ESFH CONGRESS 2026

PRAGUE, APRIL 8TH TO 10TH

ABSTRACT BOOK

Table of Contents

Chronic myeloid leukemia during pregnancy: safe and successful treatment with leukocytapheresis

Authors:

CM Canté [1], N Holle[1], K Le Poole[1], J Barmentloo[2], I Piepenbrock[2], prof. dr. EAM Beckers[3]
[1]Department of Transfusion Medicine, Sanquin Blood Supply, Amsterdam, the Netherlands
[2]Clinical Apheresis team, Sanquin Blood Supply, Amsterdam, the Netherlands
[3]Department of Hematology, Maastricht University Medical Centre, Maastricht, the Netherlands
Corresponding author: c.cante@sanquin.nl

Introduction:

Treatment of chronic myeloid leukemia (CML) during pregnancy is a rare clinical scenario with two great challenges: the risk of teratogenicity and the risk of disease progression due to ineffective treatment. We present a patient with CML during pregnancy successfully treated with leukocytapheresis and interferon-α. Existing literature hypothesizes that placenta insufficiency and intrauterine growth restriction can occur due to hyperviscosity and thrombotic complications. Leukocytapheresis is proposed to prevent these complications.

Case:

A 33-year old woman, pregnant with twins, was diagnosed with first chronic-phase CML at an estimated gestational age of 6 weeks, with a low Sokal score. Laboratory analysis showed: white blood count (WBC) 197x10^9/L, platelet count 420x 10^9/L and hemoglobin 10.8 g/dL. PCR was positive for BCR:ABL1. The bone marrow aspirate showed no blasts. Hyperviscosity symptoms were absent. Initial management consisted of leukocytapheresis and at approximately 8 weeks of gestation, weekly interferon-α (180 µg) was initiated. A total of 4 leukocytapheresis procedures were performed. A total of 7770ml – about two times the total blood volume - was processed. After every procedure a decrease of 18% in the WBC was observed. After the last leukocytapheresis at 11 weeks of pregnancy the WBC count was 55x10^9/L. Nadir hemoglobin was 7.7 g/dL and nadir platelet count was 171x 10^9/L. At 26 weeks of pregnancy a partial hematologic response was achieved (BCRABL = 10%). Despite counseling and evidence that Tyrosine Kinase Inhibitors (TKI) can be used safely after the first semester, she elected not to initiate TKI-therapy. At 36w4d of gestation two healthy neonates were born. Within 6 months of TKI treatment a major molecular response was achieved.

Conclusion:

This case demonstrates that leukocytapheresis is a safe and effective alternative treatment in pregnant patients with CML, particularly because other therapeutic options - such as TKI – are not considered safe during the first trimester.

Platelet removal during peripheral blood hematopoietic cells in mobilized donors in Terumo BCT apheresis platforms: experience of 15 years.

Authors:

Paola Charry, Paula Agritzer, Gloria Carbassé, Joan Cid, Paola Henao, Elena Cahuancama, Miquel Lozano

Department of Hemotherapy and Hemostasis. Institute of Cancer and Blood Diseases (ICAMS), Institute of Nephrology and Urology. Hospital Clínic Barcelona. IDIBAPS, Barcelona. Spain. Paracelsus Medical School, Salzburg, Austria.

Background:

In peripheral blood hematopoietic cells (CD34+) collections performed with Cobe Spectra and Optia (using the continuous mononuclear cells collection protocol), platelets are removed during the collection. In this study we have evaluated the degree of platelet removal per every total blood volume processed during CD34+ collections between 2010 and 2024 using a prospectively maintained database established in our unit.

Material and Methods:

CD34+ cell mobilization was achieved using individualized drug regimens tailored to donor characteristics and underlying diagnosis. Apheresis procedures were carried out using Cobe Spectra and Spectra Optia (Terumo BCT, CO, USA). Complete blood count was performed immediately before and after apheresis procedure. Descriptive and analytical statistical analyses were performed using SPSS v29.0.

Results

A total of 1,283 collections from 1,192 donors [(640 males, 552 females; age 15–76 years, healthy donors (HD) 325, multiple myeloma 434, Hodgkin lymphoma 73, non- Hodglin lymphoma (NHL) 242, acute myeloid leukemia 49 and autoimmune diseases (AD) 69)] were analyzed. Five-hundred forty-three CD34+ collections were performed in Cobe Spectra and 740 in Spectra Optia. Mean platelet removal per total blood volume processed decreased significantly over time (Figure 1, $p < 0.001$, maximum 14.2% in 2014 and minimum 9.7 in 2024). Cobe Spectra showed a statistically significant higher platelet removal than Spectra Optia (13.2% vs 10.7 %, $p<0.001$).

The percentage of platelet removal significantly increased according to the platelet count before apheresis collection ($p<0.001$) being 9.4% when platelet count was < 100 G/L to 14.2% when the platelet count was higher than 300 G/L. There were statistically significant differences also in platelet removal between the different groups of donors considered ($p<0.001$) highest in case of HD 14.7% and lowest in case of AD 8.8.

