

Appendix 1: List of centers which contributed patients to this analysis

Erasmus MC Cancer Institute, University Medical Center Rotterdam, Department of Hematology, Rotterdam, The Netherlands

Hopital St. Louis, Dept.of Hematology - BMT, Paris, France

Bone Marrow Transplant Unit L 4043, National University Hospital, Rigshospitalet, Copenhagen, Denmark

University Medical Center Groningen (UMCG), Dept. of Hematology, Groningen, The Netherlands

Programme de Transplantation & Therapie Cellulaire, Centre de Recherche en Cancérologie de Marseille, Institut Paoli Calmettes, Marseille, France

Aarhus University Hospital, Aarhus Amtssygehus, Aarhus, Denmark

CHU Bordeaux, Hôpital Haut-leveque, Pessac, France

Cliniques Universitaires St. Luc, Dept. of Haematology, Brussels, Belgium

CHRU Nancy, Vandoeuvre Les Nancy, France

CHU Nantes, Dept. D'Hematologie, Nantes, France

Gustave Roussy Cancer Campus, BMT Service, Department of Hematology, Villejuif, France

Kings College Hospital, Dept. of Haematological Medicine, London, United Kingdom

Oslo University Hospital, Rikshospitalet, Clinic for Cancer Medicine, Hematology Dept., Section for Stem Cell Transplantation, Oslo, Norway

Medical Clinic and Policinic 1, Hematology and Cellular Therapy, University hospital Leipzig, Leipzig, Germany

Centre Hospitalier Universitaire de Rennes, Service d'Hematologie Clinique Adulte, Rennes, France

Nijmegen Medical Centre, Department of Hematology, Nijmegen, The Netherlands

University of Liege, Dept. of Hematology, CHU Sart-Tilman, Liege, Belgium

University Hospital Gasthuisberg, Dept. of Hematology, Leuven, Belgium

CHU Lapeyronie, Département d'Hématologie Clinique, Montpellier, France

University Hospital, Dept. of Bone Marrow Transplantation, Essen, Germany

CHU Nice - Hôpital de l'ARCHET I, Hematologie Clinique, Nice, France

Addenbrookes Hospital, Department of Haematology, Cambridge, United Kingdom

Institute of Hematology and Transfusion Medicine, Warsaw, Poland

Leiden University Hospital, BMT Centre Leiden, Leiden, The Netherlands

Hosp. Reina Sofia, Córdoba Hospital, Department of Hematology, Cordoba, Spain

CHU Grenoble Alpes - Université Grenoble Alpes, Service d'Hématologie, CS 10217, Grenoble, France

Techniciens d'Etude Clinique suivi de patients greffes, Nouvel Hopital Civil, Strasbourg, France University Hospital, Dept. of Medicine, Uppsala, Sweden

University Hospital Maastricht, Dept. Internal Med.Hematology /Oncology, Maastricht, The Netherlands

Hospital Universitario Donostia, San Sebastian, Spain

C.H.R.U de Brest, Service Onco-Hematologie, Brest, France

Southampton General Hospital, Haematology, Oncology, & Paediatrics, Dept. of Haematology, Tremona Road, Southampton, United Kingdom

First State Pavlov Medical University of St. Petersburg, Raisa Gorbacheva Memorial Research Institute for Paediatric Oncology, Hematology, and Transplantation, St Petersburg, Russia

Ghent University Hospital, Haematology, Gent, Belgium

“Tor Vergata” University of Rome, Stem Cell Transplant Unit, Policlinico Universitario Tor Vergata, Rome, Italy

Centre Henri Becquerel, Hematology, Rouen, France

Universitaet Tuebingen, Medizinische Klinik, Tuebingen, Germany

Skanes University Hospital, Dept. of Hematology, Lund, Sweden

CHU - Institut Universitaire du Cancer Toulouse, Oncopole, Toulouse, France

University Hospital, Hematology, Basel, Switzerland

Inst. Português de Oncologia do Porto, BMT Unit, Porto, Portugal

Department of Haematology, University Hospital of Wales, Cardiff, United Kingdom

University of Heidelberg, Medizinische Klinik u. Poliklinik V, Heidelberg, Germany

