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Current activity trends and outcomes of hematopoietic cell transplantation: a 2026 report from the Brazilian Registry of Hematopoietic Cell Transplantation in collaboration with the CIBMTR & SBTMO

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ABSTRACT

The development of the Brazilian Registry of Hematopoietic Cell Transplantation (Registro Brasileiro de Transplantes de Células Hematopoieticas), in collaboration with the Center for International Blood and Marrow Transplant Research (CIBMTR), continues to provide a comprehensive assessment of hematopoietic cell transplantation (HCT) activity and outcomes in Brazil. In this study, we report an updated analysis of national transplant activity. Brazilian transplant centers report their data to the CIBMTR using the FormsNet3 platform, and data are returned to the Brazilian Society of Cellular Therapy and Bone Marrow Transplantation (Sociedade Brasileira de Terapia Celular e Transplante de Medula Óssea) through the Data Back to Centers (DBtC) tool. Data from patients who underwent HCT from 2015 to 2025 in Brazilian centers were extracted from the CIBMTR. Descriptive analyses were performed using patient-, disease-, and transplant-related variables, and overall survival was estimated using the Kaplan–Meier method. A total of 15,586 HCTs were included (7,507 autologous and 8,079 allogeneic). For survival analyses, 9,150 patients who underwent a first HCT from 2015 to 2023 were analyzed, with a median follow-up of 35 months. The number of reporting centers increased over time, reaching 51 centers during the study period. Acute leukemias remained the most common indication for allogeneic HCT, while multiple myeloma and lymphomas predominated in autologous HCT. In recent years, mismatched related donors have accounted for the largest proportion of allogeneic transplants. Bone marrow was the main graft source in pediatric patients, whereas peripheral blood predominated in adults. Infections were the most frequent cause of death within the first 100 days after HCT, while primary disease was the leading cause beyond 100 days. Survival patterns varied according to disease characteristics and transplant-related factors, with lower survival estimates observed in patients transplanted with advanced disease stages. Comparisons with the United States Summary Slides suggest both similarities and differences in transplant activity and outcomes, which should be interpreted with caution given variations in data structure, patient characteristics, and risk stratification.

Keywords: Data management; Hematopoietic cell transplant; CIBMTR; SBTMO; Brazilian Summary Slides.

INTRODUCTION

Hematopoietic cell transplantation (HCT) remains a potentially curative therapy for a wide range of malignant and non-malignant hematologic diseases, as well as an important strategy to prolong survival for a significant number of patients.[1]

The first national results on HCT in Brazil were published in 1985.[2] In 1997, a Brazilian center participated for the first time in an international multicenter study.[3] Over the following years, national collaborative efforts expanded, alongside the development of the Brazilian Registry of Hematopoietic Cell Transplantation and Cellular Therapy (Registro Brasileiro de Transplantes de Células Hematopoieticas e Terapia Celular [RBTCH-TC]).[4]

HCT activity in Brazil has grown substantially over recent decades, with an increasing number of procedures and participating centers. It is currently estimated that more than 4,000 HCTs are performed annually in the country, although the absence of mandatory reporting still limits the precise assessment of national activity.

The consolidation of registry-based data has been strengthened through international collaboration. The Center for International Blood and Marrow Transplant Research (CIBMTR), in partnership with Brazilian centers since 1989, and the subsequent collaboration with the Brazilian Society of Cellular Therapy and Bone Marrow Transplantation (Sociedade Brasileira de Terapia Celular e Transplante de Medula Óssea [SBTMO]) in 2016 enabled the expansion of data reporting and the development of a structured national transplant registry.[5]

More recently, the Brazilian Summary Slides initiative has been established as an annual effort to report national HCT and cellular therapy activities and outcomes, providing a standardized and accessible overview for the transplant community.[6-12] This is the sixth consecutive annual update of the Brazilian Summary Slides, which highlights HCT utilization and outcomes of HCTs performed in Brazil and reported to the RBTCH-TC.

OBJECTIVE

The objective of this study is to analyze trends in HCT activity among Brazilian transplant centers over the past decade.

METHODS

Data sources

Brazilian transplant centers report their data to the CIBMTR, using the electronic FormsNet3 platform. This process is protected by double authentication entry requirements for all system users. The compiled, standardized and codified data return to the SBTMO through the Data Back to Centers (DBtC) tool, enabling the analysis of HCT outcomes throughout the country.

Selection

Data from 15,586 HCTs performed from 2015 to 2025 were extracted from the CIBMTR portal using the DBtC, gathering information from the 51 Brazilian centers that had sent their HCT data to the CIBMTR. This total included both autologous (7,507) and allogeneic (8,079) HCTs.

The analysis of overall survival (OS) included patients who underwent a first HCT from 2015 to 2023. A total of 9,150 patients from 48 participating centers were analyzed (Table 1). The median follow-up among survivors was 35 months (range, 0–126). Follow-up completeness was 93% at 1 year, 85% at 2 years, and 69% at 3 years.