Conclusions:

In our center, platelet removal during CD34+ collections in Terumo BCT apheresis platforms has decreased significantly over the past 15 years, probably due to technological advancements (Spectra Optia introduced in 2013 with lower platelet removal). However, optimization of the apheresis collections by the staff cannot be completely rule out. These findings support further optimization to minimize platelet removal during CD34+ collections.

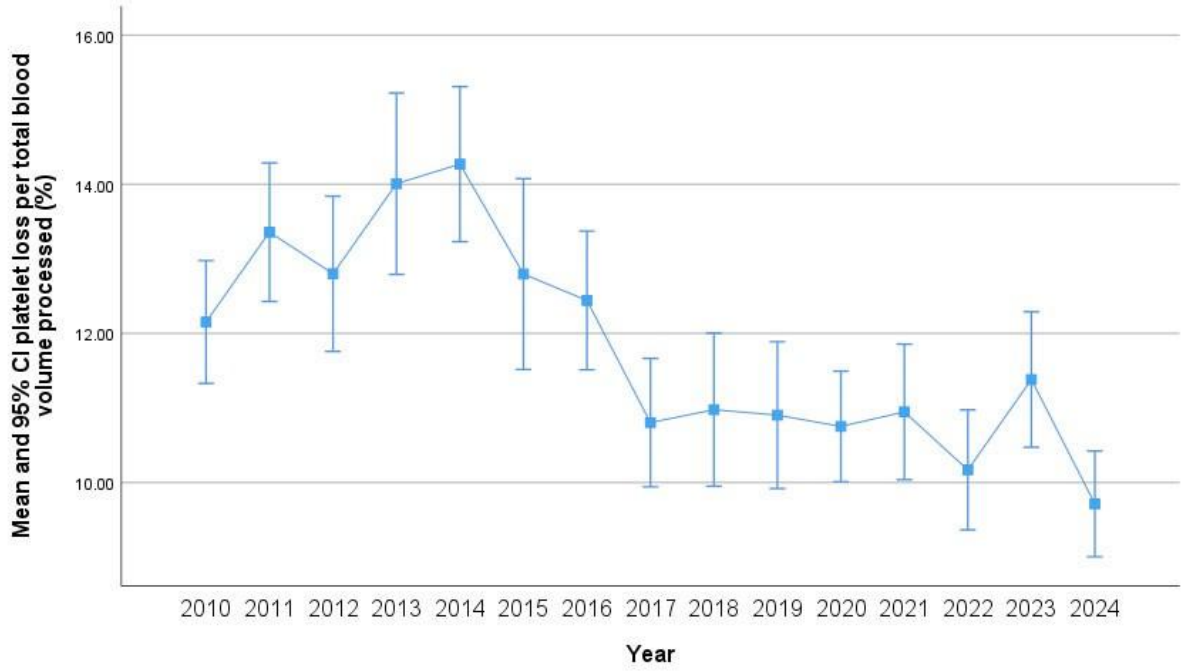

Figure 1. Mean and 95% CI of platelet removal per total blood volume processed for CD34+ collection in mobilized donors.

Age-related macular degeneration

Authors:

Nikola Cichova, MD
University Hospital Brno, Czech Republic, Transfusion and tissue department

Age-related macular degeneration (AMD) is one of the leading causes of severe visual impairment in the elderly population. The aim of this study was to evaluate the outcomes of rheopheresis treatment in patients with AMD and to assess its potential impact on disease progression. Seventeen patients diagnosed with AMD underwent a series of rheopheresis treatments. Follow-up was conducted six months after therapy, with particular attention to progression to the exudative ("wet") form of macular degeneration.
During the observation period, none of the patients progressed to the wet form of AMD. These results suggest a potential stabilizing effect of rheopheresis on disease course in the short term. Rheopheresis may represent a promising therapeutic option for selected AMD patients. However, further studies with larger patient cohorts and longer follow-up are necessary to confirm these findings and evaluate the long-term efficacy of the treatment.

Towards Harmonized Reporting of Cell Collections: Review and Recommendations from a Multicenter Experts Panel

Authors:

Hugo Fabre[a], Halvard Boenig[b], Christian Chabannon[c,d,e], Paola Charry[f], Joan Cid[f], Jesús Fernández-Sojo[g], Reinhard Henschler[h], Patricia Jarabo Blázquez[i], Mickey Koh[j], Kaatje le Poole[k], Miquel Lozano[l], Francis Swaneveld[m], Nina Worel[n]

[a] Terumo Blood and Cell Technologies, Zaventem, Belgium, [b]Institut für Transfusionsmedizin und Immunhämatologie, Frankfurt, Germany, [c]Centre de Thérapie Cellulaire, Institut Paoli-Calmettes Comprehensive Cancer Centre, Marseille, France, [d]Aix-Marseille Université School of Medicine, Marseille, France, [e]Inserm CBT-1409, Centre d'Investigations Cliniques en Biothérapies, Marseille, France, [f]Apheresis Unit, Department of Hemotherapy and Hemostasis, ICAMS, Clínic Barcelona, Barcelona, Spain, [g]Cell Therapy Unit, Banc de Sang i Teixits, Barcelona, Spain , [h]Institute of Transfusion Medicine, Faculty of Medicine, Leipzig University, Leipzig, Germany, [i]Terumo Blood and Cell Technologies, Madrid, Spain, [j]Department of Haematology, St George's Hospitals, London, UK, [k]Sanquin Blood Supply, Unit of Transfusion Medicine, Plesmanlaan 125, 1066 CX Amsterdam, the Netherlands, [l]Department of Transfusion Medicine and Cell Therapy, Medical University of Vienna, Vienna, Austria

