

Peripheral blood stem cell graft compared to bone marrow after reduced intensity conditioning regimens for acute leukemia: a report from the ALWP of the EBMT

Bipin N. Savani,¹ Myriam Labopin,^{2,3,4,5} Didier Blaise,⁶ Dietger Niederwieser,⁷ Fabio Ciceri,⁸ Arnold Ganser,⁹ Renate Arnold,¹⁰ Boris Afanasyev,¹¹ Stephane Vigouroux,¹² Noel Milpied,¹² Michael Hallek,¹³ Jan J. Cornelissen,¹⁴ Rainer Schwerdtfeger,¹⁵ Emmanuelle Polge,^{2,3,4,5} Frédéric Baron,¹⁶ Jordi Esteve,¹⁷ Norbert C. Gorin,¹⁸ Christoph Schmid,¹⁹ Sebastian Giebel,²⁰ Mohamad Mohty^{2,3,4,5} and Arnon Nagler^{2,21}

¹Vanderbilt University Medical Center, Nashville, TN, USA; ²EBMT Paris Study Office/CEREST-TC, Paris, France; ³Department of Haematology, Saint Antoine Hospital, Paris, France; ⁴INSERM UMR 938, Paris, France; ⁵Université Pierre et Marie Curie, Paris, France; ⁶Département d'Hématologie - Centre de Recherche en Cancérologie de Marseille - Aix-Marseille University, Institut Paoli Calmettes, Marseille, France; ⁷University Hospital Leipzig, Hematology, Oncology and Hemostaseology Divisions, Germany; ⁸Hematology, IRCCS San Raffaele Scientific Institute, Milan, Italy; ⁹Hannover Medical School - Department of Haematology Hemostasis Oncology and Stem Cell Transplantation, Hannover, Germany; ¹⁰Charité Universitätsmedizin Berlin, Campus Virchow Klinikum - Medizinische Klinik m. S. Hämatologie/Onkologie, Berlin, Germany; ¹¹Saint Petersburg State Medical Pavlov University, Ratsa Gorbacheva Memorial Children's Institute, Hematology and Transplantology, St. Petersburg, Russia; ¹²CHU Bordeaux - Hôpital Haut-leveque, Pessac, France; ¹³University of Cologne, Department of Medicine, Germany; ¹⁴ErasmusMC Cancer Institute, Erasmus University Medical Center, Rotterdam, the Netherlands; ¹⁵Department of Haematology, Oncology Helios-Klinikum Berlin-Buch, Germany; ¹⁶Department of Medicine, Division of Hematology, University of Liège, Belgium; ¹⁷ Department of Hematology, Hospital Clinic, Barcelona, Spain; ¹⁸Department of Hematology, Saint Antoine Hospital, APHP and University UPMS, Paris, France; ¹⁹Klinikum Augsburg, Department of Hematology and Oncology, University of Munich, Augsburg, Germany; ²⁰Department of Bone Marrow Transplantation and Onco-Hematology, Maria Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Gliwice Branch, Poland; and ²¹Hematology Division, Chaim Sheba Medical Center, Tel Hashomer, Israel

©2016 Ferrata Storti Foundation. This is an open-access paper. doi:10.3324/haematol.2015.135699

Received: 22/08/2015.

Accepted: 10/11/2015.

Pre-published: 12/11/2015

Correspondence: Bipin.Savani@Vanderbilt.Edu

Supplementary file

Appendix I. List of institutions reporting data included in this study

The European Group for Blood and Marrow Transplantation (EBMT) registry is a voluntary working group of >500 transplantation centers required to report all consecutive stem-cell transplantations and follow-ups once per year. The Acute Leukemia Working Party (ALWP) of the EBMT approved this study. Audits are routinely performed to determine the accuracy of the data. Since 1990, patients have been providing informed consent authorizing the use of their personal information for research purposes.