ASST Papa Giovanni XXIII, Hematology and Bone Marrow Transplant Unit, Bergamo, Italy

University of Muenster, Dept. of Hematology/Oncology, Muenster, Germany

Nottingham University, Hucknall Road, Nottingham, United Kingdom
Imperial College, Department of Haematology, Hammersmith Hospital, London, United Kingdom
University Hospital, Clinic of Hematology, Zurich, Switzerland
CHU de Lille, LIRIC, INSERM U995, Université de Lille, Lille, France
USD Trapianti di Midollo, Adulti, Università di Brescia, Brescia, Italy
Institut de Cancerologie Lucien Neuwirth, Service d'Hématologie Clinique, Saint Etienne, France
University Hospital Center Rebro, Zagreb, Croatia
VU University Medical Center, Department of Hematology (Br 250), Amsterdam, The Netherlands
Vilnius University Hospital Santaros Klinikos, Haematology, Oncology & Transfusion Center, Vilnius, Lithuania
Universitaetsklinikum Dresden, Medizinische Klinik und Poliklinik I, Dresden, Germany
National Research Center for Hematology, Bone Marrow Transplantation, Moscow, Russia
CHRU Limoges, Service d'Hématologie Clinique, Limoges, France
Hopital Jean Minjoz, Service d'Hématologie, Besancon, France
Department of Bone Marrow Transplantation and Oncohematology, Maria Sklodowska-Curie
National Research Institute of Oncology, Oncology Center, Gliwice, Poland
Centre Hospitalier Lyon Sud, Pavillon Marcel Bérard -Bat 1G, Service Hematologie, Lyon, France
Chaim Sheba Medical Center, Chaim Sheba Medical Center, Dept. of Bone Marrow Transplantation, Tel Hashomer,
Israel
University of Amiens: CHU Amiens, Service d'Hématologie, Amiens, France
Hôpital Necker, Service Hematologie Adulte, Paris, France
CHU CAEN, Institut d'hématologie de Basse-Normandie, Caen, France
Turku University Hospital, TD7 (Stem Cell Transplant Unit), Turku, Finland
Ospedale Civile, Dipartimento Oncologico Ematologico, Pescara, Italy
Hôpital Henri Mondor, Sve d' Hematologie, Creteil, France
Universite Paris IV, Hopital la Pitié-Salpêtrière, Hematologie Clinique, Paris, France
University of Cologne, I. Dept. of Medicine, Cologne, Germany
Dél-pesti Centrumkórház –, Országos Hematológiai és Infektológiai Intézet, Dept. Haematology and Stem Cell
Transplant, Budapest, Hungary
Manchester Royal Infirmary, Clinica Haematology Department, Manchester, United Kingdom
Silesian Medical Academy, Univ. Dept. of Haematology and BMT, Katowice, Poland
Azienda Ospedaliero Universitaria di Udine, Division of Hematology, Udine, Italy
Karolinska University Hospital, Dept. of Hematology, Stockholm, Sweden
Yorkshire Blood & Marrow Transplant Programme, Haematology Department, Level 3, Bexley Wing, St
James's Institute of Oncology, Leeds, United Kingdom
Hope Directorate, St. James's Hospital, James Street, Dublin, Ireland
Hadassah University Hospital, Dept. of Bone Marrow Transplantation, Jerusalem, Israel
University Hospital Birmingham NHS Trust, Queen Elizabeth Medical Centre, Edgbaston, Dept. of
Haematology, Birmingham, United Kingdom
HUCH Comprehensive Cancer Center, Stem Cell Transplantation Unit, Helsinki, Finland
ICO-Hospital Universitari Germans Trias i Pujol, Cattedra e Servizio di Ematologia, Badalona, Spain
Hospital Universitario Virgen del Rocío, Servicio de Hematologia y Hemoterapia, Servicio Andaluz de Salud,
Sevilla, Spain
Belfast City Hospital, Dept. of Haematology, Belfast, United Kingdom
Ospedale San Raffaele s.r.l., Haematology and BMT, Milano, Italy
Hospital Sirio-Libanés, Hematology Bone Marrow Transplant Unit, Sao Paulo, Brazil
University Hospital Aachen, Dept. of Oncology, Hematology and SCT, Medizinische Klinik IV, Aachen, Germany
Istituto Clinico Humanitas, Transplantation Unit, Department of Oncology and Haematology, Milano, Italy
Ospedale Dell' Angelo, Hematology Department, Venezia, Italy
Universitaetsklinikum Goettingen, Abteilung Hämatologie und Onkologie, Goettingen, Germany
AZ Delta, Hematology Dept., Roeselare, Belgium
Hôpital D'instruction des Armées (HIA) PERCY, Service d'Hématologie, Clamart, France
Institut Catalá d'Oncologia– Hospital Duran i Reynals, L'Hospitalet de Llobregat, Barcelona, Spain