Background:

Cellular therapies, including hematopoietic stem cell transplantation and advanced immunotherapies such as extracorporeal photopheresis (ECP), donor lymphocyte infusion (DLI), and CAR-T cell manufacturing, rely on the efficient collection of CD34+ and CD3+ cells. Despite the central role of apheresis in these procedures, the literature reveals substantial heterogeneity in reporting collection outcomes and procedural parameters, limiting the comparability and reproducibility of published data.

Methods:

A systematic literature review was conducted to identify studies published from 2013 to April 2023 that reported on CD34+ collections for transplantation and mononuclear cell collections (MNC) collections for ECP, DLI, and CAR T-cell manufacturing, using the Spectra Optia™ Apheresis System and Amicus Apheresis Collection System. Data extraction focused on study design, patient and donor characteristics, procedural variables, and product composition.

Results:

A total of 82 publications were included in this review, with 72 reporting data on Spectra Optia and 14 on Amicus. The analysis revealed significant inconsistencies across the literature. For example, key variables such as patient age, underlying disease, and target cell dose were inadequately described or pooled across heterogeneous populations in a substantial proportion of studies. Only 63% (52/82) specified age groups, and less than half (34/82, 41%) reported the targeted cell dose. Collection efficiency (CE) was inconsistently defined and calculated; 51% (42/82) of studies reported only CE2, 10% (8/82) reported only CE1, and 16% (13/82) did not report any CE results, with several studies

omitting the calculation method altogether. Reporting of non-target cell content, such as red blood cells, platelets, and granulocytes, was highly variable: red blood cell content was described in 53 studies but using five different units, while platelet data appeared in 38 studies with three different reporting formats. Finally, statistical analyses were frequently limited by incomplete datasets and lack of standardization, making robust comparative assessments impossible.

These inconsistencies hinder the development of evidence-based best practices and the ability to benchmark device performance or procedural outcomes across centers.
To address these gaps, a panel of experts of the field developed a comprehensive table of recommendations for standardized reporting in apheresis studies. The guideline covers essential domains including study design, patient and donor demographics, procedural details (e.g., device, protocol, mobilization regimen, vascular access, anticoagulation), pre- and post-collection blood counts, and detailed product analysis (target and non-target cell content, viability). Strongly recommended and optional parameters are clearly delineated, with suggested units and statistical considerations to facilitate harmonized data collection and reporting.

Conclusions:

This literature review underscores the urgent need for standardized reporting in CD34+ and CD3+ cell collection studies. Adoption of the proposed guideline will enhance data quality, enable meaningful comparisons, and support the development of EBMT-aligned best practices for transplantation and cellular therapy programs.

Evaluating Operator Impact, Process Consistency, and Predictive Modeling in CD34⁺ Cell Collections for HSCT

Authors:

Hugo Fabre[1], Sara Lewandowski[2], Patricia Jarabo-Blázquez[1], Monica Linares[3], David Gomez-Vives[4], Veronica Pons, Julia Ayats, Marina Rierola, Merce Albert, Sofia Alonso, Ana Garcia-Buendia, Nerea Castillo-Flores, Margarita Codinach, Silvia Torrents, Gemma Aran, Sergio Querol, Rafael Parra

[1]Terumo Blood and Cell Technologies Europe, Zaventem, Belgium, [2]Terumo Blood and Cell Technologies U.S., Lakewood, United States, [3]Banc de Sang i Teixits, Barcelona, Spain

Background:

Efficient CD34⁺ cell collection is critical for hematopoietic stem cell transplantation success. While donor characteristics and circulating CD34⁺ levels before apheresis are primary contributors to meeting collection goals, procedural variability, including operator performance and device handling, can strongly influence collection efficiency. A collaborative project between Banc de Sang i Teixits H. Vall d'Hebron Hospital and Terumo Blood and Cell Technologies evaluated local leukapheresis data from procedures performed on the Spectra Optia™ Apheresis System (Terumo Blood and Cell Technologies).

Methods:

A retrospective analysis of 211 leukapheresis procedures for stem cell transplantations was performed using data from Spectra Optia continuous mononuclear cell collection (CMNC) protocol procedures from January 2020 to April 2023. Variables examined included pre-apheresis CD34⁺ counts, procedure-related parameters (operator behavior, time spent reestablishing the interface, and alarm frequency), and product characteristics. Linear regression models were developed to correlate pre-apheresis CD34⁺ counts and CD34⁺ yield.

