5% albumin and fresh frozen plasma and TPE were repeated either alternate days or 2 days interval. The vitals were continuously monitored during procedure and calcium supplementation was done as per our standard protocol for calcium prophylaxis during TPE. Patient pre and post procedure CBC, INR, LFT and Renal function were evaluated. There were no adverse effects and both Patients improved recovered without need for liver transplantation.

**Conclusions:** There is limited supportive evidence for use of TPE in such cases except indications like intractable pruritis. Medical management and supportive therapies like TPE accelerates hepatic regeneration and liver failure may be reversible without need for liver transplantation with supportive therapy.
PP_TA 11

Efficacy of red cell exchange in sickle cell disease--A retrospective study

Ankita Sharma, Mohit Choudhry, Soma Agarwal, Mr Uday Kumar Thakur
Indraprastha Apollo Hospital, New Delhi, India

Background: Red cell exchange (RCE) is a type of therapeutic apheresis procedure aimed at removing the deformed red blood cells (RBCs) of a patient and replacing those obtained from a healthy donor. It is commonly but underutilized procedure for treatment of hemoglobinopathies such as sickle cell disease (SCD), thalassemia, other conditions like ABO incompatible hematopoietic stem cell transplant (HSCT), severe erythrocytosis, hereditary hemochromatosis, severe infection like malaria, babesiosis with intraerythrocytic parasites or cases of drug overdose, poisoning and to perform envenomation etc.

Objective: The objective of our study was to understand and evaluate the efficacy of RCE in patients of sickle cell disease presenting with crisis.

Methods: This is a retrospective study of five patients who underwent RCE over a period of 4 years (2016-2020). Patients of all age groups and either sexes were included in the study. Prior to the procedure, blood grouping (ABO and Rh) and red cell antibody screening were done for all the patients and those with screen positive, antibody(ies) identification was done and corresponding antigen negative units were given. All units used were non reactive for infectious markers (HIV, HBV, HCV, malaria and syphilis). 3 log leucoreduced, crossmatch compatible and less than 7 days old from the date of collection. The exchanges were performed on Spectra Optia Apheresis.

Results: A total of 8 exchanges were performed in five patients. All the patients who underwent the procedure experienced sickle cell crisis in the form of vaso occlusive crisis, bony pain, breathing difficulties (Acute chest syndrome) and experienced relief from these symptoms following the RCE. The targeted and the final values of fraction of red cell remaining (FCR) which was kept at < = 30% was achieved in all cases and no adverse events were observed during any of the procedures.

Conclusions: RBC exchange in patients of SCD is a simple, cost effective and relatively safe treatment modality which not only provides immediate relief in acute complications but also prevents the risk of long term complications such as risk of iron overload and iron induced organ damage. Its effectiveness in treating SCD patients outweighs the risk associated with multiple donor exposure and those of transfusion transmitted infections.

PP_TA 13

Efficacy of cascade plasmapheresis in comparison with traditional therapeutic plasma exchange for relapsed atypical HUS

Ashwinkumar Vaidya Isha Polavarapu, PA Prethika, A Ravindra Prabhu, Shamee Shastry
Kasturba Medical College, Manipal Academy of Higher Education, Manipal, Karnataka, India

Background-Atypical Haemolytic Uremic Syndrome (aHUS) is caused by activation of the alternate complement pathway, it can be either familial or sporadic, and it has a poor prognosis with a 10 to 15% mortality rate. The management of these cases can be very challenging, the role of therapeutic plasma exchange (TPE) is well established in these cases. We aimed to assess the efficacy of cascade plasmapheresis in a case with a HUS.

Methods: We performed cascade plasmapheresis in a case with aHUS, using Evaflux plasma fractionator (Kawasaki Laboratories Inc, Japan), in combination with Com.Tec (Fresenius Kabi, Germany). All the routine TPE was performed on Com.Tec apheresis machine. 1 cycle of TPE was taken as procedures done during 1 admission. The haematological parameters like haemoglobin, haematocrit and platelet count, biochemical parameters like serum LDH, Urea, creatinine and Anti-Factor H levels were analysed to study the effect on the clinical outcome. The data was collected on an excel sheet and the analysis was performed using SPSS 22.0.

Results: A total of 64 TPE procedures (8 cycles) and 8 cascade plasmapheresis procedures were performed over a period of 3 years (2018-2020). The mean total blood volume processed in TPE was 4888 ml, with a mean plasma volume fraction of 1.3 TPV. Total blood volume processed in cascade plasmapheresis was 8112 ml, with a
mean plasma volume fraction of 1.7 TPV. Mean pre- and post-cascade plasmapheresis anti factor H levels were 450.65 ± 392.19 AU/mL and 135.44 ± 153.13 AU/mL, respectively with a 73% reduction (p=0.05). Mean pre- and post- TPE cycle anti factor H levels were 379.54 ± 269.64 AU/mL and 189.73 ± 172.12 AU/mL, respectively with 52% reduction (p=0.11). There was 32.81% decrement in transfusion reactions, in cascade plasmapheresis. The patient’s mean pre- and post-procedure urea, creatinine and LDH for cascade plasmapheresis were 109.44 ± 25.45 and 106.06 ± 20.12; 2.78 ± 0.44 and 2.74 ± 0.44; and 379.44 ± 76.78 and 264.22 ± 75.8, respectively.

Conclusions: In our case, cascade plasmapheresis resulted in significant drop in anti-factor H levels (73%). Initiation of cascade plasmapheresis led to remission in previously unresponsive case of aHUS.

### PP_TA 14

**A study of effect of therapeutic plasma exchange in neuro-immunological disorders: A descriptive analysis**

Kuldeep Jareda, Sunita bundas, Prerna dhakar, Sarita sharma, Kesari Singh Shekhawat

S.M.S. Medical College, Jaipur, Rajasthan, India

**Background:** Apheresis refers to the process of separating the cellular and soluble components of blood using a machine. Apheresis is often done on donors where whole blood is centrifuged to obtain individual components (e.g. RBCs, Platelets, Plasma based on specific gravity) to use for transfusion in different patients. Apheresis may also be used therapeutically to treat various disorders. Therapeutic apheresis includes plasma exchange and cytapheresis.

**Aims and Aims:** 1. To find out clinical outcome of therapeutic plasma exchange in patients with neuro immunological diseases. 2. To assess adverse events associated with procedure.

**Methods:** Over a period of one year after approval of plan research review board of institute from June 2019 till desired sample size is achieved.

**Study Group:** Patients with neuro-immunological disorder belonging ASFA Category I and II. **Discussion:** This study is done on 29 patients of neuro-immunological diseases admitted in Department of neurology and advised for therapeutic plasma exchange in SMS hospital, Jaipur. Out of total 29 patients, 9 patients (31.03%) were MG, 8 patients (27.58%) were from NMO, 7 patients (24.13%) were from TM, 5 patients (17.24%) were from GBS. A total of 114 Therapeutic plasma exchange procedure were performed on 29 patients.

Most of the patients who underwent mechanical ventilation were cured after therapeutic plasma exchange and extubated. plasma exchange is highly effective in patient with respiratory distress. And only 3 patients failed to respond this therapy.

**Conclusion:** Therapeutic plasma exchange is a first line of management for most of the neuro immunological disorder. In our study there was an improvement in motor performance after 3-5 plasma exchanges which are mainly due to removal of unbound antibodies from the plasma. Improvement in sensory and autonomic performance is also seen to some extent. 89.65 % showed improvement and remaining 10.34 % doesn’t show any improvement after three plasma exchanges. In 16 Patients no adverse reaction is seen during procedure.

### PP_TA 15

**Alpha/ beta T-cell depleted haploidentical stem cell transplantation in interleukin 10 receptor deficiency**

G Mahalakshmi, R Krishnamoorthy, T Ravindra Prasad, A Ashwin, R Niranj Rathan, M Sampat Kumar

Sri Ramachandra Medical College and Research Institute, Chennai, Tamil Nadu, India

**Background:** Allogeneic hematopoietic stem cell transplantation is a curative option for patients with various diseases. Transplantation from a haploidentical donor has unrivalled advantage for patients who have difficulty in finding the HLA matched donor. Most haploidentical transplant requires selective depletion of αβ T cells prior to transplant. As αβ T-cells are the primary mediators of GvHD, ex-vivo depletion of these cells from the graft should reduce this risk.

**Objective:** To evaluate the outcomes of haploidentical HSCT after depleting the GVHD-causing αβ T-cells from the graft in patient with Interleukin 10 receptor deficiency.

**Methods:** A 6 months old boy was admitted with complaints of continuous episodes of loose stools and insufficient weight gain since birth. The patient was born to first degree consanguineous marriage. His elder sibling had similar complaints and expired at the age of 7 months. After complete evaluation and genetic studies, diagnosed as very early onset Inflammatory bowel disease (IBD) due to Interleukin 10 receptor deficiency. The treatment plan was Haploidentical Allogenic Stem Cell Transplant from patient’s father with HLA 6/10 match. To avoid GvHD and toxicity due to post-transplant high dose immunosuppression therapy, the product was subjected to αβ T-cell depletion with Immunomagnetic bead technology.

**Results:** Total volume of the product after depletion was 340ml. The pre-procedure values of αβ T-cells was 26094/µl in the product. Post procedure αβ T-cells was depleted by 99.9% (1/µl).

**Discussion:** After HSCT transplant, WBC and platelet engraftment occurred at day 9 and day 10 respectively. Chimerism study was done on day 17 which revealed 100 % donor cells was present in the patient. Baby developed Grade 1 GvHD which required no intervention.

**Conclusions:** Ex vivo depletion of αβ T-cells from a mismatched haploidentical donor graft ensures a high engraftment rate; good immune reconstitution; low incidence of severe GvHD, and acceptable post transplantation morbidity.

### POSTER_CTP 1

**Transfusion practice and safety in multi transfused oncology patients: Initiatives towards prevention of adverse transfusion reactions**

Shashi Kumar, Mangwana Sadhana, Dolly Gohel

Sri Balaji Action Medical Institute, New Delhi, India

**Background:** Transfusion of blood products has its own clinical risks causing adverse reactions. Minimising the risks of blood transfusion and optimising benefits of transfusion is important and depends on close collaboration of all the stakeholders involved throughout the transfusion chain. Good clinical practice minimises the risks of adverse events of transfusion and their management, if
they occur. Proactive role of transfusion centres for supplying safe blood components, providing education and training, developing guidelines and auditing practice, sharing experience would improve patient care, minimise adverse reaction and would definitely cause improvement in transfusion safety and patient blood management. Pre-transfusion testing, in the form of screening and identification of unexpected red cell antibodies, and issuance of leucodepleted suitable phenotype matched blood units are essential for the proper management and safety of alloimmunized patients.

**Aims:** To evaluate association of transfusion of blood components and occurrence of BTRs in multi-transfused oncology patients and importance of education to reduce the adverse reactions.

**Methods:** A retrospective analysis was done on issuance of blood components and transfusion reactions in oncology patients from January 2018 to December 2020. All blood donations were subjected to ABO Rh grouping, Antibody screening and Rhesus phenotyping by SPRCA method and universal leucodepletion. All oncology patients were issued Rh phenotype matched PRBC units. All stakeholders involved in transfusion chain were educated with best transfusion practices. Since numbers were small, data was analysed manually.

**Results:** Over three years study period, a total of 20449 blood components were issued. During this period, only two BTRs were reported in patients, both by Fresh Frozen Plasma (0.0097%). Both BTRs occurred in year 2019; 0.026% incidence for 2019 and no BTR reported in years 2018 and 2020 (zero % incidence).

**Conclusions:** Two main elements for safe and effective transfusion are sufficient supply of safe blood and good clinical practice. Preventing transfusion adverse events by various improvement measures would help in better patient care, patient blood management, long term savings and increased productivity which can be achieved by proactive role of Transfusion centres in promoting good transfusion practice and providing education and training.

**POSTER_CTP 2**

**Bleeding disorder in a young boy with normal coagulation profile**

Sherin S John, Aboobacker Mohamed Rafi, Deepak Charles, Susheela J Innah

Jubilee Medical Mission College and Research Institute, Thrissur, Kerala, India

**Background:** A 13-year-old male child brought with complaints of left scrotal pain and swelling following fall while playing. Child has a history of umbilical stump bleeding at 4-5 days of birth, recurrent episodes of easy bruising and prolonged time for wound healing. He underwent left fronto temporoparietal craniotomy for intracranial bleed following trauma at 5 years of age. He has never been evaluated for a bleeding disorder. He is born of consanguineous marriage (first cousin), but there is no similar illness in the family.

**Aims:** A case of bleeding disorder in a young boy with normal coagulation profile.

**Results:** On evaluation, his Hb was 10.9gm/dL, Platelet -2,74,000 cells/cu mm, BT - 6 min, PT – 14.50 sec, INR – 1.05, aPTT-28.30 sec and Fibrinogen – 528 mg/dl. Urea clot solubility test was positive for clot lysis (suggestive of Factor XIII deficiency). ROTEM showed normal CT, CFT, alpha angle and MCF, but with gradual loss in clot strength. Child was transfused 8 units of cryoprecipitate and underwent I&D for scrotal hematoma. Factor XIII assay was done and showed low level of Factor XIII- 4% (reference range – 50-150 %) by immunoturbidimetric method. Diagnosis of Factor XIII deficiency was made.

**Conclusions:** The presence of multiple mucocutaneous bleeds, profuse umbilical stump bleeding following birth and history of intra-cerebral haemorrhage and presently the scrotal hematoma in the presence of a normal coagulation profile directed us towards performing 5M urea solubility test. A 5M urea solubility test positive for lysis is only seen with severe deficiency of factor XIII (1-3%). The normal level of factor-XIII activity is 50-150%. Factor XIII levels should be maintained at 10-20% to prevent further bleeding and also poor wound healing. Transfusion of FFP or cryoprecipitate transfusion itself is a highly effective treatment. This is because only small quantities of factor XIII (approximately 5-30%) are needed for maintaining coagulation and factor XIII has a comparatively longer half-life of 9- 14 days. Our patient was successfully managed with cryoprecipitate transfusion and supportive care.

**POSTER_CTP 3**

**Venom induced coagulopathy in a one-year-old child: Lessons learned**

Maglin Monica, Lisa Joseph Tomy, Aboobacker Mohammed Rafi, Siju V Abraham, Ebin Jose, Susheela J Innah

Jubilee Medical Mission College and Research Institute, Thrissur, Kerala, India

**Background:** India is a tropical country where snake bites are common. Hemotoxic snake bites are known to be associated with venom induced coagulopathy, which results in deranged coagulation profile. Venom has potent cytotoxicity, weak neurotoxic, myotoxic, mild procoagulant and also phospholipase activity. In some snakes these activities are not neutralized by the locally available polyvalent antivenom. Snake bites in very young children are always a nightmare for the treating physician.

**Aims:** Management of one year old child brought to emergency medicine department with history of snake bite with deranged coagulation profile.

**Results:** One year old child was referred to our hospital 6 hours after infusion of 10 vials of ASV from another hospital with a deranged WBCT with no clinical bleeding. On admission his coagulation profile including WBCT, PT and APTT were deranged. RFT and serum electrolytes were in normal range. The bystanders later brought the killed snake which was identified as Hump Nose Pit viper (HNPV) for which no ASV is available in our country. Daily clinical and WBCT monitoring was done along with urine output monitoring. He was managed conservatively with analgesics and other supportive therapy including vitamin K administration. His clinical status was stable. His coagulation profile started normalizing by the 7th day of admission and was discharged at the 8th day, with coagulation profile in normal range.

**Conclusions:** Pediatric Snake bites are always a challenge to the treating physician. ASV therapy is first line in snake bites but there are no available ASV against HNPV in India. Snake identification plays a major role in deciding treatment. It has to be kept in mind that HNPV bite can result in serious coagulopathy and sequelae including acute kidney injury which could lead to death. Proper identification and close clinical and lab monitoring reduced the
unwanted use of further ASV and blood products in this patient leading to a favorable outcome in our patient.

**POSTER_CTP 4**

An experience of plasma therapy in COVID-19 positive patient with seropositive and seronegative status of IgG of COVID -19

Neha Singh, Bankim Das, Vandana Ravis

AIIMS, Patna, Bihar, India

**Background:** Now we live in an era of vaccine for COVID-19, still COVID-19 is biting us. Here is the brief experience of plasma therapy in a tertiary care center of excellence for COVID-19 institute.

**Objective:** To observe the effectiveness of plasma therapy in COVID-19 patients, according to their seropositive status of covid-19 antibodies IgG.

**Design:** A small cohort group has been evaluated for plasma therapy and experience evaluated in descriptive retrograde study manners. Patient enrolled according to intentional guideline of treatment protocol.

**Intervention:** Patients who have been planned for plasma therapy evaluated for antibodies for covid-19 status. According to interim guideline of plasma therapy patient enrolled in two groups, seropositive and seronegative patient group. Those patients who have seropositive for COVID-19 with IgG quantity less than 13 also enrolled for plasma therapy.

**Participant:** A total of 30 patients have been observed for plasma therapy. Two groups have been observed as seropositive and seronegative for IgG of COVID-19. 15 Patients enrolled in each group. Outcome evaluated, for days of stay in hospital, discharge, improve symptoms, and another clinical parameter.

**Main Outcome:** Composite progression of disease has been evaluated with the total duration of stay at the hospital.

**POSTER_CTP 5**

Transfusion therapy for patient’s with autoimmune hemolytic anemia a case series of 29 cases

Manasi Nayak, Minal Rane, Ujwala Dmello, Rajesh Sawant, Varsha Vadera

Kokilaben Dhirubhai Ambani Hospital, Mumbai, Maharashtra, India

**Background:** Clinicians are extremely concerned about the safety and efficacy of transfusion of least incompatible blood.

**Objective:** To evaluate safety and efficacy of least incompatible, partially antigen matched blood transfusion in patients with AIHA.

**Methods:** In a 45 months period, 29 patient’s were identified serologically as cases of AIHA, 13 had purely warm reacting antibodies and 16 had a combination of warm and cold reacting antibodies. 14 patient’s (48%) were transfused with least incompatible blood transfusion which was partial phenotype matched. All cellular blood components transfused were leucocyte depleted. The transfused and non-transfused patient group was compared for serological findings, number of transfusion’s received, interval between transfusion’s, increment in Hb per transfusion, and any immediate or delayed adverse transfusion reaction. Appearance of any new allo antibodies was monitored subsequently.