Programme de Transplantation&Therapie Cellulaire, Centre de Recherche en Cancérologie de Marseille, Institut Paoli Calmettes, Marseille, France; University Hospital Leipzig, Division of Haematology & Oncology, Leipzig, Germany; Ospedale San Raffaele s.r.l., Haematology and BMT, Milano, Italy; Hannover Medical School, Department of Haematology, Hemostasis, Oncology, and Stem Cell Transplantation, Hannover, Germany; Charité Universitätsmedizin Berlin, Campus Virchow Klinikum, Medizinische Klinik m. S. Hämatologie/Onkologie, A, Berlin, Germany; Saint Petersburg State Medical Pavlov University, Ratsa Gorbacheva Memorial Children`s Institute, Hematology and Transplantology, St._Petersburg, Russia; CHU Bordeaux, Hôpital Haut-leveque, Pessac, France; University of Cologne, I. Dept. of Medicine, Cologne, Germany; Erasmus MC-Daniel den Hoed Cancer Centre, Rotterdam, The Netherlands; Deutsche Klinik für Diagnostik, KMT Zentrum, Wiesbaden, Germany; University of Freiburg, Dept. of Medicine -Hematology, Oncology, Freiburg, Germany; University Hospital Birmingham NHSTrust, Queen Elizabeth Medical Centre, Edgbaston, Dept. of Haematology, Birmingham, United Kingdom; CHU Nantes, Dept. D`Hematologie, Nantes, France; Universitaetsklinikum Dresden, Medizinische Klinik und Poliklinik I, Dresden, Germany; University Medical Centre, Dept. of Haematology, Utrecht, The Netherlands; VU University Medical Center, Department of Hematology (Br 250), Amsterdam, The Netherlands; University Hospital Gasthuisberg, Dept. of Hematology, Leuven, Belgium; Klinik fuer Innere Medizin III, Universitätsklinikum Ulm, Ulm, Germany; Hopital St. Louis, Dept.of Hematology - BMT, Paris, France; Klinikum Grosshadern, Med. Klinik III, Munich, Germany; University Hospital Eppendorf, Bone Marrow Transplantation Centre, Hamburg, Germany; Charles University Hospital, Dept. of Hematology/Oncology, Pilsen, Czech Republic; GKT School of Medicine, Dept. of Haematological Medicine, King`s Denmark Hill Campus, London, United Kingdom; Centre Hospitalier Lyon Sud, Pavillon Marcel Bérard -Bat 1G, Service Hematologie, Lyon, France; Bone Marrow Transplant Unit L 4043, National University Hospital, Rigshospitalet, Copenhagen, Denmark; Universität Tübingen, Medizinische Klinik, Abteilung II, Tübingen, Germany; University of Heidelberg, Medizinische Klinik u. Poliklinik V, Heidelberg, Germany; Institut Universitaire du Cancer Toulouse, Oncopole, Toulouse, France; Nottingham City Hospital, Hucknall Road, Nottingham, United Kingdom; University Regensburg, Dept. of Hematology and Oncology, Regensburg, Germany; Bristol Royal Hospital for Children, Dept. of Paediatric Oncology/BMT, Bristol, United Kingdom; Ospedale San Martino, Department of Haematology II, Genova, Italy; Techniciens d`Etude Clinique suivi de patients greffes, Nouvel Hopital Civil, Strasbourg, France; Hopital A. Michallon, Department of Hematology, Grenoble, France; Royal Marsden Hospital, Leukaemia Myeloma Units, London, United Kingdom; Hopital d`Enfants, Unité de Transplantation Médullaire, Service de Méd. Infantile, Vandoeuvre_Les_Nancy, France; University Hospital Maastricht, Dept. Internal Med.Hematology /Oncology, Maastricht, The Netherlands; Asklepios Klinik St. Georg, Department of Haematology, Hamburg, Germany; Hope Directorate, St. James`s Hospital, Dublin, Ireland; Hôpital HURIEZ, UAM allo-CSH, CHRU, Lille, France; Hospital Clínico, Servicio de Hematología, Salamanca, Spain; University Medical Center Groningen (UMCG), Dept. of Hematology, Groningen, The Netherlands; Div. Stem Cell Transplantation