Hopital Saint Antoine, Department of Hematology, Paris, France
Institut Jules Bordet, Experimental Hematology, Brussels, Belgium
Bologna University, S.Orsola-Malpighi Hospital, Institute of Hematology & Medical, Oncology L & A Seràgnoli,
Bologna, Italy
CHU ESTAING, Service d'hématologie clinique Adulte et pédiatrie, Clermont Ferr, France
Olomouc University Hospital, Department of Haemato-Oncology, Faculty of Medicine and Dentistry, Olomouc,
Czech Republic
Unidad de Ensayos Clínicos de Hematología Pabellón A, bajo., Complejo Hospitalario de Navarra, Pamplona, Spain
Hospital Vall d'Hebron, Unidad de Adultos, Barcelona, Spain
Universitair Ziekenhuis Brussel, Division of Clinical Hematology, Brussels, Belgium
Philipps Universitaet Marburg, University Hospital Giessen and Marburg, Campus Marburg, Baldingerstr.,
Marburg, Germany
Hospital Clínico, Servicio de Hematología, Salamanca, Spain
University Regensburg, Dept. of Hematology and Oncology, Regensburg, Germany
University Hospitals Plymouth NHS Trust, Derriford Hospital, Plymouth, United Kingdom
H SS. Antonio e Biagio, Haematology Department, Alessandria, Italy
Medicana International Hospital Istanbul, Bone Marrow Transplant Unit, Istanbul, Turkey
Antwerp University Hospital (UZA), Dept. of Hematology, Antwerp Edegem, Belgium
Tel Aviv Sourasky Medical Center, Blood and Bone Marrow Transplantation, Tel Aviv, Israel
Hospital Guglielmo da Saliceto, Oncology and Hematology Department, Piacenza, Italy
Klinik fuer Innere Medizin III, Universitätsklinikum Ulm, Ulm, Germany
Bone Marrow Transplant Unit, Beatson, West of Scotland Cancer Centre, Gartnavel General Hospital, Glasgow,
United Kingdom
Hopital La Miletrie, Head of the Bone Marrow Transplant Unit, Clinical Hematology, Poitiers, France
Hospital Clínico de Valencia, Servicio de Hematología, Valencia, Spain
Birmingham Heartlands Hospital, Department of Haematology, Birmingham, United Kingdom
Hospital Sao Joao, Servicio de Hematologia Clinica, Porto, Portugal
ZNA, Lange Beeldekensstraat 267, Antwerp, Belgium
Fundeni Clinical Institute, Bucharest, Romania
Anadolu Medical Center Hospital, Bone Marrow Transplantation Department, Kocaeli, Turkey
King Abdul - Aziz Medical City, Riyadh, Saudi Arabia
A.Z. Sint-Jan, Dept. of Hematology, Brugge, Belgium
Universitaetsklinikum Jena, Klinik für Innere Medizin II, (Abt. Hämatologie und Onkologie), Am Klinikum 1, Jena,
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Azienda Ospedaliero Universitaria di Modena Policlinico, Ematologia, Modena, Italy
Hospital Ramón y Cajal, Servicio de Hematología, Madrid, Spain
Klinikum Nuernberg, 5. Medizinische Klinik, BMT-Unit, Nuernberg, Germany
Leicester Royal Infirmary, Department of Haematology, NHS Trust, Leicester, United Kingdom
Hospital Morales Meseguer, C/ Marqués de los Velez s/n, Unidad de Trasplante de Médula Osea, Serv de Hemat,
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Universitätsmedizin Berlin, Berlin, Germany
Hospital Gregorio Marañón, Sección de Trasplante de Medula Osea, Madrid, Spain
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Klinik fuer Knochenmarktransplantation, und Hämatologie/Onkologie GmbH, Idar Oberstein, Germany