Table 1. Selection criteria for OS.

Selection criteria	
Patients transplanted from 2015 to 2023	9,150
Participating centers	48
Median follow-up (among survivors)	35 months (0-126)
Follow-up completeness, year (%)	
1	93
2	85
3	69

Source: Elaborated by the authors.

The spreadsheet was imported into Power BI Desktop (PBI). Functions were updated to count the number of HCTs performed and the number of participating centers, to translate columns into Portuguese, to categorize and classify diseases, to group variables, and to perform global survival analyses.

Definitions and outcomes

- Patients were classified as pediatric (0-17 years of age) and adults (≥ 18 years of age).
- Allogeneic HCTs were categorized as matched related donor, mismatched related donor (including haploidentical and related donors with one mismatch), and unrelated donor.
- Grafts were classified as bone marrow (BM), peripheral blood (PB), and umbilical cord blood (UCB).
- The disease stage for acute leukemias was classified as first remission, 2nd or further remission, and patients who underwent HCT with active disease.
- Patients with myelodysplastic syndrome (MDS) were divided into early disease, comprising refractory

anemia (RA), RA with ring sideroblasts, refractory cytopenia with multilineage dysplasia, and MDS with del(5q) alone, or advanced disease, including RA with excess blasts and chronic myelomonocytic leukemia.

- Patients with lymphoma were categorized as having chemosensitive or chemoresistant disease according to the response to treatment prior to HCT.
- Classification of conditioning regimens was based on the agents and doses used, as follows: myeloablative conditioning (MAC) for patients who received total body irradiation ≥ 500 cGy in a single dose or > 800 cGy in fractionated doses; busulfan > 9 mg/kg oral or ≥ 7.2 mg/kg IV; or melphalan > 150 mg/m^2 as a single agent or in combination with other drugs. Conditioning regimens that did not meet the criteria for MAC were classified as reduced-intensity conditioning/non-myeloablative (RIC/NMA).[13,14]
- Causes of death were classified using the standard classification from DBtC. The main causes of death from 2020 to 2024 were separated between deaths 0-100 days and deaths >100 days after HCT.

Statistical analysis

Descriptive statistics were used to describe categorical data, with the number of cases and percentages, and median and range were used for numerical variables. OS was estimated by the Kaplan–Meier method, and the log-rank test was used to compare survival between groups. Graphics were generated by PBI and exported to Microsoft PowerPoint for publication. Survival analyses were performed using R Statistical software (Version 4.4.1).

For all comparisons, only trend-level data are presented. Any statistically significant p-values should be interpreted as reflecting overall differences between the groups analyzed, without implying specific pairwise comparisons. These univariate survival curves should be interpreted with caution, as multivariable analyses adjusting for potential confounders were not performed.

Ethical considerations

Ethics approval for utilization of the CIBMTR platform for the Brazilian Registry for research was obtained from the national Institutional Review Board in 2019 (Comissão Nacional de Ética em Pesquisa CAAE: 65575317.5.1001.0071; principal investigator Dr. Nelson Hamerschlak).

RESULTS

From 2015 to 2025, 15,586 HCTs were reported from 51 Brazilian centers (Table 2), of which 24 (47%) were located in the state of São Paulo, five in Distrito Federal, five in Minas Gerais, four in Paraná, three in Rio de Janeiro, three in Rio Grande do Sul, two in Ceará, and one in each of the following states: Espírito Santo, Rio Grande do Norte, Pernambuco, Pará, and Santa Catarina (Fig. 1).

The number of active CIBMTR centers has increased over the last few years in the country, with 36 active centers in 2025 (Fig. 2), which contributed greatly to the increased number of patients submitted to HCT in Brazil and reported to the CIBMTR since 2016, with more than 2,000 HCTs per year in the last 4 years in Brazil (Fig. 3).

From 2015 to 2025, 37.7% of the allogeneic HCTs performed in Brazil used a mismatched related donor, followed by a matched related donor (35.1%) and an unrelated donor (27.2%) (Fig. 4).

Regarding the graft source for allogeneic HCTs, BM was used in most pediatric HCTs, while the main source in adults was PB (Table 3).

The proportion of allogeneic HCTs performed in patients aged ≥ 60 years has increased in recent years, reaching 19% in 2025 (Fig. 5), in line with national policy changes that expanded the upper age limit for transplantation eligibility.

Table 2. Reporting HCT centers.