**Results:** 29 patient’s had established serologic diagnosis of warm AIHA and DAT was positive in all cases. 26/29 patients had a positive IAT. The autoantibody titer ranged from 128 to 2048. Mean reticulocyte count was 9%. 12/14 transfused patients had a high reticulocyte count (Range 2.5 to 29.5). Mean LDH level was 397 U/L. 409 units were cross-matched, of which 64 units were found to be least incompatible at a titer below the autoantibody titer in the patient. The titer of least incompatible cross matched units ranged from 1 to 128. 65 units were transfused in 14 patients. A mean of 9 units were transfused per patient, while the post transfusion increase in hemoglobin was 0.94 gm/dl. Mean inter-transfusion interval was 70 days. Delayed hemolytic transfusion reaction was reported in 1 case, but the alloantibody specificity could not be identified. 4/29 patients expired, 3 were from the non-transfused group. On median follow up for 278 days, the 12 patients in the transfused group maintained Hb > 10g/dl with transfusion support.

**Conclusions:** The provision of partial phenotype matched blood for transfusion support in AIHA cases was clinically beneficial and safe at titer up to 128. We now have started maintaining a record of phenotypically matched donors for patient’s with AIHA and Thalassemia. This practice has enhanced transfusion safety in urgent situations.

**POSTER_CTP 6**

Analysis of blood and blood components wastage at ward side in a tertiary care teaching hospital in south India

C Ravi Kanth, R Arun, B Suress babu, KV Sreedhar Babu

Sri Venkateswara Institute of Medical Sciences, Tirupati, Kerala, India

**Background:** A major challenge facing the blood bank is to supply a sufficient amount of safe blood whenever required. To overcome the shortage of blood supply, performance of blood bank can be increased either by increasing the level of resources from voluntary blood donors and/or by reducing the wastage of blood and blood components.

**AIMS:** To determine the rate and reasons for blood and blood components wastage at ward side in a tertiary care teaching hospital.

**Methods:** This cross-sectional, analytical descriptive study based on the statistical data collected retrospectively from department of Transfusion Medicine from Jan 2018 to Dec 2020. It contains blood and blood products wastage at wardside. The collected data were entered in Microsoft excel and analyzed using SPSS 21.0. Continuous data was analysed by student t-test/Mann Whitney U test as appropriate. Categorical data was expressed as percentages and was analyzed using chi-square/Fisher’s exact test. A ‘P’ value of less than 0.05 was considered statistically significant.

**Results:** A total of 64205 blood and blood components were issued during the study period, of which 87 (0.13%) were wasted. Wastage of packed red cells, fresh frozen plasma, platelet rich concentrates were 0.2%, 0.06% and 0.17% respectively. Maximum wastage of blood and blood components were at emergency medicine department (EMD) (41%). Overall most common reason for wastage of blood and blood components is death of patient before transfusion (36%) followed by no requirement due to no blood loss during and after surgery (24%). Overall most common blood group wasted is O positive (41%) followed by B positive (31%).

**Conclusion:** Blood transfusion is an essential part of patient care.
Blood wastage may occur for a number of reasons. Implementation of proper blood transfusion policies in coordination with clinicians, maintenance of calibrated and validated equipment at ward side and operation theatres will help to maintain the cold chain of blood components which can used further. Continuous educational programs to improve the performance of staff include proper shifting and transportation of blood components based on standard operational procedures will help to reduce the waste rate and solve the shortage of these elements.

**POSTER_CTP 7**

**Patient blood management in a neurosurgical patient with anti-E antibody - A case report**

Sreethu Chand, Anila Mani, Amita R, Debashis Gupta

Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala

Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala Patient blood management (PBM) is evidence based multidisciplinary approach to optimize the care of patients who need blood transfusion. Preoperative autologous blood donation (PAD), where the patient donates his/her blood few weeks before surgery has been a primary means to reduce the use of allogeneic blood. PAD program is an option for patients with rare blood types or multiple red cell antibodies or for those having an antibody against a high frequency red cell antigen. Here we describe the successful application of PBM approach in a 48 year old female patient planned for meningioma excision, having an antibody against high frequency ‘e’ antigen of the Rh blood group system and requiring transfusion.

**POSTER_CTP 8**

**Patient blood management guidelines for obstetrics and gynaecological patient in a tertiary care hospital**

SA Kanya, C Megala, P Aruna, R Thamil Selvi

Vinayaka Mission Kirupananda Variyar Medical College, Salem

**Background:** Patient blood management (PBM) is a multimodal, multidisciplinary approach adopted to limit the use and need for allogeneic blood transfusion in all obstetric and gynaecological practice. This also helps to provide recommendations on prevention and treatment of anemia in obstetrics and gynaecology cases. It helps to reduce the unnecessary transfusion of blood and blood components by providing other medical managements.

**Aim:** To provide blood management guidelines for transfusion of blood and blood components in obstetrics and gynaecology patients.

**Objective:** 1. To study indications of blood transfusion. 2. To Analyse frequency of utilization of blood components in particular age group. 3. To study the measures to minimize the requirements of blood transfusions.

**Methods:** Retrospective analysis of frequency and type of components used in various Obstetrics and Gynaecological conditions in Vinayaka Mission Kirupananda Variyar Medical College.

**Results:** The Total no. of blood transfusions for the past 1 year was 2876. The patients admitted in the department of obstetrics and gynaecology were 987, obstetrics cases were 491[49.74%], gynaecological cases were 496[50.25%] among these cases 369[37.38%] needed blood transfusion. The main obstetric causes: for blood transfusion were lsc:97[26.74%] PPH:4[1%], Atonic uterus: 5 [1.3%] incomplete abortion: 3[0.8%] total:109[29.5%] whereas in gynaecology majority causes were anemia [Mean Hb-8gms/dl], causes for anemia in these cases were Aub:119[32.34%], fibroid uterus:111[30.08%], and other conditions like cancer cervix, cancer uterus, uterine polyp etc.:30[8.31%].total:260[70.46%]. The utilization of packed red cells were common in age group between 40-50 years in cases of Aub, Dub, Fibroid uterus.

**Conclusion:** Patient blood management helps us in improving patients clinical outcomes. Like other treatment approaches, consolidated clinical indications for PBM are subjected to continuous evolution and new indications are being identified, regulated to avoid frequent transfusions.

**POSTER_CTP 9**

**Role of platelet indices in the outcome of dengue fever patients**

J Asha, Nithya M Bajju, Aboobacker Muhammed Rafi, Susheela J Innah, Ramesh Bhaskaran

Govt T.D Medical College, Alappuzha

Dengue fever is an acute infectious disease and is the most prevalent mosquito-borne viral disease in humans, occurring in tropical and subtropical countries of the world. The WHO has estimated 50 million cases of dengue fever. There is a need to study platelet profile & know its prognostic importance so that adverse outcomes of this rapidly spreading disease can be controlled to a great extent.

**Aim:** To assess the role of platelet indices in the outcome such as hospital stay and platelet transfusion requirements of patients with dengue fever

**Methods:** A prospective observational study of 250 patients, over a period of 18 months conducted in JMMC&RI, Thirissur. The platelet parameters (Platelet count, MPV, PDW, PLCR, PCT and IPF) were measured with Sysmex XN-1000 and followed up every 24 hrs. The clinical features, duration of hospital stay, platelet transfusion requirements details were collected and statistically analysed.

**Results:** Development of thrombocytopenia in dengue patients mainly rests on two events: decreased production of platelets and/or increased destruction and clearance of platelets. Platelet indices give information on whether the platelet destruction is ongoing or whether the bone marrow is responsive. The study population showed, normal PDW and MPV, low platelet count and PCT, normal or high PLCR and high IPF in dengue patients. There was no statistically significant correlation between platelet indices and duration of hospital stay. There were significant differences in platelet indices (lower platelet count and PCT, higher MPV, PDW, PLCR and IPF) on comparison between dengue patients based on platelet transfusion. There were no cases of DSS/DHS and no mortality observed.

**Conclusions:** Platelet indices (PI) may act as a predictive tool in the diagnosis and predicting outcomes in dengue fever. Low platelet count and PCT, high PDW, MPV,PLCR, and IPF in transfused dengue patients were found to be statistically significant. Clinicians need to be sensitized about the utility and limitations of these indices in day to day clinical practice and may also help in rationalizing the need for red cell and platelet transfusions in dengue.
POSTER_CTP 10

Transfusion reactions in a tertiary care hospital

M Nivetha, R Krishnamoorthy, T Ravindra Prasad, A Ashwin
Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu, India

Background: Blood transfusion is intended to give safe and adequate blood to the recipients but it poses inherent risks as well. An adverse reaction is an unintended and deleterious occurrence associated with blood component transfusion, which may occur during or after a transfusion. Not all transfusions are associated with adverse events. Occasionally few recipients may experience reactions because of the transfusions or because of the underlying disease condition.

Aims: To estimate the nature of the transfusion reactions and to estimate their frequency among recipients.

Methods: A retrospective study was carried out on reported transfusion reactions in the department of Transfusion Medicine in Sri Ramachandra Institute Of Higher Education and Research from January 2020 to December 2020. Transfusion reactions reported was evaluated at the blood bank by repeating the compatibility testing and blood grouping. Direct Coombs Test, Indirect Coombs Test, Antibody screening, Urine examination and blood culture were done as per the department Standard Operating Procedure. The data collected was analysed for the nature and frequency of transfusion reaction.

Results: Total number of transfusions during the period of study were 11485. Of these 18 recipients (0.15%) experienced transfusion reactions. Of these 4 patients (0.03%) had reactions to Single donor platelet, 3 patients (0.02%) had reactions to random donor platelets, 11 patients (0.10%) had reactions to packed cells. Overall the nature of the transfusion reactions observed during the study period were Allergic reactions were experienced by 12 patients (0.10%). Febrile reactions were experienced by 6 patients (0.05%).

Conclusion: Although the incidence of transfusion reactions are less than 1%, all the recipients receiving transfusions should be well explained about the possibility of transfusion reactions prior to transfusions and monitored carefully during the period of transfusion.

POSTER_CTP 11

Initiative for rare donor registry for A\textsubscript{2}/A\textsubscript{B} subgroups with extended rh phenotyping: A first of its kind

Dolly Gohel, Mangwana Sadhana, Shashi Kumar
Sri Balaji Action Medical Institute, New Delhi, India

Background: Prevalence of ABO antigens in Indian population is 21.77% for A and 9.09% for AB, making chances of prevalence of A\textsubscript{2}/A\textsubscript{B} subgroup rarer. Anti-A\textsubscript{1} antibodies appear as atypical cold agglutinins, present in 0.4% of A\textsubscript{2} and 25% of A\textsubscript{B} individuals, making it clinically significant when reactive at 37°C, causing hemolysis of A\textsubscript{1} RBCs. Alloimmunized patients with Anti-A\textsubscript{1} antibodies should receive AHG compatible A\textsubscript{2}/A\textsubscript{B} PRBC. Amongst the five RH antigens phenotyped serologically, highest prevalence in Indian population is of ‘e’ antigen followed by ‘D’, ‘C’, ‘c’ and ‘E’ being the lowest. Cases are reported of A\textsubscript{2}/A\textsubscript{B} patients having clinically significant Anti-A\textsubscript{1} antibody with implicated HTR and death, and no transfusion given to patients having rare RH phenotypes due to unavailability of blood and database of A\textsubscript{2} donors or rare RH phenotypes who could be called for directed donation.

Aims: To create donor registry of A\textsubscript{2}/A\textsubscript{B} blood donors with extended RH phenotype to provide transfusion to all A\textsubscript{2}/A\textsubscript{B} patients to prevent alloimmunization of Anti-A\textsubscript{1} antibodies.

Methods: A retrospective study was done from Jan 2019 to Dec 2020 in a tertiary care hospital based blood center at capital city. All donors were subjected to ABO RH grouping and RH phenotyping by SPRCA method. Tube technique was used to distinguish A\textsubscript{2}/ A\textsubscript{B} by agglutination reaction with Anti-A\textsubscript{1} Lectin.

Results: Total 14,292 donors were analyzed during study period, of which, A and AB groups constituted 21.38% (n=3056) and 9.22% (n=1318) respectively, out of which only 2.58% (n=73) belonged to A\textsubscript{2}, while A\textsubscript{B} was more frequent, in 11.97% (n=158). Prevalence of RH phenotype in A\textsubscript{2}/A\textsubscript{B} (n=231) was CCDeE (43.29%), CcDeE (32.9%), CcDee (7.79%), ccddee (7.36%), ccDeE (4.33%), ccDeE (2.16%), ccDEE (1.3%), CcDeE (0.87%) while CCDeE, CCcDeE, CcDeE, ccdDeE, ccddEE were completely absent (zero%). In A\textsubscript{2}/A\textsubscript{B} having ‘dd’, inheritance of homozygous ‘E’ antigen was never with co-inheritance of homozygous ‘C’ or ‘c’ antigen while in A\textsubscript{2}/A\textsubscript{B} with ‘D’, co-inheritance of homozygous ‘c’ antigen was in only 1.3%.

Conclusions: There is need to create rare donor registry for A\textsubscript{2}/A\textsubscript{B} subgroups and clinically significant blood group antigens and share at regional & national level to ensure improved quality of transfusion therapy.

POSTER_CTP 12

Pattern of thalassemia and other haemoglobinopathies using high performance liquid chromatography at tertiary care hospital-A retrospective study

Truptee Thakkar, Mamta Shah, Nidhi Bhatnagar, Sangita Shah, Shital Soni
B.J. Medical College, Ahmedabad, Gujarat, India

Background: Hemoglobinopathies constitute the world’s most common genetically inherited red blood cell disorder. In India, haemoglobinopathies and thalassemias contribute in a significant number of cases with anaemia. As corrective treatment like bone marrow transplantation is costly, prevention through population screening, and genetic counselling is the best possible strategy.

Aims: Data pertaining to the pattern of these disorders is scarce in this region and hence it was considered worthwhile to study these disorders using a large series of patients referred to clinical diagnostic laboratory.

Methods: A retrospective study was done on patients who were referred for Hb variant analysis to clinical diagnostic laboratories at tertiary care hospital From January 2016 to December 2020. Blood samples were collected into EDTA tube these samples were analysed by high performance liquid chromatography (HPLC) using BIORAD variant II(beta thalassemia short program) Hb typing system. Diagnosis of
haemoglobinopathies relies upon various methods involving clinical and family history, complete blood count, red cell indices, HbA2 & HbF Estimation.

**Results:** At a high throughput tertiary care center, out of 750 patients, abnormal Hb fractions on cation exchange HPLC was seen in 196 (26.13%) patients. Out of 196 patients, 86 (43.87%) were male, 110 (56.12%) were female. B-thalassemia trait was predominant genetic Hb disorder detected in 92 (46.93%) patients. Of 196 total cases, this was followed by 67 (34.18%) sickle cell trait, sickle cell disease in 11 (5.61%), B-thalassemia major was seen in 8 (4.08%), Double heterozygous with Hbs with B-thalassemia were seen in 6 (3.06%) & Double heterozygous with HbE with B-thalassemia were seen in 8 (4.08%), thalassemia intermedia 1 (0.51%) & Hb D Punjab was seen in 2 (1.02%) & abnormal alpha chain variant 1 (0.51%).

**Conclusion:** India is known as a country with high prevalence of different types of hemoglobinopathies, HPLC forms a rapid, sensitive, accurate, & reproducitive tool for the early detection & management of hemoglobinopathies & variants. These data demonstrate that HPLC is an excellent, powerful diagnostic tool for direct identification of hemoglobin variants with high degree of precision in quantification of major, minor, normal and abnormal hemoglobin variants.

**POSTER_CTP 13**

**Importance of inventory of indigenous donor directory – A boon for hdfn with multiple antibodies – A case report**

Parul Prajapati, Rakhee Shah, Ripal Shah

Advanced Transfusion Medicine Research Foundation, Pratham Blood Centre, Ahmedabad, Gujarat, India

**Background:** The spectrum of haemolytic disease of the foetus and newborn (HDFN) has changed over last few decades. With the implementation of Rh D immunophrophylaxis, HDFN due to ABO incompatibilities and other allo-antibodies has now emerged as major cause of this condition. The introduction of postnatal immunophrophylaxis has reduced the incidences of maternal allo-immunization to 1-2% from 14%, still HDFN due to allo-immunization is the major cause in developing countries.

**Case Report:** There was a patient of 25 years with 5th G (1 FTND & 3 IUD) presented at Pratham Blood Centre for IUT at 25th week of pregnancy. Patient’s blood group was O negative (IAT positive) and her husband’s blood group was O positive. One unit of crossmatch compatible leuco reduced, irradiated RBC unit was given. Fortunately at that time given unit was matched with patient’s blood phenotype. After 1 month, she visited the centre again for IUT. This time more than 6 units were incompatible and IAT was positive and titre was 1:32. So antibody screening and identification were performed. Patient was identified with allo-antibodies of anti-D, anti-C, anti-Jka and anti-Fya. We have inventory of 400 phenotyped donors, from this, irradiated and leucodepleted antigen negative unit was given to patient for IUT every month. Patient improved at term. Keeping frequency in consideration, chances of getting fully matched unit with such 4 antibodies is 1 in 150 units. This could become easy with inventory of phenotyped donors. As he was repeat regular donor, fortunately the first donor was among the 3 matched donors. After that, another donor was called from donor inventory whenever patient required transfusion.

**Conclusion:** By antibody screening and identification, the multiple antibodies were identified and accordingly antigen negative units of red blood cells given to the patient. This is very helpful in treating fetal anaemia in HDFN without delay.

**POSTER_CTP 14**

**Hyperhemolysis syndrome in a thalassemia major patient: A case report**

Pruthvi Raj, Shamee Shastry, Manish Raturi

KMC, Manipal, Karnataka, India

**Background:** Hyperhemolysis syndrome is one of the life-threatening complications of packed red cell transfusion characterized by the destruction of both allogenic transfused cells and autologous red cells. One of the main features of hyperhemolysis syndrome is the drop in hemoglobin level lower than that of pre-transfusion value. The possible mechanisms suggested for this syndrome are bystander hemolysis, activation of macrophages, suppression of erythropoiesis and also hemolytic anaemia in the presence of a negative direct antiglobulin test can be attributed to a direct cytotoxic mechanism mediated by natural killer cells.