and Immunotherapy, 2nd Medical Department, University Hospital Schleswig-Holstein Kiel Campus, Kiel, Germany; Karolinska University Hospital, Dept. of Hematology, Stockholm, Sweden; University of Liege, Dept. of Hematology, CHU Sart-Tilman, Liege, Belgium; CHU Lapeyronie, Département d`Hématologie Clinique, Montpellier, France; Medizinische Universitaet Wien, Klinik fuer Innere Medizin I, Knochenmarktransplantation, Vienna, Austria; University Hospital, Dept. of Bone Marrow Transplantation, Hufelandstr. 55, Essen, Germany; Hacettepe University, Department of Hematology, BMT Unit, Ankara, Turkey; Manchester Royal Infirmary, Clinica Haematology Department, Manchester, United Kingdom; University Hospital, Dept. of Hematology, Linköping, Sweden; Hôpital Henri Mondor, Sve d`Hematologie, Creteil, France; Adult HSCT unit, Northern Centre for Bone Marrow Transplantation, Freeman Hospital, Newcastle-Upon-Tyne, United Kingdom; CHRU, Service des Maladies du Sang, Angers, France; University of Saarland, University Hospital, Dept. of Internal Med., BMT Unit, Homburg, Germany; BMT unit, Clinica Ematologica, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy; Chaim Sheba Medical Center, Chaim Sheba Medical Center, Dept. of Bone Marrow Transplantation, Tel-Hashomer, Israel; University Hospital, Clinic of Hematology, Zürich, Switzerland; Department of Haematology, Cancer and Haematology Centre, Churchill Hospital, Oxford, United Kingdom; Medical University Graz, LKH - University Hospital Graz, Division of Haematology, Graz, Austria; Hospital Santa Creu i Sant Pau, Hematology Department, Barcelona, Spain; Hôpitaux Universitaires de Genève, Département des Spécialités de Médecine, Service d`Hématologie, Geneva, Switzerland; University Hospital Brno, Dept. of Internal Med. - Hematooncology, Brno, Czech Republic; St. Bartholomew`s and The Royal London NHS Trust, 45 Little Britain, London, United Kingdom; Hopital Saint Antoine, Department of Hematology, Paris, France; Silesian Medical Academy, Univ. Dept. of Haematology and BMT, Katowice, Poland; Hospital Clinic, Institute of Hematology & Oncology, Dept. of Hematology, Barcelona, Spain; Hopital Jean Minjoz, Service d`Hématologie, Besancon, France; Southampton General Hospital, Haematology, Oncology, & Paediatrics, Dept. of Haematology, Southampton, United Kingdom; Leiden University Hospital, BMT Centre Leiden, Leiden, The Netherlands; Cliniques Universitaires St. Luc, Dept. of Haematology, Brussels, Belgium; University Hospital, Dept. of Hematology, Lund, Sweden; Addenbrookes Hospital, Department of Haematology, Cambridge, United Kingdom; Bone Marrow Transplant Unit, Beatson, West of Scotland Cancer Centre, Gartnavel General Hospital, Glasgow, United Kingdom; Centre Hospitalier Universitaire de Rennes, Service d`Hématologie Clinique Adulte, Rennes, France; University Medical Center Mainz, Department of Hematology, Oncology and Pneumology, Mainz, Germany; Umea University Hospital, Hematology, Umeå, Sweden; Academisch Ziekenhuis bij de Universiteit, van Amsterdam, Emma Kinderziekenhuis, Amsterdam, The Netherlands; University Hospital Erlangen, Dept. of Internal Medicine 5, Ulmenweg 18, Erlangen, Germany; Sahlgrenska University Hospital, Center for Hematopoietic Cell Transplantation, Hematology Section, Goeteborg, Sweden; Department of Haematology, University Hospital of Wales, Cardiff, United Kingdom; University of Münster, Dept. of Hematol./Oncol., Albert-Schweitzer-Campus 1, Münster, Germany; ICO – Hospital Duran i Reynals, L`Hospitalet de Llobregat, Barcelona, Spain; North Trent BMT Programme (Adults), Sheffield Teaching Hospitals NHS Trust, Royal Hallamshire Hospital, Sheffield, United Kingdom; Inst. Português de Oncologia do Porto, BMT Unit, Porto, Portugal; Gustave Roussy, institut de cancérologie, BMT Service, Division of Hematology,, Department of Medical Oncology, Villejuif, France; CHU CAEN, Institut d`hématologie de Basse-Normandie, Caen, France; Azienda Ospedaliera Papa Giovanni XXIII, Hematology and Bone Marrow Transplant Unit, Bergamo, Italy; Antwerp University Hospital (UZA), Dept. of Hematology, Antwerp_Edegem, Belgium; Institute of Hematology and Blood Transfusion, Servicio de Hematología, Prague, Czech Republic; University Hospital, Hematology, Basel, Switzerland; Rambam Medical Center, Dept. of Hematology & BMT, Haifa, Israel; CHU Nice - Hôpital de l`ARCHET I, Hematologie Clinique, Nice, France; University Hospital, Department of Haemato-Oncology, Olomouc, Czech Republic; "Tor