Az. Ospedaliera S. Croce e Carle, Division of Hematology, Cuneo, Italy

U.O. Ematologia con Trapianto, Azienda Ospedaliero Universitaria Policlinico Bari, Bari, Italy

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University Hospital La Fe, Hematology Department (Torre F, Planta 7), Valencia, Spain

Clinica Puerta de Hierro, Servicio de Hematología y Hemoterapia, Madrid, Spain

Centro Trapianti Unico Di CSE Adulti e Pediatrico A. O Brotzu, Via Edward Jenner, 1, P.O. R. Binaghi, Cagliari, Italy

King Faisal Specialist Hospital and Research Center, Department of Oncology, Jeddah, Saudi Arabia

Medstar Antalya Hospital, Stem Cell Transplantation Unit, Antalya, Turkey

Unita Operativa di Ematologia e Trapianto di cellule staminali, Presidio Ospedaliero Vito Fazzi, Lecce, Italy

St. Franziskus Hospital, Medizinische Klinik I, Flensburg, Germany

Fondazione IRCCS Policlinico San Matteo, Pavia, Italy

Mazzoni Hospital, Haematology Service, Ascoli Piceno, Italy

Robert_Bosch_Krankenhaus, Abt. Hämatologie / Onkologie, Stuttgart, Germany

Klinikum Augsburg, II Medizinische Klinik, Augsburg, Germany

Gazi University Faculty of Medicine, Hematology, Besevler, Ankara, Turkey

University Hospital Bern, Paediatric Hematology/Oncology, Insel Gruppe AG, Kreditorenbuchhaltung, Bern, Switzerland

Medizinische Universitaet Wien, Klinik fuer Innere Medizin I, Knochenmarktransplantation, Vienna, Austria

University Medical Centre, Dept. of Haematology, Utrecht, The Netherlands

Hospital U. Marqués de Valdecilla, Servicio de Hematología-Hemoterapia, c/ Marqués de Valdecilla s/n, Santander, Spain

Department of Haematology, Cancer and Haematology Centre, Churchill Hospital, Oxford, United Kingdom

The Trustee of London Clinic, Stem Cell Transplant Unit, London, United Kingdom

Fondazione IRCCS - Ca' Granda, Ospedale Maggiore Policlinico IRCCS, Milano, Italy

Spedali Civili - Brescia, Hematology Division, Department of Medical Oncology, Brescia, Italy

Hannover Medical School, Department of Haematology, Hemostasis, Oncology, and Stem Cell Transplantation, Hannover, Germany