**Case Report:** A two-year-old female child with a thalassemia major presented with a history of hemoglobinuria and poor increment in post-transfusion hemoglobin level. The patient had a past history of recurrent transfusion reactions. Considering the low hemoglobin value of 4gm/dl the patient was planned for 100ml PRBC transfusion. Transfusion of the IAT crossmatch compatible unit had to be halted halfway due to the onset of haemoglobinuria. Transfusion reaction workup revealed negative indirect agglutination test and direct antiglobulin test. Immune mediated hemolysis was ruled out. Hence after ruling out all other possibilities and reviewing literature the diagnosis of Hyperhemolysis syndrome was entertained. Considering the diagnosis the patient was put on steroid treatment for a period of 1 week following which packed red cell transfusion was done uneventfully. The expecte increment in post transfusion hemoglobin level was noted.

**Conclusions:** Hyperhemolysis is one of the rare and serious complications of packed red cells transfusion. The main pathology behind this entity is largely unknown but the proposed hypotheses are that it is because of bystander hemolysis and by the activation of macrophages. The main importance in its identification lies in the fact that such cases should not be further transfused without proper treatment as that would aggravate the condition further.

**POSTER_CTP 15**

**Transfusion support in protein C deficiency- A case report**

Arpitha P, R Krishnamoorthy, T Ravindra Prasad, A Ashwin, R Niranj Rathan, M Sampat Kumar

Sri Ramachandra Medical College and Research Institute, Chennai, Tamil Nadu, India

**Background:** Protein C is a vitamin K dependent protein. The protein C anticoagulant pathway serves as a major system for
controlling thrombosis, limiting inflammatory responses, and potentially decreasing endothelial cell apoptosis in response to inflammatory cytokines and ischemia. The importance of protein C system is evidenced by the syndrome of Purpura Fulminans in neonates, which can be congenital or acquired condition. The clinical presentation is that of acute DIC and haemorrhagic skin necrosis. Management includes acute phase of replacement therapy with Fresh Frozen Plasma or protein C concentrates and maintenance therapy includes anticoagulation with warfarin or LMWH. This is a review of a case of Congenital Protein C deficiency presenting with neonatal purpura fulminans.

**Case Presentation:** A 36-day old boy baby born of a non-consanguineous marriage presented with the following complaints at birth. On Day 1, baby developed full thickness skin injury on the left leg with epidermolysed blood filled blebs. On examination, baby had leukocoria in left eye and corneal clouding in right eye. Eventually the baby developed spontaneous ecchymosis of unknown cause. On further evaluation, the value of Protein C was 1.3 IU/dl (Normal range: 70-130 IU/dl). Other parameters like Fibrinogen and Protein S were in normal range. Baby was diagnosed of severe Protein C deficiency. For the acute management of the condition, baby was transfused with FFP, 60ml QSH as a replacement therapy. Totally 69 units of FFP was transfused. Along with that, 3 units of Leukoreduced Packed Red cells, 3 units of Platelet concentrates and 1 unit of Cryoprecipitate was transfused. Baby was in admission for 72 days and was discharged with the moderate stabilisation of the condition against the medical advice.

**Conclusion:** Neonatal purpura fulminans, whether caused by congenital or acquired deficiencies of protein C, remains a life-threatening condition. Early recognition of the clinical symptoms, prompt diagnosis and judicious replacement therapy decreases both the morbidity and mortality associated with this condition. Every effort should be made to increase awareness of this rarely diagnosed condition and its treatment.

**POSTER_CTP 16**

**Transfusion support in abdominal aortic rupture**

V Sree Raj, Ramesh Bhaskaran, Aboobacker Rafi, Susheela J Innah, Shibu C Kallivalapill

Jubilee Mission College & Research Institute, Thrissur

**Background:** Massive haemorrhage in patients with ruptured abdominal aortic aneurysm (rAAA) undergoing open repair (OR) has been associated with a worse outcome. OR of rAAA is performed with appropriate monitoring of volume status, fluid and blood product administration as needed. Repair of the aorta usually involves clamping the aorta, opening the aneurysm to remove thrombus and debris from within the aorta, and replacing the diseased arterial segment with a synthetic graft. Death in rAAA patients has been consistently associated with large volumes of transfusion, and many rAAA patients undergo massive transfusion (MT). Refinements in the intraoperative blood product resuscitation of massively bleeding trauma patients have resulted in improved survival in military and civilian experiences 2,3.

**Case Presentation:** 61 year old male presented to the emergency department with history of abdominal pain, discomfort and an episode of syncope at home. USG and computerised tomography abdomen showed contained rupture of AAA. Patient was taken up for emergency surgical repair. Blood bank was informed regarding possible need of massive transfusion. During the procedure the strategy was to maintain hemodynamic stability with crystalloids and colloids without giving blood products until the bleeding was controlled and initiate blood transfusion thereafter. Patient was monitored with serial ABG analysis. There was a continuous fall in the haemoglobin and finally the levels were not recordable in the ABG. Soon after the aorta was clamped blood product transfusion was initiated. 6 units of PRBC, 4 units FFP and 4 units platelet concentrates were transfused peri operatively.

**Aims:** Abdominal aortic aneurysms should be approached in a multidisciplinary way for successful treatment. Transfusion support is of paramount importance in its management. Ways to minimise transfusions as far as possible should be sort after to reduce the complications of massive transfusion, for preserving the available resource and for better clinical outcome of the patient.

**Results:** Immediate post-operative evolution was satisfactory with early extubation and withdrawal of vasopressors and Inotropes.

**Conclusion:** The majority of rAAA patients undergoing OR required MT. This case highlights the importance of a timely planned transfusion strategy in patients with rAAA reducing the need of large transfusion volumes.

**POSTER_CTP 17**

**Retrospective evaluation of prevalence of red cell alloimmunization in sickle cell disease patients in a tertiary centre of eastern India**

Milind Agarwal

IMS and SUM Hospital, Bhubaneshwar, Odisha

**Background:** Sickle cell disease (SCD) is the one of the most common hemoglobinopathy prevalent in eastern India. Blood transfusion is an important therapeutic option in the management of SCD. Alloimmunization is a dreaded complication of blood transfusion. When giving antigen matched blood to the patient, it is significant to keep in mind the prevalence of the alloantibody formed.

**Objective:** This study aims to evaluate the prevalence of alloimmunization to red cell antigens in sickle cell disease patients.

**Methods:** This retrospective study was conducted in PG Department of Transfusion Medicine of IMS and SUM Hospital, Bhubaneswar from January 2020 to January 2021. Demographic, medical data and history of transfusion were recorded from departmental records of 54 previously transfused SCD patients. Blood samples were collected from the consenting SCD patients who underwent transfusion. All patients before transfusion were regularly assessed for the development of red cell antibody. In all patients, autocontrol and direct antiglobulin (DAT) test were performed using polyspecific (anti-IgG + C3d) anti-human globulin (AHG) gel cards for the detection of alloantibodies or autoantibodies. Gel card (CAT) method was used for antibody screening and identification.

**Results:** This study includes total 54 SCD patients out of which 3 (5.5%) have SCD with B-Thalessemia. The frequency of red cell alloimmunization in these patients was found to be 11.11 %. Alloantibodies identified were mostly against Rh antigens comprising 69%(Anti E - 33 %, Anti c - 17%, Anti E + Anti c - 17 %). A combination of Anti c and Anti Jk^a contributed 17 % while there was one case with antibody against a suspected high frequency antigen(16%).

**Conclusions:** The rate of red cell alloimmunization in SCD patients...
in our study came out to be 11.1%. SCD is widely prevalent in our region, so we are giving antigen matched blood to these patients since January 2020. Partial phenotyping of patient and donor reduces the risk of alloimmunization but extensive red cell screening and matching should be made mandatory to eliminate alloimmunization and the risk of delayed haemolytic transfusion reaction in SCD.

**POSTER_CTP 18**

**An audit report for assessment and platelet utilization in tertiary care hospital**

Neelam Saini, Parmendra Pachori, Keshari Singh

S.M.S Medical College, Jaipur, Rajasthan, India

**Background:** A regular audit of blood component helps to minimize inappropriate blood, Blood component transfusion risk of Transfusion Transmitted Infections (TTI), proper management of use and discard. An audit helps to improve guidelines, encouraging consultation with prescribers and identifying various areas for improvement.

**Aims:** This study was planned to assess the proper utilization of platelet and its audit.

**Methods:** A retrospective study to carried out platelet utilization and clinical indications for proper transfusion. It is a one-year study from Jan. 2020 to Dec. 2020 in SMS Medical College. As per departmental standards ABO and Rh(D) group specific platelet transfusion were recommended monthly preparation were obtained from departmental records. RDP and SDP were stored for maximum period of 5 days at 22±2°C with continuous horizontal gentle agitation in a platelet incubator cum agitator. Patients information regarding age, gender, specialty, platelet counts, transfusion episodes and ABO & Rh (D) group specific were obtained from requisition form and issue register records. 1% of platelets prepared/month or 10 units/month whichever was more, was taken for quality control parameter.

**Result:** During the study period 8606 units of platelets (PRP-PC=6024) around 71%, BC-PC=1721 around 20%, PRP=259 around 3% , SDP=467 around 6 %) were prepared. There units were transfused to 779 patients (RDP to 634 patients and SDP to 115 patients during their hospital stay).

**Conclusions:** Regular audit of blood and blood components is an important tool to maximize judicious utilization of each component.

**POSTER_CTP 19**

**Innovative strategy in issue of “O negative” uncrossmatched blood during emergency**

Samkumar R, Arathi, S Gayathri, Vinoliya P, M Prathap

Meenakshi Hospital, Tanjore, Tamilnadu

**Background:** Blood Transfusion is an integral part of life saving clinical & surgical practices. With a growing incidence of major poly trauma by vehicular accidents, bomb blasts and fires, provision of blood to emergency transfusion has inculcate many attending physicians to save innumerable lives. Our Blood Bank Maintains minimum 5 units of O negative packed red blood cells to meet emergency needs. In this study this bedside grouping process is implemented to save lives by preventing adverse events.

**Aims:** To achieve zero mortality rate and transfusion reactions. ü To reduce TAT from 30 minutes to 5 mins in emergency.

**Methods:** This Study is carried out at Meenakshi hospital Tanjore, which is 250 bedded with active emergency department over a period of one year from Jan to Dec 2020. During the incidences of unidentified blood grouping recipients in ER, clinicians will activate Emergency Blood transfusion protocol. The staff from ER communicates necessary details to blood bank. The technician from blood bank urges to ER with “Emergency Blood transfusion kit” in which it has O-ve PRBC, specific grouping antisera, testing slides. The technician then performs bedside blood grouping for the recipients. Once the grouping is done, O-ve blood will be issued to all groups. If the patient has Bombay O group, this is informed to emergency physicians immediately and as per emergency donor protocols alternate arrangements for Bombay O is done.

**Results:** This Bedside grouping procedure is carried out 9 patients in the year 2020. Out of which we have issued “08 - O Negative PRBC” and “01- Bombay O PRBC” with 0% mortality and transfusion reaction.

**Conclusion:** Issue of O Negative uncross matched blood use in the treatment to alter hemostasis and oxygen debt with the goal of reducing the risk of death from hemorrhagic shock. This implemented bedside grouping process overcome all the barriers to provide the blood with the time frame not exceeding 5 minutes.

**POSTER_CTP 20**

**An audit of massive transfusion protocol in obstetrics patients at a tertiary hospital in central Gujarat**

Khevna Kansara, Monica Gupta, Mustafa Ranapurwala, Manthan Patel, Shyama Chag

Pramukh Swami Medical College, Anand, Gujarat, India

**Background:** Major obstetric hemorrhage is a leading cause of maternal mortality. Massive blood loss is defined as the loss of one blood volume within 24 hours or 50% blood volume loss within 3 hours. Utilization of blood products in such a scenario is considered a lifesaving intervention. A multidisciplinary audit assesses the effectiveness of the management of major hemorrhages.

**Aims:** The present study wishes to analyze the current practice and effectiveness of the institutional massive transfusion protocol and compare it to available guidelines.

**Methods:** The present study is a retrospective study conducted from March 2019 to January 2021 at A.D. Gorwala Blood Centre associated with Pramukhswami Medical College & Shree Krishna Hospital, Bhaikaka University, Karamsad, Gujarat. The present study is an audit of the effectiveness of the massive transfusion protocol in place at our institute; a total of 56 protocols were analyzed. Details of patient and blood components were retrieved from departmental archives.

**Results:** A mean of 20 components was transfused per patient within 1st hour of massive transfusion while 24 components (on average) within 24 hours. A mean of 2.67 ± 1.25 unit of RCC, 4.75 ± 1.81 unit of FFP, 4.15 ± 1.40 unit of PC and 9.1 ± 1.43 unit of cryoprecipitate was transfused per patient within 24 hours. The ratio of transfused blood products for RCC: FFP: PC was 1:1.77:5. The rate of transfused blood products for RCC: FFP: PC was 1:1.77:5 in massive transfusion. The most common cause for MTP
Abstracts

A case of placenta previa? percreta required massive transfusion was performed. The patient was shifted to the operating room and the whole team worked together to save the patient’s life. The patient was transfused with 58 PRBC, 10 FFP, 20 RDP, 7 CRYO & 1 SDP units during the peri-operative period. The donors had a better coordination and experience with the blood bank. No complaint was generated by the treating department.

Results: The results were good and the patient could be saved. But it created a near miss situation where the whole surgical team and the blood bank panicked. In contrast in another case of 32/F of placenta previa, the patient was transfused with 40 PRBC, 10 FFP, 5 RDP & 10 CRYO units during the peri-operative period. The donors had a better coordination and experience with the blood bank. No complaint was generated by the treating department.

Conclusions: An organized approach with effective communication and the activation of the institutional Massive Transfusion Protocol or management plan will facilitate the rapid availability of blood products. This alerts the Transfusion Service, and enables the provision of blood products in a standardized manner and helps minimize the maternal mortality and morbidity.

POSTER_CTP 21
Make jaw jaw; not war war
Pratul Sinha, Vilasini Patil
All India Institute of Medical Sciences, Bhopal, Madhya Pradesh

Background: Communication between treating department and the Blood Bank is important for a successful transfusion support for any patient. Quality of communication is the corner stone which is improved by various methods like proper formats of written records, standard operating procedures. Guidelines for communication protocols are established by committees like Hospital Transfusion Committee and documents like standard operating procedures. In absence of good quality communication disasters can happen and result in errors some of which can be life threatening.

Aims: Here we present two cases. One which resulted in war like scenario in absence of conversation and the other identical where protocols were laid for communication and a successful transfusion outcome was achieved for the patient in a cordial environment.

Methods: A comparison of two cases is evaluated.

Case 1: A case of placenta previa? percreta required massive transfusion support during operation. However failure to communicate adequately resulted in a uncoordinated effort. 4 PRBC, 9 FFP, 5 RDP & 4 CRYO units were issued during the operation and the patient could be saved. But it created a near miss situation where the whole surgical team and the blood bank panicked. In contrast in another case of 32/F of placenta previa? percreta. Communication was well established by nominating contact person ‘friends of blood bank’ from the treating department and the ‘on duty’ person in the blood bank. The coordination of efforts and the support required by the surgical team was met and matched by the blood bank. The whole operation went like clockwork. 6 PRBC, 10 FFP, 7 RDP, 6 CRYO & 15SDP units were transfused in the peri-operative period. The donors had a better coordination and experience with the blood bank. No complaint was generated by the treating department.

Results: Real time coordination of communication between the treating physician and the blood bank helped support the patient with massive transfusion needs. This also helps generate an amiable work environment which in turn helps in a positive experience associated with satisfaction and motivates personnel.

Discussion: It is important to have good protocols and standard, easy to fill forms to achieve good quality communications. Hospital Transfusion Committees can play a very important role in laying guidelines for every individuals role in communicating. A new concept of ‘friends of blood bank’ in every department can be developed to help strengthen the communication.

PP_Covid 1
Preparedness during COVID-19 pandemic in our blood centre at university level medical college of north India
Kajal Khajuria, Kusum Thakur, TS Ashish Sharma, MLT Shubham Kamboj
MMIMS and R, Mullana, Haryana, India

Background: The Covid-19 is the biggest pandemic of 21st century. So maintaining safe and adequate blood supply during covid-19 pandemic is a big challenge for blood center. Ours is a type of preparatory programme for covid-19 pandemic in a blood center of a tertiary care hospital in north India. Various challenges faced by blood transfusion services due to covid-19 pandemic are:- Donor management challenges in which it is difficult for donors to reach blood center in lockdown situations, fear of exposure to Covid-19 at hospital blood center. Inventory management challenges in which there is decrease in demand for blood due to OPD shutdown. Staff challenge in which it is big responsibility to keep staff safe from infection & shortage of PPE Kit for staff. Consumable challenges, in which there is decreased supply of consumables due to lockdown situation. Donor notification challenge in which we can inform donor about reactive screening test but it is difficult for donor to get tested after notification, counselling and referral.

Aims and Objective: The main aim & objective of this study was to foresee the challenges and preparedness at our blood center during pandemic.

Methods: This is a preparatory programme observed from 1 March to 31 June 2020 at university level Medical college of North India.

Results: Donor challenges: Donor e-card were provided. Donors were screened for temperature at entry point of blood center, sanitized their hands, additional donor questionnaire indicating that he was not exposed to flu or in close contact with any covid patient or any travelling history in last 14 days. After covid-19 pandemic there is a drop in donor attendance of 61.8%. Inventory management challenge: Due to decrease admissions in hospital, we followed FIFO policy (first in first out), start transfusing non-identical but compatible blood units to the patient. Blood demand during the same period was reduced to 58.2%.

Staff Challenge: we started Covid-19 lab with separate centrifuge and PPE kits for staff were provided as per NACO guidelines.

Consumable Challenge: Shifted to manual testing and transfer excess consumable near expiry to nearest blood center where as needed and vice versa. Donor notification challenge: Notified and counsel our donors telephonically and advised them to confirm test at local diagnostic center.