Vergata University of Rome, Stem Cell Transplant Unit, Policlinico Universitario Tor Vergata, Rome, Italy; Institut Jules Bordet, Experimental Hematology, Brussels, Belgium; Université Paris IV, Hôpital la Pitié-Salpêtrière, Hematologie Clinique, Paris, France; Hôpital La Miletrie, Head of the Bone Marrow Transplant Unit, Clinical Hematology, Poitiers, France; CHU ESTAING, Service d'hématologie clinique Adulte et pédiatrie, Clermont-Ferrand, France; Plymouth Hospitals NHS Trust, Derriford Hospital, Plymouth, United Kingdom; Universitätsklinikum Jena, Klinik für Innere Medizin II, (Abt. Hämatologie und Onkologie), Jena, Germany; Robert-Bosch-Krankenhaus, Abt. Hämatologie / Onkologie, Stuttgart, Germany; Klinikum Augsburg, II Medizinische Klinik, Augsburg, Germany; University College London Hospital, Department of Haematology, London, United Kingdom; C.H.R.U de Brest, 2, avenue Foch, Service Onco-Hématologie, Brest, France; S.S.C.V.D Trapianto di Cellule Staminali, A.O.U Citta della Salute e della Scienza di Torino, Presidio Molinette, Torino, Italy; Hospital Universitario La Fe, Servicio de Hematología, Valencia, Spain; Leicester Royal Infirmary, Department of Haematology, NHS Trust, Leicester, United Kingdom; Centre Henri Becquerel, Hematology, Rouen, France; Hôpital Necker, Service Hematologie Adulte, Paris, France; Royal Free Hospital and School of Medicine, Department of Hematology, London, United Kingdom; A.Z. Sint-Jan, Dept. of Hematology, Brugge, Belgium; Christie NHS Trust Hospital, Adult Leukaemia and Bone Marrow Transplant Unit, Manchester, United Kingdom; Bologna University, S.Orsola-Malpighi Hospital, Institute of Hematology & Medical, Oncology L & A Seràgnoli, Bologna, Italy; Vilnius University Hospital Santariskiu Klinikos, Haematology, Oncology & Transfusion Center, Vilnius, Lithuania; University Hospital, Dept. of Medicine, Uppsala, Sweden; ZNA, Lange Beeldekensstraat 267, Antwerp, Belgium; ICO-Hospital Universitari Germans Trias i Pujol, Cattedra e Servizio di Ematologia, Barcelona, Spain; Hospital Universitario Virgen del Rocío, Servicio de Hematología y Hemoterapia, Servicio Andaluz de Salud, Sevilla, Spain; University Department of Hematology, Aarhus Amtssygehus, Aarhus, Denmark; Charles University Hospital, 4th Department of Internal Medicine - Hematology, Hradec_Králové, Czech Republic; CHRU St. Etienne, Hôpital Nord, Service d'Hématologie Clinique, Saint_Etienne, France; Hadassah University Hospital, Dept. of Bone Marrow Transplantation, Jerusalem, Israel; University Hospital Innsbruck, Internal Medicine V (Hematology & Oncology), Innsbruck, Austria; Hospital San Maurizio, Dept. of Hematology - BMT Unit, Bolzano, Italy; Philipps Universität Marburg, University Hospital Giessen and Marburg, Marburg, Germany; Azienda Ospedaliero Universitaria di Udine, Division of Hematology, Udine, Italy; Universitätsklinikum Göttingen, Abteilung Hämatologie und Onkologie, Göttingen, Germany; Imperial College, Department of Haematology, Hammersmith Hospital, London, United Kingdom; Hosp. Reina Sofia, Córdoba Hospital, Department of Hematology, Córdoba, Spain; Azienda Ospedaliera, Centro Unico Regionale Trapianti, Alberto Neri, Bianchi-Melacrino-Morelli, Reggio_Calabria, Italy; Western General Hospital, Dept. of Haematology, Edinburgh, United Kingdom; Charité - Campus Benjamin Franklin, Universitätsmedizin Berlin, Medizinische Klinik III - Hämatologie u Onkologie, Berlin, Germany; Hôpital Percy, Hematology Department, Clamart, France; Azienda Ospedali Riuniti di Ancona, Department of Hematology, Ancona University,, Ancona, Italy; H SS. Antonio e Biagio, Haematology Department, Alessandria, Italy; Klinikum Karlsruhe gGmbH, III. Med. Klinik, Haematologie, Onkologie, Karlsruhe, Germany; Ospedale di Niguarda Ca` Granda, Hematology Department, Milano, Italy; DCTK, Marrow Donor Registry, Wroclaw, Poland; Klinikum Nürnberg, 5. Medizinische Klinik, BMT-Unit, Nürnberg, Germany; Birmingham Heartlands Hospital, Department of Haematology, Birmingham, United Kingdom; Ospedale di Careggi, BMT Unit Department of Hematology, Firenze, Italy; Klinikum Rechts der Isar, III Med Klinik der TU, Munich, Germany; George Papanicolaou General Hospital, Haematology Department / BMT Unit, Thessaloniki, Greece; Ankara University Faculty of Medicine, Dept. of Hematology, Adult Stem Cell Transplantation Unit, Ankara, Turkey; Canterbury Health Laboratories, Christchurch, New Zealand; CHRU Limoges, Service d'Hématologie Clinique, Limoges, France; Hospital Clínico Universitario, Servicio de