Onco-Ematologia Pediatrica, Centro Trapianti Cellule Staminali, Ospedale Infantile Regina Margherita, Torino, Italy
Deutsche Klinik fuer Diagnostik, KMT Zentrum, Wiesbaden, Germany
European Institute of Oncology, Institute of Haematology, Milano, Italy
University Children`s Hospital, THE HOSPITAL OF THE ELEONORE FOUNDATION, Division of Stem Cell Transplantation, Zurich, Switzerland
Martin-Luther-Universitaet Halle-Wittenberg, Klinik für Innere Medizin IV, Halle, Germany
University Hospital "Queen Johanna-Isul", Sofia, Bulgaria
University Medical Center Schleswig-Holstein, Clinic for Hematology/Oncology and Stem cell transplantation, Luebeck, Germany
Department of Internal Medicine, American University of Beirut Medical Center, Beirut, Lebanon
Gaziantep University Medical School, Division of Haematology, Kilis Yolu, Gaziantep, Turkey
Centre Hospitalier Sud Réunion, Service de médecine G, Hématologie-Oncologie`, Saint Pierre, France
Unità Operativa Di Medicina Interna, Civitanove Marche, Civitanove Mar, Italy
Arab Medical Center, Amman, Jordan
Ospedale San Gerardo, Clinica Ematologica dell`Universita Milano-Biocca, Monza, Italy
George Papanicolaou General Hospital, Haematology Department / BMT Unit, Thessaloniki, Greece
Hospital Clinico Universitario, Servicio de Hematología, C/ Galeras s/n, S de Compostela, Spain
King Hussein Cancer Centre, Queen Rania Street - Aljubiha, Amman, Jordan
Universitaet Rostock, Kl. für Inn.Med./Hämatologie/Onkol., Rostock, Germany
Grande Ospedale Metropolitano Bianchi Melacrino Morelli - Centro Unico Trapianti A. Neri, Alberto Neri, Bianchi-Melacrino-Morelli, Reggio Calabria, Italy
University Hospital Brno, Dept. of Internal Med. - Hematooncology, Brno, Czech Republic
University Hospital Eppendorf, Bone Marrow Transplantation Centre, Hamburg, Germany
CHRU, Service des Maladies du Sang, Angers, France
Arcispedale S. Maria Nuova, Unita Operativa Ematologia, Reggio Emilia, Italy
Ospedale La Maddalena - Dpt. Oncologico, Unità Operativa di Oncoematologia e, Trapianto di Midollo, Palermo, Italy
Charles University Hospital, Dept. of Hematology/Oncology, Pilsen, Czech Republic
Fundació Institut d`Investigació Sanitària Illes Balears – IdISBa, Hospital Universitari Son Espases, Palma Mallorca, Spain
Umea University Hospital, Hematology, Umea, Sweden
Clínica Universitaria de Navarra, Area de Terapia Celular, Unidad de Trasplante Hemopoyético, Pamplona, Spain
University Hospital, Dept. of Hematology, Linköping, Sweden
Tartu University Hospital, Clinic of Hematology and Oncology, Tartu, Estonia
Klinikum Oldenburg, Abt. Onkologie/Hämatologie, Oldenburg, Germany
Centre Hospitalier Universitaire Vaudois, Centre Hospitalier Universitaire Vaudois, División of Hematology, Lausanne, Switzerland
Private Medicana International Ankara Hospital, Dept. Bone Marrow Transplantation, Ankara, Turkey
Central Clinical Hospital, Medical University of Warsaw, Department of Hematology & Oncol, Ul. Banacha 1a, Warsaw, Poland
University Hospital of Oran, Department of Haematology and Cell Therapy, USTO, Oran, Algeria
Demiroglu Bilim University Istanbul Florence Nightingale Hospital, Hematopoietic SCT Unit, Istanbul, Turkey

Table S1: Points accorded for individual component of the TCI score table adapted from Spyronidis et al, Blood Advances 2020. Scores are assigned additively for each component included in the conditioning regimen.

Component	Dose	Number of points
TBI (Gray)	≤ 5	1
	6-8	2
	≥ 9	3
Busulfan (mg/kg)	≤ 6.4 IV/≤ 8 PO	1
	9.6 IV/12 PO	2
	12.8 IV/16 PO	3
Treosulfan (g/m ²)	30	1
	36	2
	42	3
Melphalan (mg/m ²)	< 140	1
	140-199	2
	≥ 200	3
Thiotepa (mg/kg)	< 10	0.5
	10-19	1
	≥ 20	1.5
Fludarabine (mg/m ²)	≤ 160	0.5
	> 160	1
Cyclophosphamide (mg/kg)	< 90	0.5
	≥ 90	1

Table S2. Regimens and doses of the included patients.