Results:

The median patient age was 53 years (0.5-71), with 44% female and 56% male, 86% adult, and 14% pediatric donor. Donors included 59 healthy donors (28% of total cases), and the diagnoses for patient donors were as follows: 56 multiple myeloma (MM) (37% of autologous procedures), 51 non-Hodgkin lymphoma (NHL) (34%), 28 solid tumor (18%), 15 Hodgkin lymphoma (HL) (10%), 1 acute leukemia (1%), and 1 other (1%). The median pre-apheresis CD34⁺ count was 39 cells/µL (range: 2.0 to 584).Operator impact on CD34⁺ collection efficiency was consistently robust, with no cases of median collection efficiency (CE_2) below 40% assuming a median of 23 procedures per operator (1-49). After establishing adequate operator performance, median CE_2 was 54% (34-99) for healthy donors, 49% (7-104) for adult patient donors, and 42% (18-55) for pediatric patient donors. Median processed blood volume was 14,798 mL (5281-24,627) for healthy donors, 14,966 mL (2311-38,034) for adult patient donors, and 7744 mL (2200-21,073) for pediatric patient donors; mean product volume was 390 mL (133-637) for healthy donors, 361 mL (61-774) for adult patient donors, and 191 mL (57-568) for pediatric patient donors. Product CD34+ doses were 8.0×10^6/kg (0.7-89) for healthy donors, 3.8×10^6 /kg (0.2-27) for adult patient donors, and 4.0×10^6 /kg (1.3-26) for pediatric patient

donors. The linear regression model linking pre-apheresis CD34+ count to the number of CD34+ cells processed per liter demonstrated a moderate relationship ($R^2 = 0.7762$) for the whole dataset. Subpopulation analysis revealed that stratification by patient type and diagnosis showed stronger predictive power. Specifically, the model's R^2 values were 0.8822 for healthy donors, 0.9018 for pediatric patient donors, and 0.8292 for adult patient donors. The R^2 values by patient diagnosis were also investigated, showing 0.8124 for MM, 0.8439 for NHL, and 0.8072 for HL.

Conclusions:

In our experience, operator activity is a significant driver of variability in leukapheresis processes and must be considered before interpreting procedural or predictive metrics and identifying training needs. Once operator effects were evaluated, procedural parameters demonstrated high consistency. The predictive model describing the relationship between pre-apheresis CD34+ counts and final yield may support the development of algorithms tailored to center-specific needs. These findings enable optimization of leukapheresis planning and contribute to more efficient hematopoietic stem cell collection.

Evaluating Operator Impact, Process Consistency, and Predictive Modeling in CD3⁺ Cell Collections for CAR-T Manufacturing

Authors:

H. Fabre [1], P. Jarabo-Blázquez [1], S. Lewandowski [2], M. Linares [4], D. Gómez-Vives [4], M. Rierola [4], J. Ayats [4], J. Porras [4], C. Montanero [4], T. Contijoch [4], I. Amaya [4], M. Vilches [4], M. Guerrero [4], A. Acedo [4], S. Alonso [4], A. García-Buendía [4], N. Castillo [4], J. Fernández-Sojo [4], V. Pons [4]

[1]Terumo Blood and Cell Technologies Europe, Zaventem, Belgium [2]Terumo Blood and Cell Technologies U.S., Lakewood, United States, [3]Banc de Sang i Teixits, Barcelona, Spain

Background:

Efficient CD3⁺ cell collection is critical for CAR-T cell manufacturing success. While donor characteristics and circulating CD3⁺ levels before apheresis are primary contributors to meeting collection goals, procedural variability, including operator performance and device handling, can strongly influence collection efficiency. A collaborative project between Banc de Sang i Teixits H. Vall d'Hebrón (BST, Barcelona) and Terumo Blood and Cell Technologies evaluated local leukapheresis data from procedures performed on Spectra Optia™ Apheresis Systems.

Methods:

A retrospective analysis of 150 commercial CAR-T cell therapy (Kymriah, Yescarta) leukapheresis procedures was performed using data from Spectra Optia continuous mononuclear cell collection procedures from January 2020 to October 2023. Variables examined included pre-apheresis CD3⁺ counts, procedure-related parameters (operator behavior, time spent reestablishing the interface, and alarm frequency), and product characteristics. Linear regression models were developed to correlate pre-apheresis CD3⁺ counts and CD3⁺ yield.

Results:

The median patient age was 54 years (1-82), with 40% female and 60% male. Diagnoses included non-Hodgkin lymphoma (NHL) in 91% of cases and acute lymphoblastic leukemia (ALL) in 9%. CAR-T cell therapies administered were Kymriah (41%) and Yescarta (59%).

The median pre-apheresis CD3⁺ count was 825 cells/µL (range: 60-4, 240), and the median CD3⁺ yield in the final product was 3.89 × 10^9 cells (range: 0.22-17.97 × 10^9).

Operator impact on CD3⁺ collection efficiency was consistently robust, with no cases of median collection efficiency (CE2) below 50% considering a median of 20.5 procedures per operator (11-46). After establishing adequate operator performance, median CE2 was 60.2% (15-120). Median processed blood volume was 8.5 L (1.3-21.6); mean product volume, 194.5 mL (72-364); hematocrit, 1.2% (0.2-4); and platelet concentration, 970×10^9/L (81-3485).