Hematologia y Oncologia, Valencia, Spain; Ospedale V. Cervello, Div. di Ematologia e Unità Trapianti, Palermo, Italy; Royal Liverpool University Hospital, Department of Haematology, Liverpool, United Kingdom; HUCH Comprehensive Cancer Center, Stem Cell Transplantation Unit, Helsinki, Finland; Hospital de la Princesa, Department of Hematology, Madrid, Spain; Dept. Haematology and Stem Cell Transplant, St. István and St. László Hospital, Semmelweis University St. Laszlo Campus, Budapest, Hungary; U.O. Ematologia con Trapianto, Azienda Ospedaliero Universitaria Policlinico Bari, Bari, Italy; Clinica Puerta de Hierro, Servicio de Hematología y Hemoterapia, Madrid, Spain; Medical Park Hospitals, Stem Cell Transplant Unit, Antalya, Turkey; USD Trapianti di Midollo, Adulti, Pizzale Spedali Civili 1, Università di Brescia, Brescia, Italy; Yorkshire Blood & Marrow Transplant Programme, Haematology Department, Level 3, Bexley Wing, St James`s Institute of Oncology, Leeds, United Kingdom; Baskent University Hospital, Haematology Division, BMT Unit, Haematology Reserach Laboratory, Training & Medical, Adana, Turkey; Università Cattolica S. Cuore, Istituto di Ematologia, Ematologia, Rome, Italy; Ege University Medical School, Dept. of Hematology, Izmir, Turkey; Ospedale La Maddalena - Dpt. Oncologico, Unità Operativa di Oncoematologia e, Trapianto di Midollo, Palermo, Italy; University of Napoli, `Federico II` Medical School, Division of Hematology, Napoli, Italy; S. Bortolo Hospital, Department of Hematology, Vicenza, Italy; Rikshospitalet, Department of Medicine, The National Hospital, Oslo, Norway; University Hospital Center Rebro, Zagreb, Croatia; Onco-Ematologia Pediatrica, Centro Trapianti Cellule Staminali, Ospedale Infantile Regina Margherita, Torino, Italy; Erciyes Medical School, Dept. of Hematology - Oncology, Kapadokya (Cappadocia) BMT Center, Kayseri, Turkey; Kliniken Essen Süd, Evangelisches Krankenhaus Essen-Werden gGmbH, Haematologie/Onkologie/Stammzelltransplantation, P, Essen, Germany; Hospital U. Marqués de Valdecilla, Servicio de Hematología-Hemoterapia, Santander, Spain; Department of Internal Medicine, American University of Beirut Medical Center, Beirut, Lebanon; Policlinico G.B. Rossi , Verona, Italy; Hospital Morales Meseguer, Unidad