Conclusions: Every blood center should make an evidence based emergency blood management plan and regulatory policies in place to be ready for any kind of disaster and to respond quickly if a blood shortage happens. Our department was functional throughout pandemic with all these managerial steps.

PP_Covid 2
Evaluation of Neutrophil Lymphocyte ratio (NLR) in Covid 19 convalescent plasma donors
Kumar Ravish, Neha Singh, Vandana

Aims and Objective: The main aim & objective of this study was to foresee the challenges and preparedness at our blood center during pandemic.

Methods: This is a preparatory programme observed from 1 March to 31 June 2020 at university level Medical college of North India.

Results: Donor challenges: Donor e-card were provided. Donors were screened for temperature at entry point of blood center, sanitized their hands, additional donor questionnaire indicating that he was not exposed to flu or in close contact with any covid patient or any travelling history in last 14 days. After covid-19 pandemic there is a drop in donor attendance of 61.8%. Inventory management challenge: Due to decrease admissions in hospital, we followed FIFO policy (first in first out), start transfusing non-identical but compatible blood units to the patient. Blood demand during the same period was reduced to 58.2%.

Staff Challenge: we started Covid-19 lab with separate centrifuge and PPE kits for staff were provided as per NACO guidelines.

Consumable Challenge: Shifted to manual testing and transfer excess consumable near expiry to nearest blood center where as needed and vice versa. Donor notification challenge: Notified and counsel our donors telephonically and advised them to confirm test at local diagnostic center.

Conclusions: Every blood center should make an evidence based emergency blood management plan and regulatory policies in place to be ready for any kind of disaster and to respond quickly if a blood shortage happens. Our department was functional throughout pandemic with all these managerial steps.
Abstracts

All India Institute of Medical Sciences, Patna, Bihar, India

Aims: The purpose of the study was to evaluate neutrophil lymphocyte ratio in convalescent plasma donor population. Since nlr is significantly raised in covid 19 infection and so it can briefly about followup in recovered patients.

Methods: The retrospective study was conducted in department of transfusion medicine aiims patna. Total hundred cases of convalescent plasma donor from period of september 2021 to october 2021 were evaluated. All the donor were pcr positive previously, with complete recovery and nt-pcr negative in 28 days and covid 19 antibody (igg) were positive with titre more then 6 at the time of donation. Donor were screened and complete tlc and dlc was done with edta venous blood sample at the time of donation and neutrophil lymphocyte ratio were calculated. Calculation of nlr was done by following formula.

absolute neutrophil

\[ \text{nlr} = \frac{\text{absolute neutrophil}}{\text{absolute lymphocyte}} \]

Conclusions: In this study it is observed that after recovery nlr ratio in 79 % donor comes to normal range in mostly within 28 days of pcr negative. Nlr can be used to assess the prognostic outcome and follow up in recovered patient of covid 19 patients. Being non specific it cannot be sole diagnostic tool however, it can be used for followup in recovering patient. Dance, mobile blood drives and blood inventory records were retrospectively obtained for the period between April 2018 to October 2018, April 2019 to October 2019, April 2020 to October 2020 to assess the impact of COVID-19 on donor attendance and the management of blood supply and demand in INDIA, donor attendance and blood supply at blood bank-based hospitals. Data were analysed. Categorical variables were described using frequencies and percentages.

Results: In total hundred cases of convalescent plasma donor, 21 cases were more then 3, 76 cases were in normal range between (1 to 3) and 3 cases were less then 1. Highest nlr noted in the study was 4.4 whereas lowest nlr was 0.9. Mean calculated for the study was 2.21.

Conclusion: In the present study anemic covid patients had maximum demand for group PRBC and most had hemoglobin level less than 8g/dl.

PP_Covid 4

Challenges, Changes and Mitigative actions in blood transfusion at Tertiary care hospital, in Covid-19 Pandemic

Vikram C. Rojasara, Jitendra H. Vachhani, Shweta B. Upadhyay
Shree M.P.Shah Govt. Medical College, Jamnagar, Gujarat, India

Introduction: Maintaining blood supply is essential since blood transfusions are lifesaving in many conditions.

Aims and objectives: This study aimed to measure donor attendance and blood demand in order to help find efficient ways of managing blood supply and demand during the COVID-19 pandemic and similar public emergencies in the future.

Materials and Methods: Data from donor attendance, mobile blood drives and blood inventory records were retrospectively obtained for the period between April 2018 to October 2018, April 2019 to October 2019, April 2020 to October 2020 to assess the impact of COVID-19 on donor attendance and the management of blood supply and demand in BLOOD BANK, G.G. HOSPITAL, JAMNAGAR. Data were analysed. Categorical variables were described using frequencies and percentages.

Results: After imported cases of COVID-19 were reported in INDIA, donor attendance and blood supply at blood bank-based collections showed a drop of 19.21%. On the other hand, blood demand during the same period was reduced by 18.26%.

Conclusions: The COVID-19 pandemic had a negative impact on donor attendance and blood supply and adversely affected blood transfusion services. Close monitoring of blood needs and blood supply and appropriate response is essential for avoiding sudden blood shortage. An evidence-based emergency blood management plan and flexible regulatory policy should be ready to deal with any disaster and to respond quickly in the case of blood shortage.

PP_Covid 3

An observational study to evaluate the prevalence of anemia in Covid 19 patients admitted at AIIMS, PATNA

Vandana, Neha Singh, Nawanita Kumari, Ravish Kumar
AllIMS Patna, Bihar

Aims: To evaluate the the prevalence of anemia in Covid 19 patients admitted at AIIMS, PATNA

Materials and Methods: The present study was conducted on patients coming with demand for packed RBC in the Department of Blood Bank and Transfusion Medicine at AIIMS, Patna admitted with Covid 19 positivity. With AIIMS patna declared as dedicated hospital from august, 20 demands for PRBC in Blood bank were mostly for covid patients with anemia. Blood requisition form,duly filled with personal and clinical details of patients along with blood sample was received at blood bank. The sample was tested for ABO & Rh Blood grouping, compatibility test were done following the guidelines described by standard Technical Manual and textbook of Transfusion Medicine and blood banking. Each sample was reassessed for hemoglobin level by running in symex cell counter available in our blood bank.

Results: In a period of 3 months of observational study from August 2020 to October 2020, a total of 112 units of PRBC were demanded for Of these 51 were for female and 60 for male and 6 belonged to pediatric age group. Of these 73 (36 males and 37 females) patients were suffering with comorbid conditions like AML, CML, Peptic ulcer, CKD, Ca gall bladder, TB, uterine cancer, hypertension,diabetes mellitus. The demand according to blood group were 45[O], 26[B], 26[A], 15[AB].10 patients had hemoglobin level above 8g/dl and 102 had hb more than 8 g/dl.

Conclusion: In the present study anemic covid patients had maximum demand for group PRBC and most had hemoglobin level less than 8g/dl.

PP_Covid 5

Perception towards blood donation among
Abstracts

**blood donors during covid pandemic in southern karnataka: Knowledge, attitude and practice survey**

Deepika Chenna, Dhiyva Kandasamy, Ganesh Mohan, Shamee Shastry

Kasturba Medical College, Manipal Academy of Higher Education, Manipal, Karnataka, India

**Background:** Knowledge, attitude, and practice (KAP) surveys are representative of a specific population to collect information on what is known, believed, and done about a particular topic and are the most frequently used study tool in health-seeking behaviour research. It serves as an awareness program for the community related to blood donation and the COVID pandemic. It also helps transfusion services be prepared for such a situation in the future regarding how to create awareness and make the community aware of the myths and facts.

**Aims:** To study the perception of donors towards blood donation during COVID pandemic by conducting a knowledge, attitude and practices a Knowledge, Attitude and Practice (KAP) survey.

**Methods:** A cross-sectional observational study was conducted on donors who have come for blood donation to our blood center between June to October 2020. A structured questionnaire to assess the knowledge, attitude, and practices of blood donation among donors during the COVID 19 pandemic was prepared and validated by two subject experts in the field. Statistical analysis was done using SPSS version – to know the association of KAP with age, gender and number of donations.

**Results:** Among 2748 individuals who turned up for blood donation 403 donors participated in the study. The male to female ratio was 19:1. The study participants’ mean age was 31.1 years (SD:8.4). 94.3% of donors knew that there was a need for blood donation and 83.1% of them felt it was safe to donate during the pandemic. 63% of the people felt, the reason for eligible people not donating blood is fear of stepping outside due to risk of exposure to COVID. Knowledge about COVID-19 was significantly higher among donors above 30 years when compared to donors below 30 years (p=0.023). Compliance to practices like motivation to mobilize donors and become a regular donor was higher among repeat donors (0.017). There was no significant difference with respect to attitude between the comparison groups.

**Conclusions:** The study revealed that the knowledge and awareness about the need for blood was good. The fear of exposure to COVID was found to be major deterrent factor. Hence, communication of the precautionary measures adopted at blood centres to contain the spread of COVID 19 infection would help in recruiting and retaining the donor population and promotes safe blood donation.

**PP_Covid 6**

**Impact of COVID 19 pandemic on the blood transfusion chain - An unprecedented crisis and lessons learnt**

Paramjit Kaur, Ravneet Kaur, Kshitiha Mittal, Tanvi Sood, Gagandeep Kaur

Government Medical College and Hospital, Chandigarh, India

**Background:** Blood transfusion services witnessed unique challenges across the globe due to strict lockdown imposed to prevent spread of COVID-19 infection. Apart from inventory blues, blood centers faced major issues in donor recruitment, blood collection drives, blood utilization, management of chronically transfused patients, staff and supplies.

**Aims:** The aim of this study was to analyse the impact of COVID-19 pandemic on blood transfusion services in a tertiary care centre.

**Methods:** The study was conducted in the Department of Transfusion Medicine, Government Medical College and Hospital, Chandigarh. A retrospective analysis of blood donation statistics, transfusion transmitted infections prevalence, apheresis procedures and blood component utilization audit was conducted to assess the impact of the COVID-19 lockdown and subsequent surge in SARS CoV-2 infections from March to October 2020 and compared with data from March to October 2019.

**Results:** There was a 53.7% decline in total donations from 15759 in 2019 to 7295 in 2020 from March to October. A decline of 65.7% in voluntary donations collected from outdoor blood donation drives with more in house voluntary collection due to active participation of doctors and staff members was seen. Overall voluntary donations decreased from 91% in 2019 to 77% in 2020 while replacement donations increased by 44.8% when comparing the study periods. Only 68 voluntary blood donation camps were conducted during this period compared to 173 camps in 2019 from March and October. On comparison of TTI prevalence during the study period HIV seropositivity increased to 0.1% from 0.03%, HCV increased to 0.85% from 0.46% in 2019, HBV seropositivity was 0.46% as compared to 0.41% before lockdown and VDRL reactivity increased to 0.49% from 0.04% in 2019. The apheresis procedures showed a 34.96% decrease. Blood component utilization statistics showed a decrement of 50.8% for packed red blood cells, 53.8% for fresh frozen plasma and 58.8% for platelet concentrates.

**Conclusions:** COVID-19 pandemic and subsequent lockdown had major consequences on blood transfusion services. We observed an increase in seropositivity for transfusion transmitted infections during the study period. The COVID-19 pandemic has taught us many lessons pertaining to inventory management amid an unprecedented crisis.

**PP_covid 7**

**Sero-prevalence of SARS-COV-2 antibodies among healthy blood donors in a tertiary care hospital**

Alexandra Kristin Mawiong, Priyanka Gogoi, Preeti Diwaker, Rafat S Ahmed

GTB Hospital, New Delhi, India

**Background:** Coronavirus (2019-nCoV) was first reported from Wuhan, China, in December 2019. This 2019-nCoV is an enveloped RNA beta coronavirus which contains four structural proteins: spike (S), envelope (E), membrane (M) and nucleocapsid (N). During infections, neutralizing antibodies are mainly targeted against the spike protein, which has been the main focus for vaccine development. The actual percentage of asymptomatic cases is unclear and how long they continue to be carriers is also unknown. Sero-prevalence data can therefore throw light on the exposure, immune status and disease severity in a population. However, there is a dearth of information available on SARS-CoV-2 antibody response among healthy blood donors in India.

**Aims:** To determine the sero-prevalence of SARS-CoV-2 antibodies among healthy blood donors attending a tertiary care hospital and voluntary blood donation camps, in a tertiary care hospital.

**Methods:** The study was conducted in the Blood Bank, Department of Pathology and Department of Biochemistry, UCMS & GTB
Hospital, Delhi. Voluntary healthy blood donors were included in the study while donors having positive history of respiratory symptoms or fever in the last 28 days, travel history in the last 28 days or contact with COVID-19 confirmed case were excluded. 2 ml of venous blood was collected during phlebotomy of blood donors and serum was separated. Serum samples were then tested for the presence of IgG antibodies against spike protein of COVID-19 using a commercially available Chemiluminescence immunoassay.

**Results:** We found 26/165 (15.75%) of healthy blood donors to be positive for SARS-CoV-2 IgG antibodies. All the healthy blood donors were male and the age of the donors ranged from 21-48 years with a mean age of 29.7 years. Majority of the blood donors were of the blood group B (13) followed by AB (6), O (5) and A (2). Only 3 of the donors were Rh negative. None of the donors were positive for transfusion transmitted infections and alloantibodies.

**Conclusion:** Our study results suggest that although RT-PCR is the investigation of choice for diagnosing Covid-19, however antibody testing of general population can help in detecting actual number of asymptomatic carriers.

**PP_Covid 8**

**Impact of COVID-19 on blood transfusion services: an experience of a tertiary care centre**

Dhivya Kandasamy1,2, Shamee Shastry1,2, Chenna Deepika1,2, Ganesh Mohan1,2

1Kasturba Medical College, 2Manipal Academy of Higher Educations, Manipal, Karnataka, India

**Aims:** To study the impact of COVID-19 on blood transfusion services and the mitigation strategy adopted at our centre.

**Background:** COVID-19 pandemic and its unprecedented challenge to the blood centres is not yet entirely resolved. Although clinical services are in the resumption phase, the intermittent peak waves of COVID-19 challenges the blood transfusion services, especially with blood shortage. The appropriate confrontation measures are the "need of the hour".

**Methods:** We analyzed our center’s blood transfusion services during the first half-period of the pandemic (Y3) and non-pandemic years 2018(Y1) and 2019(Y2), in two-quarters Q1-January to March and Q2 - April to June. The mitigation strategy adopted at every step of the transfusion service is highlighted.

**Results:** During Q2 of the pandemic year, unlike Q1, blood donations were majorly by repeat donors (83%) at the in-house site (82.5%). The proportion of outdoor donation, deferral, blood collection, demand, and issue in Q2 had a significant drop of 73.4%, 50.7%, 42%, 31.4% and 34.2%, respectively than in Q1. Further, the pandemic year had a significantly less (p<0.05) blood demand and issue, especially for haemorrhage and surgery than non-pandemic years of Q2. The coping strategies include donor education on eligibility and deferral period for COVID-19 through e-sources, recruiting staff donors, recommendation of risk Vs benefit-based transfusion prioritizing emergency over elective need, donor and staff safety measures.

**Conclusions:** The timely adoption of mitigation strategies helped in combating the COVID-19 challenges and taught us to better handle unforeseen events in the future.

**PP_Covid 9**

**Adverse donor reaction during and after plasmapheresis in covid-19 convalescent plasma donors at tertiary care centre of Surat**

Hemendra Patel Nilesh Gamit, Snehal Patel Dimel Bhuvu, Ankita Shah

Surat Municipal Institute of Medical Education and Research, Surat, Gujarat, India

**Background:** COVID-19 caused by SARS-CoV-2 has become a prominent problem that has affected human health, all over world. Convalescent plasma therapy may decrease the severity or shorten the duration disease. Plasmapheresis is the process of collecting plasma, a component of blood. The term specific which refers to the method of collecting the plasma, which is performed by a device used in blood donation that separate the plasma which counting antibody and return rest component to the donor.

**Aims:** To analyze the incidence of adverse reactions occurred during and immediately after plasmapheresis donations.

**Methods:** From July 2020 to January 2021, total of 854 plasmapheresis procedures were performed from the covid-19 recovered patient (after 28 days of recovery) in blood bank of tertiary care centre, Surat.

**Results:** Total 854 procedures were performed during study period from which, 8(0.93%) adverse events were recorded. Out of these 8, 1(12.5%) had nausea and vomiting, 1 (12.5%) had hematoma formation, 4(50%) had mild vasovagal reaction and 2(25%) had tingling and numbness. All this reaction occur during procedure.

**Conclusions:** The result of 6 month study survey document that apheresis procedures performed on cell separators are safe procedures with the low incidence of adverse reactions.

**PP_Covid 10**

**Analysis of COVID-19 convalescent plasma Donors deferral rate at blood bank of tertiary level hospital in south Gujarat**

Yohan Gamit, Pravin Kucha, Snehal Patel, Dimel Bhuvu, Ankita Shah

Surat Municipal Institute of Medical Education and Research, Surat, Gujarat, India

**Background:** Convalescent COVID-19 plasma (CCP) collected from previously infected individuals with COVID-19, is used to treat the patients of COVID-19 based on the principle of passive transfer of COVID-19 antibodies. Plasmapheresis is a procedure included in donor apheresis in which the donor blood is passed through an extraction machine, the plasma are extracted, and the remainder is returned into the circulation. Convalescent Plasma Donor selection is important because donors are the only source for meeting product needs.

**Aims:** To determine the reasons and rates of plasma donor deferral.

**Methods:** Records of plasma donor deferral were retrospectively analyzed from JULY 2020 TO DECEMBE 2020 data. CCP donor were selected according to GSCBT, NBTC & FDCA guideline. The study was carried out at Blood Bank, of south Gujarat.

**Results:** A total of 1401 Sample collected from persons who had applied for plasmapheresis procedure for covid-19 convalescent plasma; 1398 were male and 3 female. A total of 854 persons were found to be eligible as plasmapheresis donors; 852 were male and 2 female. 541 persons were deferred due to various reasons. The most
common reason for donor deferral was due to low titer of COVID IgG antibodies 166(30%) followed by 146(26%) non reactive for COVID IgG antibodies, 100 (18.48%) inappropriate vascular access, 75 (13.8%) Self deferral, 38(7%) low hemoglobin, 8 (1.4%) low platelet count, 6(1.1%) indeterminate TTI result, 2(0.3%) high BP.