The linear regression model demonstrated a moderate relationship (R^2 = 0.6895) for the whole dataset. Subpopulation analysis revealed that stratification by patient type and diagnosis showed stronger predictive power. Specifically, the model's R^2 values were 0.6792 for adults and 0.8458 for pediatric patients, while for diagnostic categories, R^2 values were 0.6786 for NHL and 0.6891 for ALL.

Conclusions:

In our experience, operator activity is a significant driver of variability in leukapheresis processes and must be considered before interpreting procedural or predictive metrics and identifying training needs. Once operator effects were evaluated, procedural parameters demonstrated high consistency. The predictive model describing the relationship between pre-apheresis $CD3^+$ counts and final yield may support the development of algorithms tailored to center-specific needs. These findings enable optimization of leukapheresis planning and contribute to more efficient CAR T-cell collection.

Extracorporeal Photochemotherapy (ECP) using off-line and on-line techniques

Authors:
Z. Gašova[1], M. Böhmová[1], Z. Bhuiyanová-Ludvikova[1], R. Pytlík[1], K. Polgárová[2]

Apheresis Department, Institute of Hematology and Blood Transfusion[1], General Faculty Hospital[2], Charles University, Prague, Czech Republic

Introduction

Extracorporeal photochemotherapy is an effective immunomodulatory treatment for diseases in which T-lymphocytes play a key role. At the Apheresis Department, off-line ECP(„OFFL“) has been performed since 1998. The independent devices are used (Spectra Optia, Macogenic) in different locations as separate steps. In 2024, a new on-line ECP technique („ONL“, Amicus Blue) using a single closed system at the patient's bedside was implemented to ECP program.

Aims

The aim of the study was to compare run parameters, MNC yield, and safety of both ECP techniques in patients.

Methods

A total of 193 ECP procedures (77 "OFFL" and 116 "ONL") were performed in 13 patients with acute and chronic GVHD, and Mycosis fungoides in 2025. The results are presented as medians and their ranges.

Results:

In the “OFFL” group, the median processed blood volume was 6 430 ml (1,2× total blood volume (TBV), compared with 3 993 ml (0,7× TBV) in the “ONL” group.

MNC yield correlated with pre-collection lymphocyte and monocyte counts, but only a weak relationship with processed blood volume was observed in both ECP method.

	ECP „OFFL“	ECP „ONL“
Procedure duration:	5-6 hours	3 hours
MNC ($\times 10^9$/bag):	3 (0,4-16)	4 (0,4-15)
MNC Hematocrit (%):	3,3 (1-7)	2,5 (0,5-4)

Conclusion

It is accepted that higher blood volumes are processed in off-line ECP. Processing one total blood volume (TBV) in an off-line system is considered safe and effective (Cid, 2019).

Our results indicate that on-line ECP yielded a comparable number of MNC to the off-line ECP even with a lower processed blood volume. The shorter on-line ECP reduces the burden on patients and staff, lowers ACD-A exposure, and eliminates risks associated with open systems and transport of MNC products. Both procedures were well tolerated, and no serious complications were observed.

Mononuclear Cell Collections for CAR T-Cell Therapy – Procedures and Outcomes

Authors

Z. Gašová[1], Z. Bhuiyanová-Ludvíková[1], M. Böhmová[1], R. Pytlík[1], K. Polgárová[2]
Institute of Hematology and Blood Transfusion[1], General Faculty Hospital[2], Charles University, Prague, Czech Republic

Introduction

CAR T-cell therapy is a personalized treatment based on genetic reprogramming of autologous T lymphocytes to enable recognition and elimination of malignant cells. Mononuclear cells (MNCs) are collected by leukocytapheresis and subsequently processed into a CAR T-cells used for the treatment of patients with DLBCL, FL, ALL, MCL, and MM. At the Apheresis Department, MNCs have been collected for five CAR T-cell products: Kymriah, Yescarta, Tecartus, Breyanzi, and Abecma.

Aims

To evaluate run parameters, MNC composition, and complications during MNC collections in 2025.

Methods and Patients

Since 2019, a total of 264 collections have been performed in 254 patients. In 2025, 58 MNC collections were carried out in 57 patients using Spectra Optia (Terumo). Results are presented as medians and ranges.

Results

For Kymriah, 2.5 (1,9-2,8) total blood volumes (TBV) were processed, corresponding to 11 (10-12) l. Volume of ACD-A infused was 997 (769-1021) ml. The CD3+ T-cell yield in the product was 4,3 (1,8-8,2) × 10^9.

For Yescarta and Tecartus, 2,3 (1,8-3,0) TBV were processed, corresponding to 12,4 (8,4-15) l. ACD-A used was 999 (648–1472) ml. The CD3+ T-cell yield reached 6 (2–19) × 10^9.

For Breyanzi and Abecma, 2,2 (1,3–3,7) TBV were processed (calculated without ACD-A according to the manufacturer's requirements), corresponding to 9,7 (6,8–12) l, and volume of ACD-A infused was 755 (539–1142) ml. The CD3+ T-cell yield was 3,8 (1,1–10,5) × 10^9.