de Trasplante de Médula Osea, Serv de Hemat, Murcia, Spain; Gazi Üniversitesi Tip Fakültesi Hastanesi, Eriskin Hematoloji Bilim Dalı, Ankara, Turkey; Ospedale Civile, Dipartimento di Ematologia, Medicina Trasfusionale e Biotecnologie, Pescara, Italy; Belfast City Hospital, Dept. of Haematology, Belfast, United Kingdom; Goethe-Universität, Medizinische Klinik II, Klinikum der Johann Wolfgang, Frankfurt_am_Main, Germany; European Institute of Oncology, Institute of Haematology, Milano, Italy; Heinrich Heine Universität, Klinik für Hämat,Onkol,Klin.Immun., Düsseldorf, Germany; Beilinson Hospital, Hematology and BMT Department, Petach-Tikva, Israel; Hospital de Gran Canaria `Dr Negrin`, Servicio de Hematología y Hemoterapia, Las_Palmas_De_Gran_Canaria, Spain; Hospital Universitario Donostia, Paseo Dr Beguiristain 107-116, San_Sebastian, Spain; AZ Delta, Hematology - Oncology Dept., Roeselare, Belgium; Poznan University of Medical Sciences, Department of Hematology, Poznan, Poland; Unità Operativa Oncoematologia Pediatrica, Azienda Ospedaliera Universitaria Pisa, Pisa, Italy; Hospital Gregorio Marañón, Sección de Trasplante de Medula Osea, Madrid, Spain; Tel Aviv Sourasky Medical Center, Blood and Bone Marrow Transplantation, Tel_Aviv, Israel; "Karadeniz Technical University; Faculty of Medicine; Department of Haematology; ", Trabzon, Turkey; Turku University, Central Hospital, BMT Unit, Dept. of Medicine, Turku, Finland; Specialized Children`s Oncohematology Hospital, 8, `Bialo More` Str., Sofia, Bulgaria; Klinik für Innere Medizin C, Hämatologie und Onkologie, Transplantationszentrum, Palliativmedizin, Universitätsmedizin Greifswald,, Greifswald, Germany; Univ.`La Sapienza`, Dip. Biotecnologie Cellulari ed Ematologia, Rome, Italy; Nijmegen Medical Centre, Department of Hematology, Nijmegen, The Netherlands; Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, IRCCS, Milano, Italy; Istituto Clinico Humanitas, Transplantation Unit, Department of Oncology and Haematology, Milano, Italy; Hospital Univ. Virgen de las Nieves, Servicio de Hematología, Granada, Spain; Hospital Vall d`Hebron, Unidad de Adultos, Barcelona, Spain; Klinik für Knochenmarktransplantation, und Hämatologie/Onkologie GmbH, Idar-Oberstein, Germany; Elisabethinen-Hospital, I. Internal