**Conclusions:** Studying the frequency and the different causes of CCP donor deferral will help to identify sections of the population which could be targeted for increasing and retaining of the existing pool of voluntary CCP donors and also to guide and provide the necessary essential database for the policy design and programme implementation at local, regional, and national level.

**PP_Covid 11**

**Convalescent plasma collection from COVID-19 recovered donors â€“ a single center experience**
CH Vinay Kumar, B Shanthi, V Sudhir Kumar, K Mahesh Kumar, B Murali Krishna
Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

**Background:** On 11th march 2020, WHO declared novel coronavirus disease (COVID-19) as Pandemic. As of today, 106 million people are effected worldwide and 3 million deaths are attributed to COVID-19. There is a need to look into all possible treatment strategies as there are no proven drugs or specific treatments. Convalescent Plasma Therapy (CPT), a type of passive immunotherapy was used in SARS, MERS, H1N1 and Ebola virus with satisfactory results. Use of Convalescent Plasma for COVID-19 was started in many centres in India. Role of donors in CPT is very important, as donors availability is the key factor in convalescent plasma collection.

**Aims:** Aim of this study is to review of donor selection criteria, review of plasma collection procedure and to evaluate the safety of plasma donors.

**Methods:** Based on the donor eligibility criteria, donors were recruited. After donor questionnaire and physical examination, blood samples were drawn for pre-donation testing. Antibody titres were done with semi-quantitative IgG assay. Donors whose antibody titres were not available at the time of procedure, samples were stored for future testing. Then Plasma collection procedure was started with donors who met all the criteria. All procedures were done with Trima-Accel apheresis machine.

**Results:** Convalescent Plasma was collected from 20 donors with the mean age of donors was 35 years. Antibody titres were available for 9 donors at the time of procedure. 450-500 ml plasma was collected from each donor. Among the 20 donors only one donor got adverse effect from donation.

**Conclusions:** Apart from minor adverse effects, this procedure is safe. We can reduce these adverse effects by proper screening of donors. And getting donors for plasma donation is very difficult & involves number of practical challenges. Lack of awareness, lack of knowledge, more time taken for all screening tests, lengthy procedure, fear of re-infection are some factors. As donating plasma is new to donors, proper approach, repeated motivations and creating awareness in public would increase the number of donors for plasma donation.

**PP_Covid 12**

**Study of duration of persistence of natural immunity after COVID-19 infection**
Harshad Popat Adsul, MV Mallya, Romesh Jain, Sangeeta Amoncar, Sachin Palyekar, Sachin Palyekar
Goa Medical College, Bambolim, Goa, India

**Background:** Repeat convalescent plasma donors were true life saviour. Some of the plasma donors donated even 8-9 times.

**Aims:** The objective of the present study was to find out how long IgG SARS-CoV-2 antibody persist after COVID-19 infection and to know the protective nature of this antibody.

**Methods:** A total 579 convalescent plasma donors donated plasma at our centre over six-month period. Inclusion criteria for plasma donation were lab confirmed COVID-19 recovered patients and 14 days of symptoms free period. All plasmapheresis donors were tested for IgG SARS-CoV-2 antibody through chemiluminescent microparticle immunoassay, CBC, serum protein, blood grouping along with other required test for normal blood donation as per Drugs & Cosmetics Act. Repeat plasma donors were tested again for all the test mention above. At the end of study period history of reinfection with SARS-CoV-2 was asked from all plasmapheresis donors (who donated convalescent plasma at our centre) telephonically.

**Results:** Out of 579 convalescent plasma donors 46 were repeat donors. 46 plasmapheresis donors were tested for repeat IgG SARS-CoV-2 antibody after various time interval when they came for repeat plasma donation. Out of 46 repeat donors, 42 (91.3%) were positive for SARS-CoV-2 antibodies during repeat plasmapheresis. Few (3) plasma donors donated plasma 8-9 times also. It was observed that antibodies against SARS-CoV-2 were present in these donors for more than 60 days with the longest persistence of 141 days in one of the participants. Only 4 donors tested negative when they came for 3rd or 4th time plasma donation. During the period of study, no plasmapheresis donor developed repeat COVID-19 infection.

**Conclusions:** SARS-CoV-2 IgG antibodies persist for varying period after covid-19 infection and provide protection against reinfection. Long term follows up evaluation of durability and protective nature of this antibody may help us to identify population at risk against SARS-CoV-2 reinfection.

**PP_Covid 13**

**Frequency of “ABO” And “RH (D) “blood group in the COVID -19 convalescent plasma (CCP) Donor**
Ashish Patel, Sheela Rana, Dimel Bhuva, Ankita Shah
Surat Municipal Institute of Medical Education and Research, Surat, Gujarat, India

**Background:** The “ABO” and “Rh (D)” Blood Group System is the most important system in Transfusion Medicine. The knowledge of the frequency of “ABO” and “Rh (D)” Blood groups is also very essential for the effective management of convalescent plasma donor in blood banks. It is therefore important to have information on the distribution of these blood groups.

**Aims:** The present study have been undertaken with the objective to provide data on the “ABO” and “Rh(D)” Blood Group Distribution in the convalescent plasma donor.

**Methods:** A total of 1374 sample collected from healthy blood donors who is coming for CCP donation were included in the
Due to Covid 19 pandemic, donor attendance and blood centres maintained adequate blood supply during COVID19 comparable before and after COVID19 lockdown period. Our centres, our data suggests that our voluntary blood collection was cancelled during the lockdown period at our hospital hence blood requirements decreased in this period.

**Results:** The Study showed that among the Rh (D) Positive donors “B Positive” was the most common blood group 510 (37 %) followed by “O Positive” blood group 385 (28.0%), “A Positive” blood group 283 (21%) and least common blood group was “AB Positive” 125 (9.09 %). Among the Rh (D)negative donors Frequency of “O Negative” was 21 (1.89%), “B Negative” 24(1.7%), “A Negative” 16(1.1%) and “AB negative” 5(0.36%). Total Rh (D) Positive donor was 1303 (94.8%) and Rh(D) Negative donor was 71 (5.1%).

**Conclusions:** The present study will be prove out to be very useful for all the blood banks in the south Gujarat to maintain its CCP (Plasma) stock according to the blood group requirements.

**PP_Covid 14**

**Role of voluntary blood donation programme amid COVID19 pandemic blood crisis**

Jigisha K Mer, Vandana Y Patel, Faruq Mulla, Kirti Rathod

D Gorwala Blood Centre, Anand, Gujarat, India

**Background:** The need for blood transfusions continues despite the COVID-19 pandemic and blood collection services are worried about potential blood shortages in the future. Patients with thalassemia, haematology, blood dyscrasias, nutritional anemia cannot be deferred for a long time and the obstetric-neonatal blood requirement too cannot be neglected. Role of voluntary blood donor (VBD) organizations becomes more important in such pandemic for sufficient blood supply. Blood centres that have efficient VBD organizations can sustain a constant inflow of donors.

**Aims:** To observe the pattern of VBD camps, blood collection and issue of components before and after COVID19 pandemic blood crisis.

**Methods:** The present study is a retrospective observational study conducted from March 2019 to December 2020 at A.D. Gorwala Blood Centre associated with Pramukh swami Medical College & Shree Krishna Hospital, Bhaikaka University, Karamsad, Gujarat. We followed Covid NACO Guideline for donor selection criteria. Details of VBD camps, whole blood collections and blood components issues were compared between the period before COVID19 pandemic lockdown (March 2019 to December 2019) and after COVID19 pandemic lockdown (March 2020 to December 2020).

**Results:** Our blood centre organized a total of 64 VBD camps with a total of 2036 VBD whole blood collections and issued a total of 11497 different blood component units before COVID19 pandemic lockdown (March 2019-December 2019). Our blood centre organized a total of 43 VBD camps with a total of 1469 whole blood collections, 26 Covid convalescent plasma and issued a total of 9400 different blood component units during COVID19 pandemic lockdown (March 2020-December 2020). All elective surgeries were cancelled during the lockdown period at our hospital hence blood requirements decreased in this period.

**Conclusions:** Despite blood crisis all over the world in blood centres, our data suggests that our voluntary blood collection was comparable before and after COVID19 lockdown period. Our blood centre maintained adequate blood supply during COVID19 pandemic and this was appreciated by State Blood Transfusion Council for noble cause. Identifying key areas, coordinated strategies and their timely execution is essential for transfusion services to tide over the current COVID-19 pandemic.

**Impact of COVID 19 pandemic on blood donation trends at aiims rishikesh and strategies employed -A two year comparative study**

Anju R Kurup, Gita Negi, Yatendra Mohan, Aswin K Mohan, Vnodi Thapliyal

AIIMS, Rishikesh, Uttarakhand, India

**Background:** The essential need of blood centres is to maintain blood supply since blood transfusions are lifesaving in many conditions. The outbreak of pneumonia reported in Wuhan, China by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been declared as pandemic by the World Health Organization. By December 2020, there had been 79 million cases with more than 1.7 million deaths reported globally. This is a retrospective study to analyse the blood donation trends prior to and during the COVID-19 pandemic and strategies adopted to face similar public emergencies in the future.

**Methods:** The study was conducted in Department of Transfusion Medicine at All India Institute of Medical Sciences, Rishikesh. Data from in-house donor attendance registers and voluntary blood donation camps records were retrospectively obtained for the period from January 2019 to October 2020. Data were plotted on graphs and the trend was analysed.

**Results:** Due to Covid 19 pandemic, donor attendance and voluntary blood donation camps dropped initially (total donations for the year 2019 and 2020 were 16921 and 10042 respectively) but there has been gradual increase in blood supply. The blood demand during the crisis could be met as the supply remained adequate due to various strategies taken by our blood centre which included small in-house camps, donor passes, mobile blood bank etc. The number of camps conducted in both the years were 55 (2019) and 40 (2020) respectively. As per our observation, camp donations had a drop from 18.23% in 2019 to 15.6% in 2020.

**Conclusions:** The COVID-19 pandemic had a negative impact on donor attendance initially but later there has been gradual increase in blood supply. The blood requests received were comparatively equal to the supply at our blood centre. Guidelines that prioritize blood transfusion should be prepared at the beginning of emergencies similar to this pandemic. Innovative strategies and out of the box solutions can enable us to combat the blood donor crisis during this pandemic.

**Inventory management during COVID-19 at a regional blood centre**

D Deepa, P Arumugam, Swathandran Hansavardhini

The Tamilnadu Dr M.G.R Medical University, Chennai, Tamil Nadu, India

**Background:** COVID -19 is an infectious disease caused by severe
acute respiratory syndrome coronavirus-2. It was first identified in Wuhan, China in December 2019 and has spread globally, resulting in a pandemic. It is primarily transmitted by respiratory route. We encountered various challenges due to strict lock-down, disruption of transport services and reduction in staff attendance leading to a significant reduction in our blood inventory.

**Aim and Objective:** To analyze the challenges faced by blood transfusion services to meet the demand in pandemic situation

**Methods:** Retrospective study was performed from March 2020 to December 2020 in our center. Voluntary Blood donors (VBD) were motivated through telephonic calls and explained about blood requirements. During lockdown, as per NBTC advisory, donor appointment letters were given to prospective donors through email to facilitate their unimpeded travel to our Centre. On arrival donors were advised to adhere to COVID-19 sanitary precautions and to ensure social distancing. As per NACO guidelines, donors with recent travel history/diagnosed with COVID-19 or had contact with COVID-19 positive patient were deferred for 28 days. To enhance blood safety, those who had donated were personally contacted over telephone to enquire their health status for 14 days. Collected blood units were quarantined for 14 days to avoid window period transmission.

**Results:** Despite our efforts, only 201 VBD donated at our center. 99% (199) were male donors, 75.6% (152) were in the age group of 18-30 years. The present study witnessed 2 at risk donors who were deferred due to history of travel to COVID-19 hotspot and fever in the past 28 days. In view of proper pre donation counseling, two of the male donors reported COVID-19 positive on 5th and 7th day post donation respectively. Based on NBTC guidelines the unutilized components prepared from these units were discarded.

**Conclusion:** The demand for blood in emergency care is the high priority in health care to save precious lives. COVID-19 pandemic has exposed the gaps and challenges that need to be addressed, this would enable new strategies to be designed and face similar pandemics in future.

**PP_Covid 18**

**Pre donation council of COVID convalsant plasma donors in post covid patient at M.P.Shah medical collagen, Jamnagar**

Vinod Kumar Panicker

Saveetha Medical College Hospital, Chennai, Tamil Nadu, India

**Background:** The world is facing an unpredictable challenge with communities and economies everywhere affected by the growing COVID-19 Pandemic. Corona viruses are group of RNA viruses which cause respiratory tract infections. There are no vaccines or anti-viral drugs to prevent /treat human corona virus infection. In this scenario, convalescent plasma therapy is emerging out as adjuvant therapy. Passive immunization using the plasma of recovered COVID-19 donor, which contains specific IgG and IgM anti SARS-COV-19 antibodies that neutralize the virus offers a suitable therapeutic strategy. All of the recovered COVID-19 patients who are eligible for plasma donation are not willing for plasma donation. For such patients counselling of plasma donor is necessary.

**Aims:** To convince COVID-19 recovered patient for covid 19 convalescent plasma donation. Before collection of covid 19 convalescence plasma donors are free from any type of force and always volunteers.

**Methods:** A retrospective study was conducted from 1/07/2020 to 30/12/2020(6 month).

Data collected from post-covid plasma donors register in our department. Total 500 post covid donors counselled for donation of plasma. We reached to donors by contact via phone and face to face council.

**Conclusions:** According to study data 50% donors not contact. Rest of 50% donors refusal ratio is 28%.Remaining 22% donors where counselled and 69% accept and 31% defer due to temporary and permanent defer.

**PP_Covid 19**

**Voluntary blood donors’ willingness to donate blood during COVID-19 Pandemic – a prospective study**

**Aims:** To analyse the susceptibility of blood groups in Covid 19 patients

**Methods:** A retrospective study done in Department of Transfusion Medicine, Medical College and Hospital, Chennai, Tamilnadu. This study was done for a period of ten months from March 2020 to December 2020. All SARS COV-2 RT-PCR positive patients including home quarantined and dead patients during the study period was included in this study. Data regarding patient’s blood group and RT-PCR was collected from Medical records department of the Hospital and analysed in excel.

**Results:** The ABO blood group in 1808 normal people in Chennai displayed a percentage distribution of 20.6%, 34.07%, 6.25% and 38.94% for A, B, AB and O, respectively, while the 1000 patients with COVID-19 from our Tertiary care Hospital at Chennai, showed an ABO distribution of 37.7%, 25.9%, 3.2% and 33.2% for A, B, AB and O respectively. The percentage of A blood group in patients with COVID-19 was significantly higher than that in normal people, being 37.7% in the former vs 20.6% in the later. The percentage of O blood group in patients with COVID-19 was significantly lower than that in normal people, being 33.2% in the former vs 38.4% in the later.

**Conclusion:** The study suggest that blood type A might be more susceptible to infect COVID-19 while blood type O might be less susceptible to infect COVID-19; there were no correlation between ABO blood group and severity or demise of COVID-19. However, more investigation and research are warranted to clarify the relationship between COVID-19 and ABO blood type.
Abstracts

Manju, Arumugam P, Swathandran Hamsavardhini
The Tamilnad Dr M.G.R Medical University, Chennai, Tamil Nadu, India

Background: Outbreak of Covid-19 played major impact on blood supply management in India. In April, 2020, the active case ratio was 96% and it reduced to 0.5% in January, 2021. Due to restrictions and mass lock down imposed by the Government, the blood donation camp activities faced a challenge. Nationwide, blood donation rate has reduced, from April to December 2020, only 29,390 Units were collected. This leads to drop in blood collection in spite of persistent demand for emergency needs and continuous hemotherapy.

Aims: To identify the willingness of voluntary blood donor to donate blood during Covid-19 pandemic.

Methods: Prospective observational design used for the study. During Covid-19 outbreak from April 2020 to December 2020 totally 980 regular voluntary blood donors were motivated for Blood donation through telephonic conversation at site convenient for them. The donors were motivated regarding demand and supply of blood during Covid-19. Irrespective of Covid-19 pandemic, the department was functioning regularly to meet the need for blood components in Obstetric, Dialysis and oncology units. The Donors belief and intention on blood donation were identified by a questionnaire.

Results: From 980 Regular voluntary blood donors, 144 (14.6%) had positive intention to donate blood. Total blood units were only 115. 98% (113) were from regular voluntary blood donors and 2% (2) were replacement donors. Majority was between 18 – 40 years of age [83% (94)]. All were male donors with intend for pro-social behavior. 55.7% (63) and 19.4% (22) had donated 2-10 times and > 10 times respectively. 80% (90) of Donors had donated regularly at 4 – 12 months interval. But due to family restrictions, 11.6% (114) were not willing to donate, 10.2 % (100) were not able to donate due to travel restrictions and 63.6% (624) were fear of Covid-19 transmission risk. All 115 donors were found Sero-Negative for mandatory TTI screening.

Conclusion: The significant reduction in blood donation was observed during novel Covid-19 pandemic among regular voluntary blood donors. The blood centers should develop SOP to increase the blood donation during such inexperienced infectious disease outbreak scenarios.

PP Covid 20

Evalution of donor deferral pattern in COVID-19 convalescent plasma donor
Krishna Mayani, Shweta Upadhyay, Jitendra Vachhani
M.P.Shah Government Medical College, Jamnagar, Gujarat, India

Background: The whole world is facing challenging time due to COVID-19 pandemic. Passive immunization using the plasma of recovered COVID-19 donors, which contains specific IgG and IgM anti SARS-COV-19 antibodies that neutralize the virus offers a suitable therapeutic strategy in the absence of effective treatment. Convalescent plasma refers to plasma collected from individual, following resolution of infection and development of antibodies. Convalescent plasma may offer the only short-term strategy to confer immediate immunity to susceptible individuals. Many donors willing to donate convalescent plasma but defer due to donation criteria.

Aims: The aim of this study is to evaluate the donor deferral pattern in COVID-19 convalescent plasma donor.