Conclusion

MNC collection parameters were acceptable for majority of CAR T-cell products. Low lymphocyte viability was observed in only one product in 2025, likely related to inappropriate medication prior to apheresis. Subsequent collection and manufacturing were successful. Due to the relatively high volume od ACD-A, Calcium gluconate was administered profylactically during the procedure. Ionized calcium decreased by 14 (4–70)%. No serious complications occurred during MNC collections.

Use of Plerixafor for Stem Cell Mobilization in Multiple Myeloma Patients: Real-World Data

Authors

J. Holasová, A.Púčaťová, A.Wild, Ľ.Mišániová, O.Trubanová, M.Sunderlíková, D.Gyurkyová, L.Laudárová, P.Antalová, M.Jacková, S.Lenhártová

Hematology Department, University Hospital F. D. Rooosevelt, Banska Bystrica, Slovakia

Background:

Autologous stem cell transplantation (ASCT) remains an integral part of first-line treatment in eligible patients with multiple myeloma (MM). The increasing use of daratumumab-based quadruplet regimens has been associated with impaired stem cell mobilization and a higher need for plerixafor in clinical trials.

Aims:

To evaluate the need for plerixafor during stem cell mobilization and the yield of collected $CD34^+$ cells in MM patients treated with daratumumab-based versus non-daratumumab induction regimens in real-world clinical practice.

Methods:

We retrospectively analyzed 99 MM patients (including 2 with primary plasma cell leukemia) eligible for ASCT and treated between 2018 and 2025 at a single center. Patients received various induction regimens, including daratumumab-based (D-VTD, D-VRD) and non-daratumumab regimens. Mobilization strategies, duration of G-CSF administration, use of plerixafor, number of apheresis days, and $CD34^+$ cell yield were assessed. $CD34^+$ cells were quantified by flow cytometry according to the ISHAGE protocol. Statistical analysis was performed using the Mann–Whitney U test.

Results:

Plerixafor was required significantly more frequently in patients treated with daratumumab-based regimens compared to non-daratumumab regimens (36% vs 7%; $p = 0.0003$). Despite the increased use of plerixafor, stem cell collection was successful in both groups, with no statistically significant difference in $CD34^+$ cell yield (median 3.8×10^6/kg vs 4.9×10^6/kg; $p = 0.524$).

Conclusion:

Daratumumab-based induction regimens are feasible in routine clinical practice but are associated with a significantly higher need for plerixafor during stem cell mobilization. With appropriate mobilization strategies, adequate stem cell yields can be achieved, supporting the continued use of these regimens prior to ASCT.

Stem cell mobilization with PEGfilgrastim in pediatric patients for autologous infusion: safe and effective.

Authors
A Jaspers-Bakker, KCJ Kraal, M van der Vlugt, MJ van Eijk, NE Franke, MB Bierings, MP Dierselhuis

Background:

Worldwide, filgrastim is used for stem cell mobilization in pediatric oncology patients. Few data is available using PEGfilgrastim in this population for successful stem cell mobilization, whilst the single administration of PEGfilgrastim is a lot more patient friendly. Here we describe our single center experience with PEGfilgrastim for stem cell mobilization across different oncological diagnoses.

Methods:

Data of 248 mobilizations with PEGfilgrastim from January 2019 until December 2025 were retrospectively analyzed. PEGfilgrastim for mobilization, dose ≥ 100 mcg/kg (range 100-300 mcg/kg) was in most cases administered >24<48 hours after completion of chemotherapy.

Results:

Median mobilization time -from PEGfilgrastim administration until stem cell apheresis- was 8 (range 3-19) days. In 122 of 248 mobilizations (49%), filgrastim had to be added to achieve a sufficient number of CD34+ cells to obtain the intended yield. Filgrastim was administered for median 3 (range 1-13) days. 27 Of these 121 mobilizations required additional Plerixafor, median 1 dose (range 1-7 doses). In 208 mobilizations (= 84%) the intended yield was collected in one apheresis procedure. Result of mobilization was median 76 (range 9-1079) CD34+ cells per microliter. PEGfilgrastim was well tolerated, no side effects nor toxicity was seen.

Conclusion:

PEGfilgrastim alone for stem cell mobilization was in 51% successful in our cohort. Nevertheless a substantial number of patients needed additional Filgrastim and/or Plerixafor. Further adjustments to the mobilization protocol will be made based on these results.

Hematopoietic stem cell collection in a pediatric patient: experience of Verona Transplant Program CIC 623

Authors

Irena Kostic[1], Maurizio Cantini[1], Annachiara Giuffrida[1], Sabrina Genesini[1], Monica Rizzi[1], Mattia Schino[1], Raffaella Fasolo[1], Cristina Tecchio[2], Simone Cesaro[3], Giorgio Gandini[1], Aurora Vassanelli[1]

1.Department of Transfusion medicine, University hospital Verona, Italy

2.Deparment of Hematology, University hospital Verona, Italy

3.Pediatric Hematology Oncology clinic, University hospital Verona, Italy

Introduction:

Hematopoietic stem cell (HSC) collection in a pediatric patient is always challenging. The aim of the study was to describe our experience in pediatric HSC collection.