Regimen		Component (dose unit)	Dose (median [IQR] where varied)
<i>Flu+Bu</i>	1,129 (68%)	Fludarabine (g/m ²)	150
		Busulfan IV (mg/kg)	6.4
		Busulfan PO (mg/kg)	8
<i>Bu+Cy</i>	20 (1%)	Busulfan IV (mg/kg)	3.2 [3.2-6.4]
		Busulfan PO (mg/kg)	6.4
<i>Flu+Mel</i>	27 (2%)	Cyclophosphamide (mg/kg)	150
		Fludarabine (g/m ²)	150 [135-150]
<i>Flu+TBI</i>	364 (22%)	Melphalan (mg/m ²)	110
		Fludarabine (g/m ²)	150
<i>Flu+Treo</i>	65 (4%)	Total body irradiation (cGy)	200
		Fludarabine (g/m ²)	150
<i>Flu+Bu+Thio</i>	58 (3%)	Treosulfan (g/m ²)	30
		Fludarabine (g/m ²)	150
		Busulfan IV (mg/kg, no PO)	6.4
		Thiotepa (mg/kg)	5

Patients described in Figure 2 (comparing comorbidity by TCI intensity level) included those who received these regimens at intermediate and high doses as per the TCI definitions (Spyridonitis 2020) as well as patients who received conditioning with cyclophosphamide + total body irradiation. Abbreviations: Flu: fludarabine; Bu: busulfan; Cy: cyclophosphamide; Mel: melphalan; TBI: total body irradiation; Treo: treosulfan; Thio: thiotepa.

Table S3: Comorbidity definitions. *Composite cardiac disease* was defined as the presence of HCT-CI-defined cardiac disease, arrhythmia, or heart valve disease.

Comorbidity	HCT-CI Definition
Arrhythmia	Atrial fibrillation or flutter, sick sinus syndrome, or ventricular arrhythmias
Cardiac	Coronary artery disease, congestive heart failure, history of myocardial infarction, or left ventricular ejection fraction $\leq 50\%$
Heart valve disease	Except mitral valve prolapse
Diabetes Mellitus	Diabetes Mellitus requiring treatment with insulin or hypoglycemic agents at the time of initiation of conditioning
Mild Hepatic	Serum bilirubin between ULN and 1.5 times ULN; ALT or AST between ULN and 2.5 times ULN, or chronic hepatitis
Moderate/Severe Hepatic	Serum bilirubin greater than 1.5 times ULN; ALT or AST greater than 2.5 times ULN, or chronic hepatitis
Infection	Infection requiring antimicrobial therapy continuing after the date of transplantation (day 0)
Obesity	Body mass index ≥ 35 kg/m ²
Psychiatric	Depression or anxiety which requires treatment at the time of transplantation
Moderate Pulmonary	DLC _o ^a or FEV ₁ 66-80% or dyspnea on slight activity
Severe Pulmonary	DLC _o ^a or FEV ₁ < 66 or dyspnea at rest/oxygen dependent
Moderate/severe renal	Serum creatinine > 2 mg/dL, on dialysis, or prior renal transplantation
Cerebrovascular disease	Transient ischemic attack or cerebrovascular accident
Rheumatologic	SLE, RA, polymyositis, mixed CTD, or polymyalgia rheumatica
Prior malignancy	Malignancy unrelated to the indication for transplantation which has been treated at any point in the patient's history, excluding non-melanoma skin cancer
Peptic ulcer	Requiring treatment
Inflammatory bowel disease	Crohn disease or ulcerative colitis

ULN – upper limit of normal; ALT – alanine aminotransferase; AST – aspartate aminotransferase; DLC_o – diffusion capacity of the lung for carbon monoxide; FEV₁ – forced expiratory volume in one second; SLE – systemic lupus erythematosis; RA – rheumatoid arthritis; CTD – connective tissue disease