Department, Linz, Austria; "Shariati Hospital; Hematology-Oncology and BMT Research; ", Teheran, Iran; Universitätsklinikum Würzburg, Med. Klinik und Poliklinik II, Würzburg, Germany; Complejo Hospitalario de Navarra, Servicio de Hematología, Pamplona, Spain; King Hussein Cancer Centre, Queen Rania Street - Aljubiha, Amman, Jordan; University of Milano, Istituto Nazionale dei Tumori, Hematology - Bone Marrow Transplantation Unit,, Milano, Italy; Hospital Universitario Central de Asturias, Avenida de Roma S/N, Oviedo, Spain; University Hospital Gent, Haematology and Bloodbank, Gent, Belgium; Martin-Luther-Universität Halle-Wittenberg, Klinik für Innere Medizin IV, Halle, Germany; King Faisal Specialist Hospital & Research Centre, Oncology (Section of Adult Haematology/BMT), Riyadh, Saudi Arabia; Az. Ospedaliera S. Croce e Carle, Division of Hematology, Cuneo, Italy; Institute of Hematology and Transfusion Medicine, I. Gandhi 14 str., Warsaw, Poland; IRCCS, Casa Sollievo della Sofferenza, Unit of Hematology and Bone Marrow Transplantation, San_Giovanni_Rotondo, Italy; University Hospital SPSK 1, Department of Hematology, Wroclaw, Poland; A.O.R.N. `SAN.G MOSCATI`, Ematologia, Avellino, Italy; First Affiliated Hospital of Soochow University, Department of Hematology, Suzhou, China; Universitätsmedizin Mannheim, III. Medizinische Klinik, Einheit für Stammzelltransplantation, Mannheim, Germany; Hopital Bretonneau, Service d`Oncologie Médicale, Tours, France; NHS Grampian, Aberdeen Royal Infirmary - Foresterhill, Dept. of Haematology, Aberdeen, United Kingdom; St. George`s Hospital, Department of Haematology, London, United Kingdom; Malignant Haematology & Stem Cell Transplantation, Alfred Hospital, Melbourne, Australia; University Hospital, Department of Hematology and Transfusiology, Bratislava, Slovakia; Mazzoni Hospital, Haematology Service, Ascoli_Piceno, Italy; Inst. Portugues Oncologia, BMT Unit, Lisboa, Portugal; Azienda Ospedaliero Universitaria di Modena Policlinico, Ematologia, Modena, Italy; Ospedale San Gerardo, Clinica Ematologica dell`Universita Milano-Biocca, Monza, Italy; Hospital Clinico Universitario, Servicio de Hematología, Santiago_De_Compostela, Spain; Universitair Ziekenhuis Brussel, Division of Clinical Hematology, Brussels, Belgium; University Med. Center, Department of Hematology, Ljubljana, Slovenia; Fiona Stanley Hospital, Hematology Department, Perth, Australia; Ospedale Vito Fazzi, Haematology & Stem Cell Transplant Unit, Lecce, Italy; Patras University Medical School, University Hospital, Haematology Division, Patras, Greece; Ospedale S. Camillo-Forlanini, Dept. of Hematology and BMT, Rome, Italy; U.O.S.A Centro Trapianti e Terapia Cellulare, Azienda Ospedaliera Universitaria Senese, Policlinico S.Maria alle Scotte, Siena, Italy; Univ. Est. de Campinas/TMO/UNICAMP, Cidade Universitaria `Zeferino Vaz`, Campinas, Brazil; KLINIKUM BREMEN - MITTE, Hämatologie / Onkologie, Klinik für Innere Medizin, Bremen, Germany; Hospital Universitari Son Espases, Hematology Service, Palma_De_Mallorca, Spain; Hospital Guglielmo da Saliceto, Oncology and Hematology Department, Piacenza, Italy; Hospital Universitario Virgen de la Arrixaca, Ctra. Madrid - Cartagena, Murcia, Spain; Otto von Guericke Universität, Med. Fakultät d., Klin.f.Hämatol./Onkologie, Magdeburg, Germany; Fundeni Clinical Institute, BMT Unit, Bucharest, Romania; Anadolu Medical Center Hospital, Bone Marrow Transplantation Department, Kocaeli, Turkey; Hospital Ramón y Cajal, Servicio de Hematología, Madrid, Spain; Haematology Department, St.Savvas Oncology Hospital, Athens, Greece; University Hospital, Collegium Medicum UMK, Pediatric Hematology and Oncology, Bydgoszcz, Poland; St Franziskus Hospital, Medizinische Klinik I, Flensburg, Germany; Hospital Sirio-Libanés, Hematology Bone Marrow Transplant Unit, Sao_Paulo, Brazil; Ospedale Nord, Institute of Haematology, Taranto, Italy; Makassed University Hospital, Haematology/Oncology, Beirut, Lebanon; Ankara Oncology Research & Education Hospital, Hematology & Stem cell Transplantation Unit, Ankara, Turkey; Ospedale Dell`Angelo, Hematology Department, Venezia-Mestre, Italy; Universität Rostock, Kl. für Inn.Med./Hämatologie/Onkol., Rostock, Germany; LKH - University Hospital Graz, Division of Paediatric Haemato/Oncology, Graz, Austria; Cardarelli Hospital, Division of Hematology && SCT Unit, Napoli, Italy; Hospital del SAS, Dept. of Hematology, Cádiz, Spain; Hospital Universitario La Paz, Hematologia-