Materials and Methods:

A retrospective, cross-sectional study conducted 1997-2025 observed 89 autologous HSC procedures performed in 61 hospitalized pediatric patients, aged 1-17 years, in the University hospital of Verona, Italy. 21.3% had hematological diseases and 78.7% had non-hematological diseases. The continuous flow separator ComTec (Fresenius, Kabi) was prepared for procedures filled with saline for patients over 30 kg; 4% albumin solution in saline for patients 16-30 kg; a red blood cell concentrate diluted in 4% albumin to obtain a 30% Hct for patients under 15 kg.

Results:

The 61 patients underwent a mobilization cycle with chemotherapy (appropriate therapeutic protocol for the disease) and G-CSF for a total of 63 mobilization cycles (2 mobilization cycles in 6 patients). Plerixafor was used in 8 (13%) patients. A total of 89 procedures were performed; collection rate 1.46 procedures/patient (1.4 procedures/mobilization cycle). Calcium gluconate supplementation (0.5 ml/kg) was administered via continuous infusion during hemapheresis. In order to obtain minimum 4x106/kg CD34+ cells at least 37(0,87%) CD34+/µL in peripheral blood were required. In 96,7% patients <30 kg, the procedure was performed via a central vascular access, in 3 via peripheral vascular access (1/3 arterial, 2/3 antecubital vascular access). No serious adverse reactions occurred. The procedure was well tolerated, even in young patients. Patients were supervised by a caregiver throughout the procedure and assisted. For patients <15 kg, most of the procedure was conducted in close contact with always present parent.

Conclusions:

HSC collection is a procedure well tolerated by young patients, but requires great care in priming e setting the separator, obtaining adequate vascular access, and in caring for the young patient especially if under 30 kg.

The role of lipid apheresis in the treatment of familiar hypercholesterolemia - 30 years of one center experience

Authors

Lanska M.[1], Blaha M.[1], Blaha V.[2], Zak P.[1]

4th Internal Department – Hematology, University Hospital Hradec Kralove and Charles University, Faculty of Medicine Hradec Kralove, Czech Rebuplic

3rd Internal Department – Metabolic Care and Gerontology University Hospital Hradec Kralove and Charles University, Faculty of Medicine Hradec Kralove, Czech Rebuplic

Familial hypercholesterolemia (FH) is a genetically determined disorder of lipid metabolism with high risk of premature atherosclerosis. Although significant progress has been made in the pharmacological treatment of FH over the last decade, lipoprotein apheresis (LA) remains an indispensable modality, particularly in patients (p.) with homozygous FH (HoFH) or severe heterozygous FH (HeFH) resistant to conventional therapy.

The aim of this study was to evaluate 30 years of experience at our center with LA and to assess the impact of novel lipid-lowering agents on patient prognosis. Between January 1, 1996, and January 31, 2026, a total of 20 p. were treated using various LA methods, including 11 men and 9 women, with a median age of 50 years at treatment initiation.

6 p. remain on LA, including five HoFH and one HeFH. The median treatment duration is 149 months (range 22–343 months). LA was discontinued in 14 p. In 11 p. (all HeFH), therapy was discontinued due to achievement of target LDL-C levels- in 7 p. after the addition of a PCSK9 inhibitor and in 2 p. after inclisiran. 2 p. with HoFH died due to cardiovascular disease, 1 p. due to cancer. Among p. who discontinued therapy, the median duration of LA treatment was 170 months (range 31–352 months). Overall, 4,800 LA procedures were performed during the observation period, with a mean of 240 procedures per p. (median 200, range 53–615).

Even in the era of modern lipid-lowering therapies, LA continues to play an important role in the treatment of FH. Our experience represents the largest single-center series reported in the Czech Republic. LA is a safe and effective therapeutic modality. Optimal management of FH requires a multidisciplinary approach, individualized treatment strategies and continuous monitoring.

Lessons learned from the 2025 Spanish blackout for the transfusion and apheresis sector

Author:

I. Romon

Assistant Professor of Hematology, Head of the Apheresis Unit, Hematology and Hemotherapy Service, University Hospital Marques de Valdecilla – IDIVAL, Santander, SPAIN

Background:

On April 28, 2025, a large-scale electrical blackout affected most of the Iberian Peninsula, disrupting essential infrastructures including healthcare services. Blood transfusion and apheresis activities rely on complex operational chains involving donor recruitment, component processing, cold storage, digital communication, and distribution networks. Disruptions to critical infrastructure may therefore threaten the continuity and safety of blood supply systems. This study evaluates the operational impact of the Spanish blackout on transfusion services and identifies key lessons for preparedness across the transfusion and apheresis sector.

Methods:

A nationwide survey was distributed to Directors of Blood Transfusion Centers (BTCs) and hematologists responsible for Hospital Transfusion Services (HTSs) across Spain. The questionnaire explored the availability of contingency plans, backup power systems, operational disruptions, communication failures, and corrective measures implemented after the event. Responses were analyzed descriptively to identify systemic vulnerabilities and resilience factors within the transfusion supply chain.