Methods: This was a retro-spective study in COVID-19 convalescent plasma donor over a period of 6 months. For plasma donation, donor selection standard operating procedure was followed and donor subjected to questionnaire.

Results: In recent COVID-19 pandemic, 1st case of COVID-19 was reported at 4th April 2020 in Jamnagar. 1st convalescent plasma donated on 6th July 2020 in Jamnagar. A total of 300 donors counselled for convalescent plasma donation from July 2020 to December 2020. A total of 102 (34%) donors were deferred for different reasons includes 78 temporary deferred (76.47%) & 24 permanently deferred (23.52%) as per the guidelines given by ICMR. Out of 277 male registered donors 82 (27.33%) & out of 23 female registered donors 20 (66.6%) donors were deferred respectively.

Conclusion: Most common cause of donor deferral is non development of IgG anti SARS-COV-19 antibodies in male donor and low Hb in female donor.

PP Covid 21

The response of COVID-19 pcr positive health care worker for convalescent plasma donation
Ansuman Sahu, Satya Prakash, Somnath Mukherjee
All India Institute of Medical Sciences, Bhubaneswar, Odisha, India

Background: The coronavirus pandemic is the ongoing global pandemic of coronavirus virus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first identified in December 2019 in Wuhan, China. Though specific treatment is not available to date, Convalescent Plasma (CP) is being tried in some patients to confer passive immunity. The source of CP is a donor recovered from COVID-19 disease. It can be collected by apheresis or by plasma separated from whole blood donation. A healthy recovered donor should be motivated to donate either of these. Motivating convalescent plasma donation is a challenge for Blood Centers in a developing country like India due to various stigma involving whole blood donation or donation of the component by apheresis.

Aims: This study’s objective was to evaluate the response of PCR positive recovered COVID-19 health care workers for plasma donation and motivating factors as well as barriers to CP donation.

Methods: A retrospective interview-based study from August 2020 to November 2020 was planned on the health care workers (HCWs) of AIIMS, Bhubaneswar, who have recovered from COVID-19. The list of COVID-19 positive patients who attended our Institute was taken from the screening area. A dedicated Medical Social Worker was trained for counselling of recovered donor (RD) for CP donation. He interviewed and documented the response of COVID-19 pcr positive HCWs for plasma donation during July 2020 to November 2020.

Results: A total of 4375 cases came positive for COVID-19 by 15th October 2020, out of which 626 were HCWs of the Institution. A total of 300 donors were counselled for convalescent plasma donation over a period of 6 months. Only 25.8% of HCWs were motivated for Blood donation because of weakness, fear of losing antibody, fear of being cryogened or reserated, fear of being infertile, and other stigma as that of regular blood donation.

Conclusions: Only 25.8% of health care workers were motivated for convalescent plasma donation in our Institute. Various stigma
Abstracts

Plasma donation is still prevalent in health care workers as 25.6% were not interested in this altruistic behaviour. For an effective CP donation programme, proper information, education, and communication are required to raise awareness among the recovered donors.

PP_Covid 22

Harvesting covid convalescent plasma using latest generation apheresis systems: Analysing factors associated with donor, machine and manufactured product

Rathina Nath Biswas, Sudipta Sekhar Das, RU Zaman, Subrata Sen, Mohanlal Mishra

Apollo Gleneagles Hospitals, Kolkata, West Bengal, India

Background: The novel coronavirus disease-2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a contagious respiratory disease and is now a worldwide pandemic. Till date there is no proven effective therapy for COVID-19 and a number of treatment options are on clinical trial. Transfusion of COVID convalescent plasma (CCP) has been found to be a useful and logistically feasible therapeutic strategy in COVID-19. Appropriate guidelines describing donor eligibility criteria, CCP collection and storage and clinical transfusion of CCP have been described. In this study we discussed the collection of CCP by plasmapheresis, quality of product obtained and donor adverse reactions associated with CCP collection.

Aims: To analyse the quality of product obtained and donor adverse reactions associated with CCP collection by Spectra Optia and Terumo BCT cell separator.

Methods: The prospective observational study was conducted in the hospital blood centre from June 2020 to October 2020 after obtaining ethical approval from the Institute Ethics Committee. The study included 209 screened eligible donors and 186 procedures of plasmapheresis for collection of CCP. Donor selection and CCP collection were done as per guidelines described by regulatory bodies. Statistical analysis was done using the SPSS statistical package.

Results: The median age of eligible donors was 42 years with a male preponderance. Mean Anti-SARS-CoV-2 IgG value (S/Co) was 11.8 in eligible donors. Total mean whole blood volume processed to collect the targeted plasma volume, mean utilization of anticoagulant and mean time needed to complete the procedure were significantly more in the Spectra Optia cell separator (p<0.05). Quality of plasma separated by Trima accel and Spectra Optia was found to be comparable. A total of 9 (5.1%) donors experienced adverse events during or after plasmapheresis.

Conclusions: Plasmapheresis using new generation automated cell separators has the potential to generate CCP of optimized quality and potency. More emphasis is needed on the quality control of CCP with regards to establishment of defined quality markers and their allowable limits. Appropriate donor vigilance, donor selection and equipment management during procedure may significantly prevent adverse events related to plasmapheresis.

PP_Covid 23

Knowledge, attitude and practices among convalescent plasma donors attending a tertiary care center in south-east Karnataka during COVID-19 pandemic

AM Gayathri, R Sreelatha

Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India

Background: COVID-19 affected lives of millions of people around the globe and claimed lives of thousands. Currently, there are no approved treatments for COVID-19 and management plan is supportive care with supplemental oxygen and mechanical ventilation. Many other drugs are under trial and convalescent plasma therapy was also tried as a part of clinical trial. Our Institute was involved in PLACID trial under ICMR and hence recovered COVID-19 patients were recruited with the help of social media, non-governmental organisations (NGO) and incentives announced from government during the lockdown period.

Aims: To study Knowledge, Attitude and Practices regarding Convalescent plasma donation among convalescent plasma donors attending a tertiary care center in South-East Karnataka.

Methods: 51 convalescent plasma donors among 93 who attended in-house convalescent apheresis plasma donation over a period between 1st July 2020 to 15th January 2021 gave consent for participation in this study and were given designed questionnaire.

Results: 54.83% convalescent plasma donors responded to the questionnaire. 78.3% were voluntary donors and 54.9% were motivated through social media followed by NGOs (37.25%) and government incentives (11.32%). 94.11% donors were having a previous history of blood donation. Only 19.6% plasma donors were aware about the process of apheresis and only 5.8% had a previous history of apheresis. 83.6% donors had a positive attitude towards convalescent plasma donation and convalescent plasma therapy and 82.35% supported voluntary convalescent plasma donation. 96.07% donors believe the reason for reduced response to plasma donations among COVID-19 recovered patients were due to lack of awareness followed by weakness following donation (84.31%), fear of loss of antibodies against COVID-19(72.55%), and reinfection from hospital premises (23.53%).

Conclusions: Voluntary plasma donations were more than replacement donations mostly recruited through social media and NGOs. Majority of the donors have positive attitude towards the convalescent plasma donation and therapy. Lack of proper awareness towards plasma donation is the major reason for recovered patients not coming forward for plasma donation.

PP_Covid 24

Impact of COVID 19 outbreak on the blood transfusion services in a tertiary care hospital of JAMMU region

Neeti Dutt, Meena Sidhu, Anshu Mahajan, Salve Sharma

Government Medical College, Jammu, Jammu and Kashmir, India

Background: The outbreak of COVID-19 was declared as a Public Health Emergency on 30th January, 2020 by the World Health Organisation and a pandemic on 11th March, 2020. A national lockdown was imposed in the country on March 24, 2020, by the Government of India to contain virus spread. After this, majority of services have come to standstill except essential services. Blood Transfusion Services (BTS) being an essential medical service, shall cater patient needs and should remain uninterrupted
Abstracts

The main haematological findings were increased lymphocyte count, decreased lymphocyte count, increased levels of d-Dimer and deranged PT. Out of the 25 cases under study, 72% (18) showed increase in NLR and d-Dimer levels while 64% (16) showed prolonged PT. Most of the patients had a normal total leucocyte count that is 68% (17) while 44% (11) showed lymphopenia. RBC count, Haemoglobin and platelet count were mostly in normal ranges and no significant variations were seen.

Conclusions: NLR, PT and d-Dimer levels show abnormalities in corona virus patients and these are easily available and important investigations which can predict early course of disease as well as alarm the treating clinician about the haematological aspect of disease progression. This would minimize morbidity and mortality arising out of severe complications of corona virus disease.

Comparison of Prothrombin Time, D-dimer and Neutrophil: Lymphocyte ratio IN RT-PCR positive COVID-19 patients

Raghav Kapoor, SH Rajeshwari
Jawaharlal Nehru Medical College, Belagavi, Karnataka, India

Background: Currently, novel corona virus infection (COVID-19) has affected more than 200 countries and regions around the world. More than 100 million people have been infected and nearly 2 million have died. Most patients infected with novel corona virus presents with Acute respiratory tract infection in early course, and some patients quickly progress to acute respiratory distress syndrome, acute respiratory failure, or other severe complications. Complete blood count (CBC) is a basic and economical investigation done for every admitted patient. CBC, along with Coagulation parameters provide a potential information about haematological aspect of disease progression. In a study, Wang D et al. took first 138 laboratory-confirmed cases with COVID-19 showed the changes of neutrophil count, lymphocyte count, and D-dimer levels. This study is aimed at comparing cbc and coagulation parameters with special reference to Neutrophil : Lymphocyte ratio (NLR), prothrombin time (PT) and d-Dimer levels.

Aims: Comparison and Correlation of NLR, PT and d-Dimer levels in Covid – 19 patients.

Methods: First 25 rt-PCR confirmed covid 19 patients admitted in KLES Dr.Prabhakar Kore Hospital and Medical research centre, Belagavi were included. Blood Samples were drawn (EDTA and Citrated vacutainers) from patients and the CBC and Coagulation parameters were analyzed using CAL 6000 – Mindray haematology analyzer and ACL TOP 500-CTS respectively. The readings are tabulated and compared.

Results: The main haematological findings were increased neutrophil count, decreased lymphocyte count, increased levels of d-Dimer and deranged PT. Out of the 25 cases under study, 72% (18) showed increase in NLR and d-Dimer levels while 64% (16) showed prolonged PT. Most of the patients had a normal total leucocyte count that is 68% (17) while 44% (11) showed lymphopenia. RBC count, Haemoglobin and platelet count were mostly in normal ranges and no significant variations were seen.

Conclusions: NLR, PT and d-Dimer levels show abnormalities in corona virus patients and these are easily available and important investigations which can predict early course of disease as well as alarm the treating clinician about the haematological aspect of disease progression. This would minimize morbidity and mortality arising out of severe complications of corona virus disease.

Blood supply management and utilization during the COVID-19 pandemic

Abhinav Verma
Max Super Speciality Hospital Vaishali, Ghaziabad, Uttar Pradesh, India

Background: In March 2020, Government of India began issuing social distancing guidelines. These measures also caused cancellation of blood drives and reduced the number of blood donors which severely affected the availability of blood products. Since the Introduction of blood transfusion into a clinical practice, its appropriate use has always been the subject of debate. Excessive cross matching in addition to being wasteful of resources has adverse consequences on the management of blood inventory and blood quality. Today, the crossmatch/to transfusion (C/T) ratio is an important National Quality Indicator in many developed countries. In these countries it is used to assess the appropriate use of services offered by the transfusion laboratory service to the Clinicians/Surgeons. A C:T ratio of > 2 indicates excessive ordering of crossmatched blood.

C:T ratio = Total Number of crossmatched Red blood cell (RBC) units
Actual Number of RBC units transfused

Aims: The main aim of this study is to highlight the importance of Blood Supply Management and Utilization During The COVID-19 Pandemic.

Methods: 6 months of retrospective data during the COVID-19 pandemic from March 2020 to August 2020 was collected which included RBC crossmatch requirements requests and all RBC units transfused. We made multiple synchronous efforts like calling voluntary blood donors to increase blood collection and alignment among various clinical departments. Enhanced monitoring and triage of blood product was used by activating MTP (Massive Blood Transfusion Protocol) and MS-BOS(Maximum Surgical Blood Ordering Schedule) for appropriate blood utilization.

Results: A total of 3854 units of packed red blood cells were crossmatched and 2379 units were transfused. The overall C/T ratio was 1.62. The outcome of the study was compliance of overall C/T ratio with the international guidelines.

Conclusions: To conclude the duration of the pandemic is still unknown and the knowledge of the COVID-19 is evolving every
day. Challenges for blood availability will remain present for an unknown duration. So the efforts to increase blood donation in the general population including an efficient communication strategy with the voluntary blood donors as well as implementation of safe blood drive protocols will help go a long way into the blood supply management and utilization during this pandemic.

**PP_Covid 27**

A retrospective study on the effect of COVID19 pandemic on voluntary blood donations in blood bank as well as blood donation camps in Navi Mumbai, Maharashtra, India

Vinita Gara Rao, Shweta Dhote, Iqbal Singh

MGM Medical College, Navi Mumbai, Maharashtra, India

**Background:** Due to the COVID19 pandemic outbreak, in order to avoid mass gatherings, there has been a considerable decrease in voluntary blood donation in the blood banks as well as suspension of organising voluntary blood donation camps. This study was done to assess the effect of lockdown on blood supply management before and after the outbreak.

**Aim:** The study was conducted to determine the impact of COVID19 pandemic on voluntary blood donations in blood donation camps and blood bank.

**Methods:** This retrospective study was done in the Dept. of Immuno-hematology & Transfusion Medicine at MGM Medical College & Hospital, Navi Mumbai, for 6 months, from December 2019 to May 2020 in 2 phases: phase 1 - prior to lockdown (December 2019 – February 2020), and phase 2 – after declaring lockdown (March 2020 – May 2020).

**Results:** A total of 1637 donations were recorded in phase 1 – prior to lockdown, between December 2019 and February 2020, whereas, 924 donations were recorded in phase 2 - after declaring lockdown between March 2020 and May 2020.

**Conclusions:** The blood transfusion services including blood supply and voluntary donors were severely affected during the COVID-19 pandemic. For tackling emergencies such as the current pandemic, proper guidelines should be kept prepared. In order to maintain demand and supply of blood, and to prevent sudden shortage of blood supply, suitable measures should be taken.

**PP_Covid 28**

Convalescent plasma therapy for Covid-19 patients a study of 20 procedures- A single tertiary care center experience

CH Vinay Kumar, B Shanthi, V Sudhir Kumar, K Mahesh Kumar, B Murali Krishna

Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

**Background:** On 11th March 2020, WHO declared novel coronavirus disease (COVID-19) as Pandemic. As of today, 106 million people are affected worldwide and 3 million deaths are attributed to COVID-19. There is a need to look into all possible treatment strategies as there are no proven drugs or specific treatments. Convalescent Plasma Therapy (CPT), a type of passive immunotherapy was used in SARS, MERS, H1N1 and Ebola virus with satisfactory results. Use of Convalescent Plasma for COVID-19 was started in many centres in India. Role of donors in CPT is very important, as donors availability is the key factor in convalescent plasma collection.

**Aims:** To review of donor selection criteria, review of plasma collection procedure and to evaluate the safety of plasma donors.

**Methods:** Based on the donor eligibility criteria, donors were recruited. After donor questionnaire and physical examination, blood samples were drawn for pre-donation testing. Antibody titres were done with semi-quantitative IgG assay. Donors whose antibody titres were not available at the time of procedure, samples were stored for future testing. Then Plasma collection procedure was started with donors who met all the criteria. All procedures were done with Trima-Accel apheresis machine.

**Results:** Convalescent Plasma was collected from 20 donors with the mean age of donors was 35 years. Antibody titres were available for 9 donors at the time of procedure. 450-500 ml plasma was collected from each donor. Among the 20 donors only one donor got adverse effect from donation.

**Conclusions:** Apart from minor adverse effects, this procedure is safe. We can reduce these adverse effects by proper screening of donors. And getting donors for plasma donation is very difficult & involves number of practical challenges. Lack of awareness, lack of knowledge, more time taken for all screening tests, lengthy procedure, fear of re-infection are some factors. As donating plasma is new to donors, proper approach, repeated motivations and creating awareness in public would increase the number of donors for plasma donation.

**PP_Covid 29**

Recruitment of convalescent plasma donors for COVID-19 patients and its associated challenges

K Mahesh Kumar, B Shanthi, Sudhir Kumar Vujhini, Murali Krishna Bogi

Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

**Background:** The cornerstone of management of COVID-19 is primarily supportive care, which includes treatment to relieve symptoms, fluid replacement, oxygen support and positioning of the patient as needed and drugs which limit the viral load and prevent the damage to various vital organs. Passive immunization with convalescent plasma has been proposed as a potential treatment. Plasma obtained from the recovered COVID-19 patient contains anti-bodies against SARS-CoV2.

**Aims:** To analyze the challenges encountered in recruiting and in collection of convalescent plasma from COVID recovered patients.

**Methods:** It is a prospective study carried out in a tertiary care hospital blood bank catering to COVID patients. This study was carried out between August 2020 and December 2020. For analyzing the challenges in the collection of convalescent plasma, a list of recovered patients between age 18 years and 50 years was shortlisted and contacted telephonically requesting, motivating and encouraging them to donate plasma for the needy COVID-19 patients. All the queries of the eligible donors were clarified telephonically or personally who visited the blood bank. Their response was documented and analyzed.

**Results:** A total of 82 eligible recovered COVID-19 cases treated at our tertiary care hospital were contacted and requested for donation of convalescent plasma after applying deferral criteria. Only 20 donors successfully donated convalescent plasma for the
Abstracts
Since December 2019 many cases of pneumonia affecting blood utilization in COVID patients. The impact of patient factors may help further elucidate mechanisms that may reduce blood supply, our study demonstrated that hospitalized infection with SARS CoV-2, whereas blood group O was associated with other treatments.

Conclusions: Blood donation is an altruistic gesture, but due to the pandemic situation there is a drastic fall in the voluntary donors due to the fear of contacting infection from hospital premises or environment and hospital staff. It has become a major challenge for the medical profession and blood bank to motivate these eligible and potential donors about the advantages of this precious product and its usefulness in the COVID-19 patients who are not responsive to other treatments.