Oncologia, Madrid, Spain; Azienda Policlinico Vittorio Emanuele, Programma di Trapianto Emopoietico Misto e Metropolitano Di Catania, Ospedale Ferrarotto, Catania, Italy; Azienda Ospedaliera Universitaria San Martino, Monoblocco 11-Ponente, Genova, Italy; Haukeland University Hospital, Department of Haematology, Bergen, Norway; Univ. of Parma, Cattedra di Ematologia, Centro Trapianti Midollo Osseo, Parma, Italy; Gaziantep University Medical School, Division of Haematology, Gaziantep, Turkey; Albert Albert's Stem Cell Transplantation Centre, Haematology Pretoria East Hospital, Pretoria, South Africa; St. Anna Kinderspital, Stem Cell Transplantation Unit, Vienna, Austria; Pesaro Hospital, Hematology & Transplant Centre, Pesaro, Italy; Hospital Regional de Málaga, Servicio de Hematología, Málaga, Spain; Hospital de Santa Maria, BMT Unit, Lisboa, Portugal; Centre Pierre et Marie Curie, Service Hématologie Greffe de Moëlle, Alger, Algeria; "Tartu University Hospital; Clinic of Hematology and Oncology; ", Tartu, Estonia; IRRCS Ospedale Pediatrico Bambino Gesù, Rome, Italy; Adult and Paediatric Transplant Centre, Centro Trapianti di Midollo Osseo, P.O. R. Binaghi, Cagliari, Italy; Military Institute of Health Services BMT Unit, Bone Marrow Transplantation Unit, Warsaw, Poland; Federal Centre of Heart, Blood and Endocrinology, Dept. of Hematology, St._Petersburg, Russia; Central Clinical Hospital, The Medical University of Warsaw, Department of Hematology & Oncol, Warsaw, Poland; University of Amiens: CHU Amiens, Service d`Hematologie, Amiens, France; KH Hameln-Pyrmont, Abt. Haem/Onkologie, Hameln, Germany; Clinical Hematology and BMT Unit, str. Revolutei, no 35, Targu-Mures, Romania; The Trustee of London Clinic, Stem Cell Transplant Unit, London, United Kingdom; Hacettepe University, Hematopoietic Stem Cell Transplantation Unit, Institute of Oncology, Ankara, Turkey; GHDC, Department of Hemato-Oncology, Charleroi, Belgium; GATA BMT Center, Gülhane Military Medical Academy, Ankara, Turkey; Ankara Bayindir Hospital, Haematology BMT, Ankara, Turkey; University Hospital, Department of Pediatrics, Tübingen, Germany; Civic Hospital, Dept. of Oncology, Noale, Italy; Royal Devon and Exeter Hospital, Dept. of Clinical Haematology, Exeter, United Kingdom; Hospital Ampang, Jalan Mewah Utara, Ampang, Malaysia; Hospital C. Panico, Hematology, Tricase_(Lecce), Italy; Arcispedale S. Maria Nuova, Unita Operativa Ematologia, Reggio_Emia, Italy; Niño Jesus Children`s Hospital, Dept. of Pediatrics, Madrid, Spain; Fundación Favaloro, Buenos_Aires, Argentina; Schneider Children`s Medical Center of Israel, BMT Unit, Petach-Tikva, Israel; Ýstanbul Tip Fakultesi, İç Hastalıkları ABD, Istanbul, Turkey; Istanbul University, Cerrahpasa Medical Faculty, BMT Unit / Hematology, Division of Hematology/BMT, Istanbul, Turkey; Constantiaberg Medi-Clinic, Cape Haematology and Bone Marrow Transplant Unit, Cape_Town, South Africa; Sezione di Ematologia, Dipartimento di Medicina Clinica e Sperimentale, Università di Perugia, Perugia, Italy; Medical University of Gdansk, Dept. of Haematology, BMT Unit, Gdansk, Poland; Azienda Ospedaliero-Universitaria Maggiore della Carità, SCU Ematologia, Amedeo Avogadro University of Eastern Piedmont, Novara, Italy