Results:

All 20 Spanish blood transfusion centers and 61 hospital transfusion services responded. Most facilities had pre-existing contingency plans and backup generators, which allowed essential transfusion activities to continue. However, operational disruptions were common. Seventy percent of blood centers had to suspend blood donation drives, and more than half reported a reduction in donations exceeding 50%. Communication failures between hospitals and blood centers affected approximately two-thirds of institutions. Despite these disruptions, the storage and safety of blood components were largely preserved, and transfusion support for patients was maintained in most hospitals. Only one hospital reported a temporary interruption in blood component issuing. Following the incident, blood centers and hospitals reviewed their contingency strategies and emergency preparedness plans.

Conclusions:

The 2025 Spanish blackout acted as an unplanned stress test for the transfusion and apheresis sector. Although the system demonstrated considerable operational resilience, the event exposed critical dependencies on electricity, communication systems, and donor logistics across the transfusion supply chain. Strengthening energy autonomy, ensuring communication redundancy, and implementing coordinated emergency preparedness strategies will be essential to safeguard blood supply continuity during future large-scale infrastructure disruptions.

Improving Peripheral Access Success in Apheresis: A Service Evaluation of Targeted Vein Assessment and Ultrasound Integration

Author:
Jordan Sciacca
Apheresis Co-ordinator
Jordan.sciacca@nhs.net
The Christie Hospital, Manchester, UK.

Background:

Central venous access (CVC's) are frequently used in apheresis when peripheral venous access is deemed inadequate. However, CVC's insertion carries risks including infection, thrombosis, procedural delays, and increased resource utilisation and costs. Optimising peripheral access and reducing avoidable CVC placement is therefore clinically and operationally desirable.

Aim:

To improve vascular access practice within the apheresis service through the introduction of ultrasound guided cannulation and a structured vein assessment tool, with the goal of reducing reliance on CVC's and minimising associated risks.

Methods:

A retrospective service evaluation was conducted reviewing all apheresis procedures performed between January 2024 and current 2026 activity.

In mid-2025, procedural activity increased significantly from that of the beginning of the year. Jan-June 2025, 67 procedures were performed, but from July-Dec numbers increased to 115 procedures. During this period, a formalised pre-procedure vein assessment tool was introduced along with an ultrasound trained team to support cannulation.

CVC usage rates were compared across 2024 baseline data, 2025 (Jan-June) Pre-full implementation, 2025 July-Dec post-implementation, and projected 2026 year to date data.

Results:

CVC use in 2024 was 15.2%. in 2025, overall CVC usage reduced to 12.8%. However, from Jan- June 2025 data demonstrated 23% CVC use. Following implementation of structed assessment and ultrasound support, the second half of 2025 utilisation fell to just 7.9%, despite the sharp increase in procedures.

Conclusion:

Implementation of a structured vein assessment and ultrasound guided practice was associated with a marked and sustained reduction in CVC use, even with an increase in service demand. Targeted vascular access strategies may improve patient safety, reduce CVC related complications and support efficiency and service delivery within our apheresis department.

Optimising Total Blood Volume Processing to Improve CD34 yield

Author:

Rebecca Webster
Apheresis Co-ordinator
Rebecca.Webster24@nhs.net
The Christie NHS Foundation Trust

Background

Total blood volume (TBV) processed during apheresis is a determining factor of mononuclear cell (MNC) and CD34 yield. Over processing may increase procedure duration, anticoagulant (ACD-A) exposure, and negatively affect patient experience, while under processing may result in suboptimal yields or second day collections. Predictive algorithms from published models, allow estimation of required processing volume using pre procedure CD34 counts and the collection efficiency (CE2).

Aim

To evaluate whether individualised TBV processing, calculated using a predictive volume equation, improve CD34 yield while reducing procedure time and number of collection days.

Methods

A retrospective analysis was performed on autologous patients undergoing apheresis between December 2025 and February 2026. Predicted processing volume was calculated using:

Volume processing required = (Desired cells*patient weight)/(Peripheral CD34*0.5)

A CE2 of 0.5 was applied as a standard baseline. Pre procedure CD34 counts, TBV processed, and final MNC CD34 yields were recorded. Actual yields were compared with predicted yields to assess correlation between processed volume and product yield.

Results

A total of 49 apheresis procedures were analysed. Application of the predictive model demonstrated that, in several cases, the processed TBV exceeded the calculated volume required to achieve the target CD34 dose. This suggests that some procedures may have been longer than necessary, increasing patient exposure to ACD-A and procedure time. However, in certain cases, higher day one processing volumes could contribute to achieving the overall CD34 target and potentially avoiding the need for a second collection day.

Conclusion

Use of a predictive processing equation may support personalised TBV strategies to reduce unnecessary over processing while maintaining adequate CD34 yields. However, additional factors influencing collection efficiency, including white blood cell count, anticoagulant exposure and vascular access stability should be considered when applying predictive models in clinical practice.

References

Terumo Blood and cell technologies (2025) Optimizing peripheral blood cell collections: A review of prediction Algorithms for PBSC and PBMC

Leberfinger, DL, Badman KL, Roig JM, Loos T. Improved planning of leukapheresis endpoint with customized prediction algorithm: minimizing collection days, volume of blood processed, procedure time, and citrate toxicity. Transfusion. 2027;57(3):685-693. Doi: https://doi.org/10.1111/trf.13925