PP_Covid 30
Blood group distribution and transfusion requirements in COVID 19 patients-A retrospective study
Manisha Agrawal, Shanthi Bonagiri, Sudhir Kumar Vujhini, Mahesh Kumar Kandukuri Murali Krishna Bogi
Nizam’s Institute of Medical Sciences, Hyderabad, Telangana, India

Background: Since December 2019 many cases of pneumonia caused by the novel coronavirus have been discovered in Wuhan, Hubei Province.WHO officially named it as coronavirus disease 2019 (COVID 19) in February 2020. The human blood type has been used as a genetic marker. By studying the relationship of human blood type with virus infection, it is possible to determine the susceptibility to the virus of people with different blood types. As patients infected with severe COVID-19 often present coagulopathy, appropriate prevention and treatment for haemodynamics control are most essential.

Aims: Our main aim is to examine the association of ABO blood group distribution and clinical characteristics and laboratory parameters with COVID 19. We also studied transfusion demand in COVID19 patients.

Methods: This was a retrospective study. We studied samples from 136 patients with confirmed COVID 19 that were sent to our blood bank for pretransfusion testing and ABO Rh typing during admission period. Blood grouping and clinical and laboratory parameters was collected through HIS NIMS. Transfusion data of patients was collected from issue register of NIMS blood bank.

Results: Out of total 136 patients 90 are males and 46 are females. Mean age of patients is 45.5yrs - A are 29.4%, B - 27.2%, AB - 6.6% and O 36.8%. Length of hospital stay among A - 12.5, B - 13.2, AB - 8.8, O - 11 days respectively. Mean Hb of A - 12.1, B - 12.6, AB - 12.5, O is 12.4 gm/dl respectively. Mean D-dimer among A - 392, B - 248, AB - 304, O - 176 ng/ml respectively. C reactive protein is positive in 57.5% - A, 48.6% - B, 22.2% - AB and 48% - O. Mortality in A - 15%, B - 11.4%, AB - 0%, O - 6.5%. Total 8% (11/136) of patients are transfused with blood and blood components.

Conclusions: Patients with blood group A had an increased risk of infection with SARS CoV-2, whereas blood group O was associated with a decreased risk, indicating that certain ABO blood groups were correlated with SARS-CoV-2 susceptibility. While pandemics may reduce blood supply, our study demonstrated that hospitalized COVID 19 patients had low blood usage. Further studies examining the impact of patient factors may help further elucidate mechanisms affecting blood utilization in COVID patients.

PP_Covid 31
Exploration of COVID-19 related fears deterring blood donation in India
Suchet Sachdev, Kamal Kishore, Lakhvinder Singh, Divjot Singh Lamba, Rekha Hans, Hari Krishan Dhawan, Sandeep Grover, Ratti Ram Sharma
Postgraduate Institute of Medical Education and Research, Chandigarh, India

Background: The coronavirus pandemic (COVID-19) has impacted and pushed the health care settings to extreme across the globe. It was extremely challenging to sustain blood donation and strategies could be formulated on knowing fears hindering blood donation.

Methods: A cross-sectional survey using Google Forms® through WhatsApp, and email after obtaining the ethical clearance using snowball sampling. The survey questionnaire was validated for content using Delphi technique, pilot tested for finalization.

Results: 749 participants who had not donated since pandemic reported the reasons for not donating blood. A little more than half (55%) reported either one or more than one fear during the pandemic which hindered blood donation. The lack of confidence in the safety measures at the hospital and fear of transmitting infection to family, was reported by 55% of the participants each respectively. The fear of contracting COVID-19, was reported by 27% of the participants. Fear of weaken of their immunity and the fear of hospital entry, was reported by 20% and 19% of the participants respectively. The fear of COVID-19 hospital infection risk and family restrictions was reported 17% and 16% of the participants respectively. The fear of COVID-19 hospital infection risk and hospital entry was statistically significant across the age groups that are eligible for blood donation.

Conclusions: The clear and dedicated confidence building measures to sustain blood donation using all communication modalities clearly emerge as the most important strategies to augment blood donation in the COVID-19 pandemic. The measures should include information about implementation of safety measures to mitigate COVID-19 transmission at the blood centres, and that the act of blood donation does not increase risk of COVID-19 and therefore the risk of transmission of infection to family. The consideration of shifting blood donation towards non-hospital-based blood centres, along with provision of donor transport and donor travel passes. The focus should be to motivate donations from students and middle-aged potential donors. For optimizing resources all this would be best implemented as integral part of the disaster management directly under local administration under hub and spoke model of centralizing blood collection with supply.

PP_Covid 32
Impact of COVID-19 in the blood transfusion services in a tertiary care centre in south Kerala
Angel Mary Sam, Debasish Gupta
SCTIMST, Thiruvananthapuram, Kerala, India

Background: The Corona Virus Disease (COVID-19) has made a huge impact in every segment of life which in turn has made a major destabilizing threat to the blood transfusion services also. The pandemic worsened the already existing shortage of voluntary
blood donors. In order to meet the needs of the patients, our blood centre made efforts to counter-balance the acute changes caused by COVID-19 in various aspects pertaining to the blood transfusion services in our hospital.

**Aims:** To assess the rate of decrease in donor registration, blood collection and camps. To assess and compare the Transfusion Transmissible Infection (TTI) rates, difference in blood unit expiry and blood utilization rates pre-COVID and during the pandemic.

**Methods:** Data of 2019 (pre-COVID) and 2020 (during COVID) from the Department of Transfusion Medicine, Sree Chitra Tirunal Institute for Medical Sciences and Technology were collected retrospectively to extract and make a comparison between donor registration, blood collection, camps organized, deferrals, TTI statistics, expiry of RBCs and the blood utilization rates between the two years.

**Results:** There was a 36.72% and 30.45% decrease in the total registration and total collection respectively. The donor pool was male dominant in both years. Voluntary donations dropped by 58.86%. Number of camps diminished by 70.27%. There was a rise in TTI positive donations in 2020. PRBC discs due to expiry was lesser during the pandemic (1.67%) compared to pre-COVID period (3.64%). There was no marked difference in the blood utilization rate between the two years.

**Conclusions:** Switching onto accepting replacement blood donation during the COVID pandemic, provided to meet the blood requirements in our Blood Centre despite the drastic decrease in the number of voluntary donors and blood donation camps. Autologous donation was also implemented. Introduction of replacement donations could be the reason for the rise in TTI positive units.

**PP_QA 1**

**Assessment of quality indicators in blood transfusion services- An institutional study**

MH Soumya, Subhashish Das, R Kalyani

**Background:** Blood transfusion has become an essential part of patient management in modern medicine. Blood is a scarce resource and the blood needs still exceed its supply. Inappropriate ordering and use of blood can burden the physical and human resources of a health-care facility and increase the cost of medical care. The Blood Transfusion Services (BTS) plays an important role and is responsible for ensuring sufficiency, quality, and safety of the blood supply. BTS can reach the highest level of efficiency through implementation of quality management system in all phases of blood collection, processing and storage. The National accreditation board for hospitals and healthcare providers (NABH) has recognized quality indicators as an important tool for quality improvement. It helps to identify areas of poor performance and measures improvement. It provides a visible and safety of the various process in the blood bank pertaining to collection, processing, testing and transfusion of blood products. Data from many developing countries have shown gross over-ordering of blood in 40% to 70% of patients transfused.

**Aims:** To evaluate the quality indicators & to analyze the effectiveness of blood transfusion services.

**Methods:** Study Design – Cross-Sectional observational study. Source of Data: The records of all the patients, daily blood collection, cross-matching, actual transfusion, Adverse reaction, Transfusion Transmitted Disease (TTD) and blood stock were taken & evaluated department wise C:T ratio.

**Results:** The total blood collection during the period was 12,450 units, of which the voluntary blood donors constituted 46.12% and the replacement blood donors, 53.88%. The total packed red blood cells and blood components issued were 13,053. The total cross-matched RBC units were 10,101 and the total RBC units transfused were 9821. A total of 48 RBC containing units were discarded including 20 expired units and 28 wasted units. The C:T ratio was found to be 1.02 and TI was 0.97. The transfusion probability (% TI) was calculated as 97.2%.

**Discussion:** Blood safety depends on the recruitment and retention of blood donors. It is important to promote high standards of quality in all aspects of production, patient care, and service to ensure no risk of transmitting infection, safe blood collection procedures, correct testing for TTIs, accurate blood grouping and compatibility testing and the appropriate use and safe administration of blood.

**PP_QA 2**

**Analysis of various causes of discarding of blood components at a blood bank in a tertiary care centre in north India**

Devinder Paul Singh, Meena Sidhu, Naveen Akhtar, Neeti Dutt, Saive Sharma

**Background:** Blood and blood products (packed RBCs, FFP, platelets) are used across the various departments of a hospital every day to save many lives. Wastage of all blood components, including RBCs, platelets (PLT), and plasma, is an important issue for hospitals worldwide. Therefore, it is essential for each blood transfusion service to periodically assess the causes of blood discard to prevent loss of already scarce and precious resource.

**Aims:** This study was undertaken to assess the various causes of wastage of blood components in a tertiary care centre.

**Methods:** This retrospective study was conducted in the Department of Transfusion Medicine, Government Medical College, Jammu for a period of 6 months from July 2020 to December 2020. Data on the number of discarded whole blood units and its components, reasons for discard, and the number of blood components processed as well as the number of collected blood units were obtained from the Blood Bank records and was analyzed.

**Results:** The total number of blood units collected during study period was 7008 from which 12891 units of blood components were prepared. The total number of discarded whole blood units and its components was 915 (7.1%). Platelet concentrate recorded the highest of discard at 4.2% (535) followed by fresh frozen plasma (FFP) at 1.4% (175), whole blood at 1.0% (132), and packed red blood cells at 0.5% (73). Expiry of PLT (55.1%-504) and TTI reactivity of blood components (19.6%-180) were the major cause of discard at 74.7% (684). Other causes include non-utilization of thawed FFP (14.6%-134), hemolysis (4.7%-40), transfusion reaction units received back (2.2% - 20), and undercollection (2.1% - 19).

**Conclusions:** Regular assessment of causes of blood discard can help in prevent unnecessary blood wastage and enhance efficient blood utilization as these discarded blood units are both financially and socially harmful to the blood bank.

**PP_QA 3**

**Cross match to transfusion ratio - A tool to assess efficient blood utilization**
C Muthukumar, RA Shanmugha Priya
Fortis Healthcare Limited, Chennai, Tamil Nadu, India

**Background:** India has a huge shortage of blood by 41 million units with demand outstripping supply by over 400%. Hence it is essential to reduce unnecessary ordering and reservation of blood components. The Cross match to transfusion ratio act as a scale to measure efficient use of blood components in a hospital. Better inventory management is feasible when cross match / Transfusion ratio is implemented as a quality indicator.

**AIMS:** To assess blood utilisation in a start up hospital in Chennai using cross match to transfusion ratio as a quality indicator.

**Methods:** Data on number of cross matches and transfusions performed between July 2020 to January 2021 in blood centre & hospital were obtained retrospectively from hospital information system. Data were recorded and analysed using Microsoft Excel 2016. As per literature, C/T ratio of 1.2 and below is considered indicative of optimum blood usage.

**Results:** During 7 months study period 232 cross matches and 184 transfusions were performed. The C/T ratio in our hospital was found to be 1.2. Among the departments in study, best C/T ratio was seen in Department of General surgery 1.0 & Department of General medicine 1.24.

**Conclusions:** It can be stated that unnecessary transfusion request is avoided in our hospital and there is a good communication between clinicians and blood centre. Efficient blood utilisation helps to reduce substantial time and effort consumed in unnecessary pre transfusion testing. Better inventory management, effective manpower planning and improved productivity is possible with help of cross match to transfusion ratio as a quality indicator.

**PP_QA 4**

**Adverse donor reactions: Experience at a tertiary hospital-based blood centre in central Gujarat**
Khushbu Rabadiya, Mustafa Ranapurwala, Kirti Rathod, Manthan Patel

Pramukh Swami Medical College, Shree Krishna Hospital, Anand, Gujarat, India

**Background:** Whole blood donation is generally considered to be a safe procedure, but occasionally adverse donor reactions (ADR) of varying severity may occur during or at the end of the collection. ADR contributes to the negative experience of blood donation and acts as a common deterrent for donor retention.

**Aims:** To analyze the frequency and spectrum of adverse events in voluntary blood donors occurring during or immediately after blood donation.

**Methods:** The present study is a retrospective observational study conducted from January 2019 to December 2020 at A.D. Gorwala Blood Centre associated with Pramukhswami Medical College & Shree Krishna Hospital, Bhaikaka University, Karamsad, Gujarat. Details of 13,331 blood donors who presented for donation over the said 24 months were retrieved from the departmental archives for analysis. All immediate donor reactions are documented for type, severity and resolution, which have been analyzed for the present study.

**Results:** A total of 32 post-donation adverse events were reported in the 13,331 voluntary blood donations (12932 male donors and 399 female donors) resulting in an overall prevalence of 0.24%. Among the blood donors with adverse events, the mean age was 29±8 years and mean weight was 68±12 kgs. Types of reactions noted were systemic complications like vasovagal reaction (40%), giddiness, (22%) vomiting (15%) and generalized weakness (3%). All ADR occurred within the donation area without any injury and mostly were resolved by Trendelenburg position, reassurance and rest. None of them required urgent medical attention or I.V. Administration.

**Conclusions:** Our study shows that blood donation is a very safe procedure for voluntary blood donors. Vasovagal reactions were the most common adverse events at our blood centre. The knowledge of donor adverse events and the probable risk factors would make blood donation process a pleasant experience leading to better donor retention.

**PP_QA 6**

**Systematic root cause analysis of a blood bag culture positivity in component laboratory and corrective and preventive action for the same**

Aswin K Mohan, Gita Negi, Joyisa Deb, Suhasini Sil, Manoj Bish

AIIMS, Rishikesh, Uttarakhand, India

**Background:** An efficient error reporting system can limit the magnitude and severity of incidents. Root cause analysis and CAPA (Corrective and Preventive Action) helps to identify the origin of error in the blood bank services and thereby prevent any further occurrence in future. Here an occurrence of a culture positivity of two units of PRBCs are being discussed.

**Methods:** As a part of monthly QC two PRBC bags which were sent for culture came out to be positive for coagulase negative staphylococcus. Possible causes of incident were analysed, a systematic RCA was performed, and adequate corrective actions were undertaken an adherence to preventive measures was recommended.

**Results:** The incident occurred in component area of AIIMS Rishikesh blood bank. Two PRBC units were found to be culture positive as per report received from microbiology lab. Both were positive for Coagulase negative staphylococcus. Root cause analysis was done after brainstorming sessions involving doctors and technicians. Coagulase negative staphylococcus being body surface dwelling organism, most probable source would be during phlebotomy or inoculation of sample in to culture bottle. On further enquiry, it was found that betadine was not used along with spirit by one of the phlebotomists in that shift while doing phlebotomy of these two units. As a corrective action all blood products of those two units were discarded and rest of the blood products prepared on that day were quarantined till the culture reports came negative. As preventive action residents and staffs were sensitized about importance of aseptic precautions and necessity of hand washing, sterilization and preparation of phlebotomy site. Proper phlebotomy SOP flow chart was displayed in phlebotomy room, and usage of diversion pouch was ensured. Training sessions were conducted, and monthly classes were scheduled for staffs and doctors with assessment through OSCE.

**Conclusions:** Staffs should be encouraged to report all errors and near miss events in the blood bank. A proper Root cause analysis and CAPA of such events would help in improvement of blood bank services. Correct aseptic precautions before phlebotomy can prevent culture positivity in future.
Abstracts

PP_QA 7

Quality control and indications of leukocyte-depleted packed red cells
Gayatri Makwana, Nidhi Bhatnagar, Sangita Shah, Tarak Patel, Dhara Patel
B J Medical College and Civil Hospital, Ahmedabad, Gujarat, India

Background: The leukocytes present in the donated blood play no therapeutic role in transfusion and may be a cause of adverse transfusion reactions. Many of the risks and discomforts associated with blood transfusion may be avoided by removing the Leukocytes from cellular blood components. Leukocyte-depleted red cell concentrates are used on special indications. The major indication is the prevention of HLA alloimmunization in patients that may require multiple transfusions, e.g. Thalassemia and Cancer patients. Removal of leukocytes below a certain threshold, <5.5x10^6 in a blood component certainly helps in prevention of alloimmunization and associated risks in these patients.

Methods: In our blood center we are using Penta blood bag system (Manufacturer: HLL Donato). It has closed system for collection and lab side Leuko-depletion of whole blood at blood center. This incorporates 4th generation leukocyte filter which depletes over 99.99% leukocytes and achieves log 4 reduction using surface adhesion technology. As per guidelines of Drug & Cosmetic act and NABH, we are sending 1% of total prepared Leuko-Depleted RBCs for Quality Control check at Haematology Laboratory for residual leukocyte count. All the samples are processed on the 7 part cell counter.

Results: From September 2020 to January 2021 we have collected 1000 Leuko-depleted bags. 23 samples (>1% of the collected bags) were sent for residual WBC count at Haematology Laboratory. All the samples were tested for the pre and post Leuko-Depleted WBC count. The requisite standards of Leuko- Reduction were achieved in all the blood units and was <5.5x10^6.

Conclusions: Leuko-Depletion is associated with reduced risks of HLA alloimmunization and prevents Febrile Nonhemolytic Transfusion Reaction in the patients having multiple transfusions. All the Thalassemia patients are being transfused Leuko-Depleted blood units in our institute and no Febrile Nonhemolytic Transfusion Reaction was reported.

PP_QA 9

Data logger in blood bank-impact in cold chain maintenance
MK Rakesh, P Arumugam, Swathandran Hamsavardhini
The Tamilnadu Dr M.G.R Medical University, Chennai, Tamil Nadu, India

Background: One unit of blood is separated into packed cells, fresh frozen plasma, platelet concentrate and cryoprecipitate. Maintaining correct temperature conditions and ensuring consistent adherence to this temperature are crucial factors in the preservation of blood and its components. Data logger is a specialized instrument that is extremely accurate in recording and monitoring of equipment’s temperature in the blood bank.