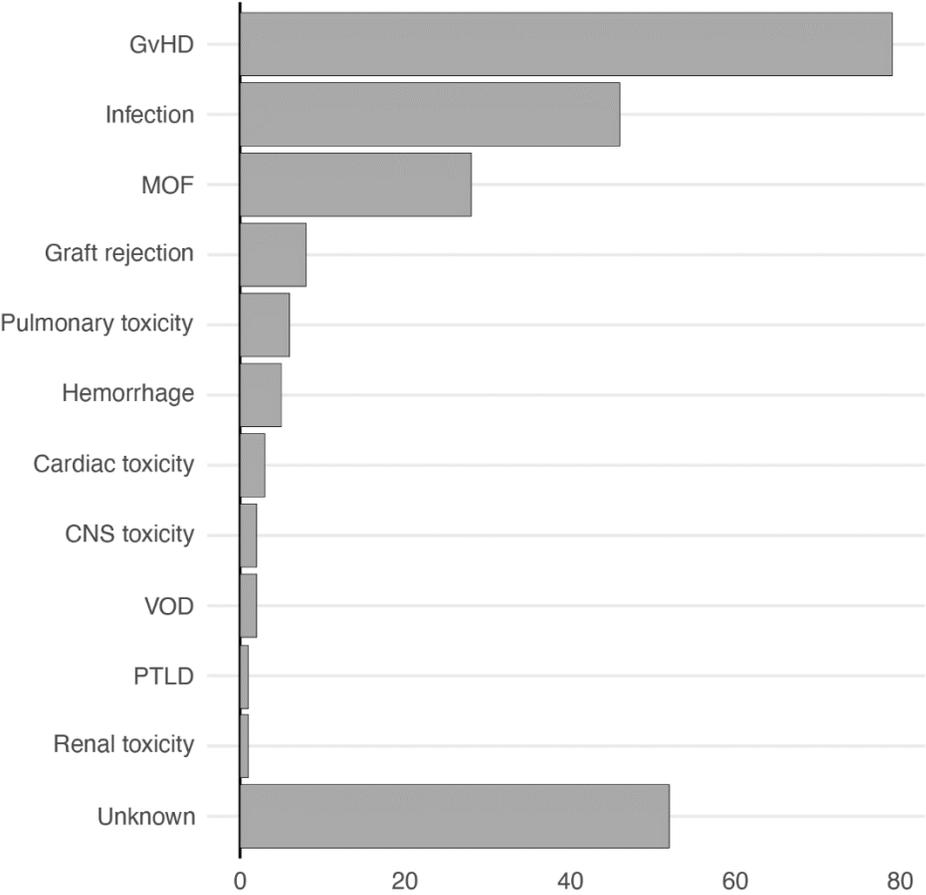
Table S4: Population characteristics across TCI groups

Characteristic	Overall (4,836)	TCI low (1,663)	TCI int (2,057)	TCI high (1,116)
Age (years)	54 [44, 62]	61 [55, 66]	54 [45, 61]	41 [31, 49]
KPS				
≥ 90	3,762 (78%)	1,150 (69%)	1,664 (81%)	948 (85%)
< 90	1,074 (22%)	513 (31%)	393 (19%)	168 (15%)
DRSS				
<i>Low</i>	1,848 (38%)	665 (40%)	741 (36%)	442 (40%)
<i>Int-1</i>	909 (19%)	332 (20%)	388 (19%)	189 (17%)
<i>Int-2/High</i>	2,079 (43%)	666 (40%)	928 (45%)	485 (44%)
Cytogenetic risk²				
<i>Favorable</i>	203 (4%)	48 (3%)	87 (4%)	68 (6%)
<i>Intermediate</i>	2,730 (56%)	1,003 (60%)	1,119 (54%)	608 (54%)
<i>Poor</i>	938 (19%)	314 (19%)	423 (21%)	201 (18%)
<i>Unknown</i>	965 (20%)	298 (18%)	428 (21%)	293 (21%)
Ontology				
<i>Primary/NOS</i>	4,598 (95%)	1,583 (95%)	1,947 (95%)	1,068 (96%)
<i>Secondary</i>	238 (5%)	80 (5%)	110 (5%)	48 (4%)
Donor				
<i>MSD</i>	4,598 (52%)	744 (45%)	1,088 (53%)	700 (63%)
<i>MUD</i>	2,304 (48%)	919 (55%)	969 (47%)	416 (37%)
Sex match				
<i>Other</i>	3,955 (82%)	1,367 (82%)	1,661 (81%)	927 (83%)
<i>Female-to-male</i>	881 (18%)	296 (18%)	396 (19%)	189 (17%)
CMV serostatus				
<i>D-/R-</i>	989 (20%)	371 (22%)	380 (18%)	238 (21%)
<i>D-/R+</i>	1,073 (22%)	411 (25%)	446 (22%)	216 (19%)
<i>D+/R-</i>	413 (9%)	162 (10%)	150 (7%)	101 (9%)
<i>D+/R+</i>	2,361 (49%)	719 (43%)	1,081 (53%)	561 (50%)
Regimen				
<i>Flu+Bu</i>	2,231 (46%)	1,129 (68%)	1,023 (50%)	79 (7%)
<i>Bu+Cy</i>	843 (17%)	20 (1%)	53 (3%)	770 (69%)
<i>Flu+Mel</i>	469 (10%)	27 (2%)	442 (21%)	0 (0%)
<i>Flu+TBI</i>	449 (9%)	364 (22%)	82 (4%)	3 (0%)
<i>Flu+Treo</i>	336 (7%)	65 (4%)	271 (13%)	0 (0%)
<i>Cy+TBI</i>	258 (5%)	0 (0%)	8 (0%)	250 (22%)
<i>Flu+Bu+Thio</i>	250 (5%)	58 (3%)	178 (9%)	14 (1%)