Aims: To assess usefulness of data logger in blood bank cold chain maintenance.

Methods: This study was conducted in Department of Transfusion Medicine, The Tamil Nadu Dr.MGR Medical University- Chennai. Microtrend Multichannel Data Logger (Model T43-DL-BB) was installed in the month of February 2020. It consisted of 8 channels and the following equipments were monitored: BBR (3), platelet agitator(1), plasma freezer(2),kits reagents refrigerator(1),Ambient temperature (1).Features include: Real Time Data Logging, Programmable (Scan rate, Alarm Duration & Limits), Error Status indication & Alarm, Data Storage on Pen Drive, PC Communication through USB, PC Chart Software, Battery Back-up and Sim-card facility for alert.

Results: In May 2020 during COVID-19 pandemic, one of the BBR unit displayed wide variation in temperature up to 7°C. Later it was observed that the reason was due to improper functioning of the stabilizer. After the stabilizer was replaced, the BBR’s temperature was maintained. The provision of continuous recording in data
Abstracts

1. To analyze the incidence of adverse transfusion reactions at a tertiary care hospital from central Gujarat

Hiren Gajera, Aman Kalaria, Hetal Joshi, Kirti Rathod, Monica Gupta
A D Gorwala Blood Centre, Pramukh Swami Medical College, Anand, Gujarat, India

**Background:** Hemovigilance is defined as a set of surveillance procedures to collect and assess information on unexpected or undesirable events resulting from the use of labile blood products and to prevent occurrence and recurrence of such incidents. Transfusion reactions may be immediate or delayed type depending on the onset and immune or nonimmune type depending on the pathogenesis. A study was conducted to analyze the frequency of various transfusion reactions.

**Objective:**
1. To analyze the incidence of adverse transfusion reactions (ATRs).
2. To compare the incidence of adverse transfusion reactions between different blood components

**Methods:** All ATRs occurring over 4 years at a tertiary care hospital were analyzed according to the blood centre protocol and were intimated to the HvPI.

**Results:** Of 44,232 units of blood components that had been transfused, 37 (0.08%) cases had an ATR. The most common reaction was febrile - 24/37 (64.86%) followed by allergic - 9/37 (24.32%). Other reactions included immune hemolytic transfusion reaction in 3/37 (8.10%) cases, and non-immune hemolytic reactions were seen in 1/37 (2.70%) cases. Out of all ATRs, 33 reactions were attributable to red cell concentrate units (23 febrile, 6 allergic, 3 immune hemolytic, 1 non-immune hemolytic), 2 reactions were attributable to fresh frozen plasma units (1 febrile, 1 allergic) and 2 reactions were attributable to platelet concentrate units (2 allergic). All patients recovered with good outcome and no mortality was associated with any adverse transfusion reactions. All ATRs were intimated to the HvPI.

**Conclusions:** Febrile and allergic reactions are the most common and least harmful, but fatal reactions can also occur. Active hemovigilance program, improved quality of blood components and awareness among clinician are an integral part of safe blood transfusion practice.

**PP_QA 10**

**Analysis and reporting of adverse transfusion events to hemovigilance program of India (HVPI) at a tertiary care hospital from central Gujarat**

Hiren Gajera, Aman Kalaria, Hetal Joshi, Kirti Rathod, Monica Gupta
A D Gorwala Blood Centre, Pramukh Swami Medical College, Anand, Gujarat, India

**Background:** Hemovigilance is a set of surveillance procedures to collect and assess information on unexpected or undesirable events resulting from the use of labile blood products and to prevent occurrence and recurrence of such incidents. Transfusion reactions may be immediate or delayed type depending on the onset and immune or nonimmune type depending on the pathogenesis. A study was conducted to analyze the frequency of various transfusion reactions.

**Objective:**
1. To analyze the incidence of adverse transfusion reactions (ATRs).
2. To compare the incidence of adverse transfusion reactions between different blood components

**Methods:** All ATRs occurring over 4 years at a tertiary care hospital were analyzed according to the blood centre protocol and were intimated to the HvPI.

**Results:** Of 44,232 units of blood components that had been transfused, 37 (0.08%) cases had an ATR. The most common reaction was febrile - 24/37 (64.86%) followed by allergic - 9/37 (24.32%). Other reactions included immune hemolytic transfusion reaction in 3/37 (8.10%) cases, and non-immune hemolytic reactions were seen in 1/37 (2.70%) cases. Out of all ATRs, 33 reactions were attributable to red cell concentrate units (23 febrile, 6 allergic, 3 immune hemolytic, 1 non-immune hemolytic), 2 reactions were attributable to fresh frozen plasma units (1 febrile, 1 allergic) and 2 reactions were attributable to platelet concentrate units (2 allergic). All patients recovered with good outcome and no mortality was associated with any adverse transfusion reactions. All ATRs were intimated to the HvPI.

**Conclusions:** Febrile and allergic reactions are the most common and least harmful, but fatal reactions can also occur. Active hemovigilance program, improved quality of blood components and awareness among clinician are an integral part of safe blood transfusion practice.

**PP_QA 11**

**Monitoring of blood transfusion feedback forms as a quality improvement tool- A single centre audit from south India**

Deepthi Krishna, Deepthi Sachan, K Thameemunisa
Dr Rela Institute and Medical Centre, Chennai, Tamil Nadu, India

**Background:** The transfusion audit seeks to improve patient care and outcomes, through the systematic review of the use of transfused blood components against transfusion guidelines. To ensure the safety of the blood supply, there must be systems in place that will evaluate, monitor and manage risk along the entire blood supply chain.

**Aim:** of the study was to audit the bedside transfusion practices and evaluate the turnaround time for inhouse transportation, initiation of Transfusion and duration of transfusion and also to strengthen the transfusion feedback system at our centre.

**Methods:** This was a Prospective, observational, single centre cohort study conducted in the department of Transfusion Medicine for a period of one year from Jan 2020 to Dec 2020. For each blood transfusion episode, feedbacks of the transfusion events were received by the blood centre at the completion of transfusion within 24 hours. All the feedbacks were analyzed in terms of no of forms received from non covid wards/ICUs; (as per hospital policy feedback forms from covid wards were not received) no of delays in transfusions >30 min from the time of issue; no of extended transfusions >4 hrs from the start of transfusion and inhouse transportation turnaround times (TAT) were monitored and recorded on monthly basis and used as a tool for quality improvement.

**Results:** During the study period, for 5903 transfusion episodes, a total of 4531 (76.7%) transfusion feedback forms were received from various non covid wards/ICUs and OT. 89.7% forms were received from OT and 73.6% from wards/ICUs. Out of 3494 forms from wards/ICUs, around 3.9% showed delay in transfusion >30 min from the time of issue of blood from blood centre and 1.4% showed extended transfusion beyond 4hrs. Most common reason for delay in transfusion was patient’s medical condition (fever, unstable vitals, busy hours etc). Most common reason for extended transfusion was slow transfusion due to patient condition like circulatory overload / in pediatric population or interrupted transfusions due to emergency interventions like CT/MRI. TAT from Issue to start of transfusion showed an average of 29min (23-39min) and 2 hrs (variable for different components) for TAT from start to end of transfusion throughout the year. The transfusion feedback forms received improved in number from 65 % in 2019 to 84.8 % in 2020. All the indicators improved significantly over the study period with regular trainings and corrective and preventive actions for each deviations.

**Conclusions:** Timely delivery and transfusion of blood components plays a role in avoiding untoward risk of blood transfusion. The regular audit of transfusion feedback form for all transfusions help to achieve better patient safety and improve quality of bedside transfusion services.

**PP_QA 12**

**Impact of donor characteristics on quality of packed red cell concentrate**

Kshitija Mittal, Inayat Grewal, Ravneet Kaur, Nitika Suria,

Asian Journal of Transfusion Science | 2021 | Volume 15 | Supplement 1
Tanvi Sood, Paramjit Kaur
Government Medical College and Hospital, Chandigarh, India

Background: Packed red blood cells (PRBC) are being administered to patients considering one unit of red cell will increase hemoglobin (Hb) by 1 g/dl. However, PRBCs total hemoglobin content (THb) can vary with donor characteristics and can affect post-transfusion increment in the patients.

Aim: To study the effect of donor age, sex, donation status, diet and smoking status on quality of red cell concentrates.

Methods: The prospective observational study was conducted after approval by the Institutional Ethics Committee and written informed consent from blood donors. This was a pilot study with a sample size of 505 blood donors. All blood donors were screened as per criteria laid down by National regulatory authority. Two ml EDTA sample was collected from eligible blood donors for hemoglobin estimation and all relevant donor details were recorded. Whole blood was collected from blood donors in double blood bags. PRBCs were prepared as per departmental SOP. Volume of each PRBC was recorded and sample from each blood bag was taken for estimation of THb content and hematocrit.

Results: Of 505 blood donors enrolled for the study, 459 (90.9%) were males and 324 blood donors (64.2%) were less than 30 years of age. Majority of the blood donors in our study were repeat blood donors (61%, n=308 repeat donors), vegetarians (52.9%, n=267 vegetarians) and non smokers (92.7%, n=468). Mean hemoglobin was found to be significantly higher in males (14.9 vs 13.3; p= <0.001), donors more than 30 years of age (15 vs 14.7; p=0.042), repeat blood donors (14.9 vs 14.7), non-vegetarians (15.1 vs 14.6; p= <0.001) and smokers (15.3 vs 14.8 g/dl; p=0.020).

PPQA 13

Incidence of adverse transfusion reaction in a tertiary care hospital south India, retrospective study

Anju Joy, Dibyajyoti Sahoo
JIPMER, Puducherry, India

Background: Blood transfusion services, life saving medical intervention has reached newer heights over past decades. Though with the advances of transfusion medicine, the incidences of transfusion risk is gradually reduced, but the adverse transfusion reaction (ATR) of non hemolytic type still prevails. Early identification of these reactions helps to reduce incidence and severity.

Objective: This study is conducted to estimate the incidence and determine the nature of blood transfusion reactions in our hospital.

Methods: The present retrospective observational study was conducted in the Department of Transfusion Medicine from august 19-december 20 (17 months) at a Tertiary Care Center in South India. All the Adverse transfusion 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 66221 units of components were issued to various departments in the hospital. Total 84 transfusion reactions (0.13%) were reported to the blood bank following transfusion of components only. The most common type of transfusion reaction among all the ATRs was febrile nonhemolytic transfusion reaction (38%), followed by allergic (33%). Fever and chills, rigor (23%) were the most common symptom noticed in ATR followed by dysnea (16%), rashes (11%) and tachycardia (9.6%). Red cell concentrate (RCC) transfusion (76%) contribute to majority of reactions followed by Platelet concentrate and Platelet Rich Plasma.

Conclusions: Incidence of reactions in our study is low compared to similar studies. Advances in serology and transfusion services, have significantly reduced their incidence. Technological advances in red cell modification like leukofiltration for FNHTR, washing for allergic reactions and anaphylactoid reactions and avoiding unnecessary transfusion implementing PBM programmes, other oxygen carrying solutions will significantly change red cell transfusion practice in the future. Reporting adverse reaction to hemovigilance programme of India helps in investigating their causes and outcomes, prevent their occurrence or recurrence.

PP_QA 14

Haemovigil a step towards safe blood transfusion to the bedside

Abhinav Verma
Max Super Speciality Hospital Vaishali, Ghaziabad, Uttar Pradesh, India

Background: Hemovigilance is a set of surveillance procedures of the whole transfusion chain intended to minimize adverse events in the patients. Collection of a properly labelled pre-transfusion blood sample from the intended patient is critical to safe blood transfusion. Misidentification of patient or pre-transfusion sample labelling errors may result in Wrong Blood In Tube (WBIT), a situation where the blood in the tube is not that of the patient identified.

Aims: The main aim of this study is to see the impact and efficacy of using Haemovigil, a bedside transfusion safety system designed for patient identification to prevent errors in the transfusion process.

Methods: The study was conducted in the Department of Transfusion Medicine for a period of 15 months From September 2018 to November 2019. Three months data after implementation of haemovigil was compared retrospectively with 12 months data to see whether haemovigil system is able to identify and prevent transfusion related patient identification. In our study we implemented Haemovigil system to all the patients suppose to receive blood transfusion. Haemovigil system comprises of Wistbands, which consist of a unique 6 digit number, A Software which decrypts the code and A Digital transporter which is an insulated reusable box with a digital lock to carry blood units.

Results: During September 2018 to August 2019 we received 8,945 samples for blood transfusion. Out of 8,945 samples 71 samples were improperly labeled (0.79%) and 4 were Wrong Blood In Tube (WBIT) (0.05%). After implementing Haemovigil from September 2019 to November 2019 we received 2,452 samples for blood
Abstracts

Basic identification of organism and detailed biochemical, morphological, functional and immunologic changes in the RBC and in the associated storage supernatant during ex vivo preservation of RBCs are collectively known as RBC storage lesions. During collection and storage, haemolysis of RBC may occur. It may be due to a diverse set of causes including activation of leukocytes, mechanical injury during handling, osmotic damage, oxidative damage, complement damage, bacterial contamination, subclinical donor red cell enzyme deficiencies etc., ATP is one of the most important storage lesion markers related to viability and function of RBCs. The energy requiring cellular reactions like active transport, antioxidant reactions tend to decrease with a fall in concentration of ATP.

Aims: Serial sampling of whole blood (WB) and packed red blood cell (PRBC) units to measure %hemolysis, ATP and supernatant LDH levels to assess whether %hemolysis correlates with supernatant LDH and ATP levels in the stored blood units.

Methods: Ten whole blood and 10 PRBC units were collected in 450 ml bags from voluntary donors weighing >55kg and screened negative for infections after obtaining informed consent. A subset of units underwent modifications including irradiation in both groups in matched numbers & timing. The units were sampled weekly. %hemolysis was derived from free Hb measured by spectrophotometric method and hematocrit & Hb from CBC on these samples. Supernatant LDH levels were estimated photometrically, in an autoanalyzer. For ATP, the lysates were deproteinized with trichloroacetic acid and measured photometrically by hexokinase method.

Results: Pearson correlation revealed a significant negative correlation between %hemolysis and ATP (umol/g of Hb) (r= -34.7%, p < 0.000018). %hemolysis showed a significant positive correlation with supernatant LDH levels (r= -42.4%, p < 9.4 x 10^-8). Duration of storage showed significant negative correlation with ATP (r= -41.8%, p < 1.5 x 10^-7) and significant positive correlation with %hemolysis (r= 58.1%, p < 1.4 x 10^-14) and supernatant LDH levels (r= 50.7%, p < 6.5 x 10^-11).

Conclusions: We see that as expected, %hemolysis increases in the stored units with time and so does supernatant LDH, which can be used as a surrogate marker of hemolysis. As ATP levels decrease with storage time, there is a significant negative correlation between %hemolysis measured directly (by free hemoglobin) or indirectly (by LDH), and ATP.

PP_QA 16

Correlation between %hemolysis, Ldh and ATP levels of serially sampled whole blood and PRBC units

Jaydutti Mandal, Pradip Banerjee, Saptarshi Mandal, Richa Mishra, Atik Khan, Satwik S, Muskan Arora, Poonam Elhence, Archana Bajpayee, Pradeep Kumar Bhatia, Praveen Sharma

AllIMS, Jodhpur, Rajasthan, India

Background: Storage lesions constitute the array of progressive biochemical, morphological & functional changes in stored blood products, that may compromise quality and safety. During the first week of storage, normocytes (discocyte) dominate the population. However, by the 14th day, the number of reversibly and irreversibly changed RBC starts increasing. Towards the end of shelf life, population of echinocytes and sphero-echinocytes increase sharply and also spherocytes and stomatocytes become predominante.
These morphological changes in RBCs can be attributed to the gradual depletion of ATP during storage, which leads to their decreased deformability. Hence, after transfusion of such units, there may be a sluggish capillary flow (until majority changes are reversed by replenishment of ATP) leading to short-term decrease in tissue oxygenation, which may contribute to organ failure risks.

**Aims:** Serial sampling of whole blood (WB) and packed red blood cell (PRBC) units to measure intracellular ATP and morphology of stored red cells with storage time, along with other storage lesion parameters and finding their correlations.

**Methods:** Ten whole blood and 10 PRBC units were collected in 450 ml bags from voluntary donors weighing >55kg and screened negative for infections after obtaining informed consent. A subset of units underwent modifications including irradiation in both groups in matched numbers & timing. The units were sampled weekly. Morphologic indices from 5-part Autoanalyser and microscopic % scoring of Leishman stained smears were evaluated on each sample. For ATP, the lysates were deproteinized with trichloroacetic acid and measured photometrically by hexokinase method.

**Results:** Pearson correlation revealed a significant positive correlation between ATP (umol/g of Hb) and %Normocytes ($r = 54.7\%$, $p < 9.2 \times 10^{-13}$), and significant negative correlations with the aberrant morphologies eg %Echinocytes ($r = -53.9\%$, $p < 2.2 \times 10^{-12}$), %Spherocytes ($r = -47.6\%$, $p < 1.3 \times 10^{-9}$) and %Stomatocytes ($r = -41.3\%$, $p < 2.2 \times 10^{-7}$). As expected, duration of storage showed significant negative correlation with ATP ($r = -41.8\%$, $p < 1.5 \times 10^{-7}$) and %Normocytes ($r = -76.2\%$, $p < 5.4 \times 10^{-29}$) and significant positive correlation with %Echinocytes ($r = 78\%$, $p < 4.5 \times 10^{-31}$), %Spherocytes ($r = 55.2\%$, $p < 5.4 \times 10^{-13}$) and %Stomatocytes ($r = 35.7\%$, $p < 9.7 \times 10^{-6}$).

**Conclusions:** We see that there is a significant negative correlation between ATP levels and the % of reversibly and irreversibly changed RBCs, indicating that as ATP levels fall in RBCs over storage time, it leads to reversible and irreversible morphological changes in RBCs. The apparent significant difference of the means of the morphologic changes in irradiated and non-irradiated sub arms of both PRBC & Whole Blood groups, found by overall t-test, became insignificant when the days without representation of both sub-arms (e.g. days 0, 1) were excluded from the t-test. ATP levels were sustained in PRBCs in SAGM for one week longer than the Whole blood in CPDA1.