Table S5: Multivariable regression for presence of any versus no significant comorbidity including the 5 comorbidities identified in the model presented in Table 4: pre-existing malignancy, composite cardiac comorbidity, psychiatric disease, renal disease, or inflammatory bowel disease

Variable	Non-relapse mortality		Relapse		Overall survival	
	HR (95% CI)	p-value	HR (95% CI)	p-value	HR (95% CI)	p-value
Presence of any of the included comorbidities	1.74 (1.34, 2.26)	< 0.001	1.22 (1.01, 1.47)	0.042	1.47 (1.24, 1.73)	< 0.001
Age (by year)	1.05 (1.03, 1.07)	< 0.001	1.00 (0.99, 1.01)	0.68	1.02 (1.01, 1.03)	< 0.001
Karnofsky						
≥ 90			<i>reference</i>			
< 90	0.88 (0.67, 1.15)	0.34	1.00 (0.83, 1.22)	0.97	0.89 (0.75, 1.06)	0.20
Disease risk (DRSS)						
Low			<i>Reference</i>			
Int-1	1.03 (0.73, 1.46)	0.86	1.35 (1.04, 1.76)	0.024	1.27 (1.01, 1.59)	0.043
Int-2/high	1.10 (0.82, 1.48)	0.51	1.91 (1.56, 2.35)	< 0.001	1.62 (1.35, 1.95)	< 0.001
Donor						
MSD			<i>Reference</i>			
MUD	1.23 (0.92, 1.63)	0.16	0.83 (0.69, 1.00)	0.052	1.01 (0.86, 1.20)	0.87
Female-to-male	1.97 (1.46, 2.68)	< 0.001	0.9 (0.72, 1.17)	0.49	1.24 (1.01, 1.52)	0.041
CMV						
D-/R-			<i>Reference</i>			
D-/R+	1.46 (1.00, 21.2)	0.051	1.00 (0.78, 1.29)	> 0.99	1.14 (0.91, 1.42)	0.27
D+/R-	1.04 (0.61, 1.75)	0.89	0.93 (0.66, 1.32)	0.70	0.95 (0.69, 1.30)	0.74
D+/R+	1.17 (0.82, 1.67)	0.39	0.91 (0.72, 1.14)	0.42	0.97 (0.79, 1.20)	0.79

Figure S1: Causes of non-relapse mortality



GvHD – graft versus host disease; MOF – multi-organ failure; CNS – central nervous system; VOD – veno-occlusive disease; PTLD – post-transplant lymphoproliferative disorder