Participating centers
A.C. Camargo Cancer Center
Albert Einstein Hospital
Associação Hospitalar Moinhos de Vento
Bio Sanas Serviços Médicos
Bio Sana's São Camilo
Centro de Pesquisa Clínica Hospital 9 de Julho
Centro de Pesquisas Oncológicas Dr. Alfredo Daura Jorge
Complexo Hospitalar de Niterói
Centro de Transplante de Medula Óssea, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo
Fundação Faculdade Regional de Medicina de São José do Rio Preto
Fundação Pio XII, Hospital de Câncer de Barretos
Hospital Amaral Carvalho
Hospital Brasília
Hospital da Criança de Brasília José Alencar
Hospital das Clínicas, Faculdade de Medicina de Botucatu, Universidade Estadual Paulista "Júlio de Mesquita Filho"
Hospital de Clínicas, Universidade Federal do Paraná
Hospital de Clínicas de Porto Alegre
Hospital DF Star
Hospital e Maternidade Brasil
Hospital Erasto Gaertner
Hospital Leforte Liberdade
Hospital Mãe de Deus
Hospital Monte Sinai
Hospital Nossa Senhora das Graças, Instituto Pasquini
Hospital Ophir Loyola
Hospital Pequeno Príncipe
Hospital Samaritano
Hospital Santa Casa de Belo Horizonte
Hospital Santa Rita de Cássa
Hospital São Camilo – Mooca
Hospital São Camilo – Pompéia
Hospital São Camilo – Santana
Hospital Sírio Libanês
Hospital Sírio Libanês em Brasília
Hospital Universitário Clementino Fraga Filho, Universidade Federal do Rio de Janeiro
Hospital Universitario, Universidade Federal de Juiz de Fora
Hospital Universitário Walter Cantídio, Universidade Federal do Ceará
Hospital Vila Nova Star/Oncostar SP Oncologia S.A.
Instituto da Criança, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo
Instituto de Cardiologia do Distrito Federal, Unidade de TMO Pietro Albuquerque
Instituto de Oncologia Pediátrica, Grupo de Apoio ao Adolescente e à Criança com Câncer
Instituto Nacional de Câncer
Monte Klinikum Hospital
Natal Hospital Center
Real e Benemérita Sociedade de Beneficiência Portuguesa de São Paulo
Real Hospital Português
Rede D'Or São Luiz S.A.
Santa Casa de Montes Claros
Hospital das Clínicas, Serviço de Transplante de Medula Óssea, Universidade Federal de Minas Gerais
HEMOCENTRO, Universidade Estadual de Campinas
Hospital São Paulo, Universidade Federal de São Paulo

Source: Elaborated by the authors.

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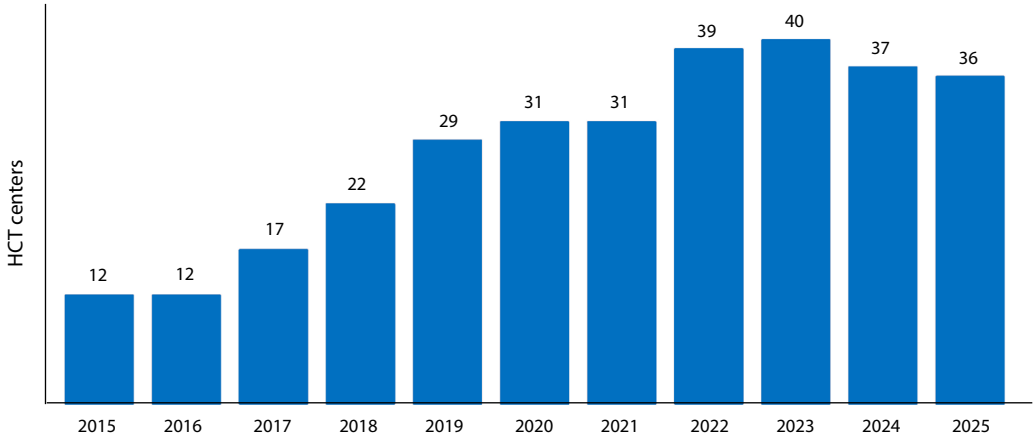
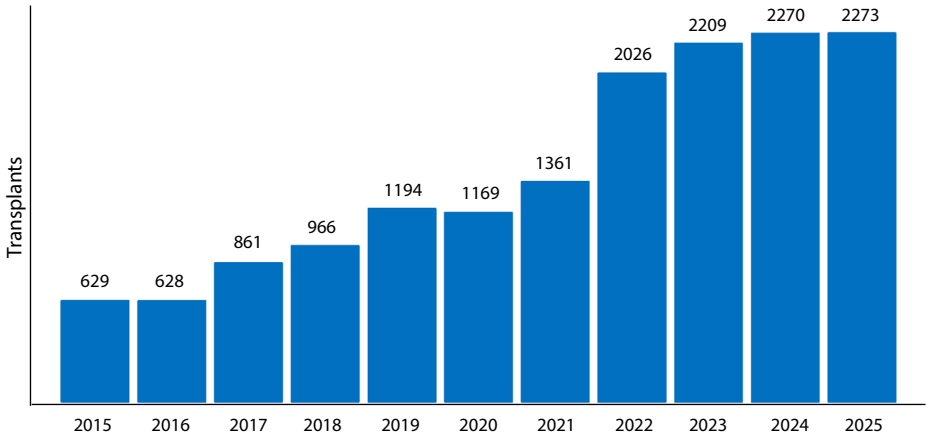
Figure 1. Geographic distribution of HCT centers in Brazil (2015–2025).



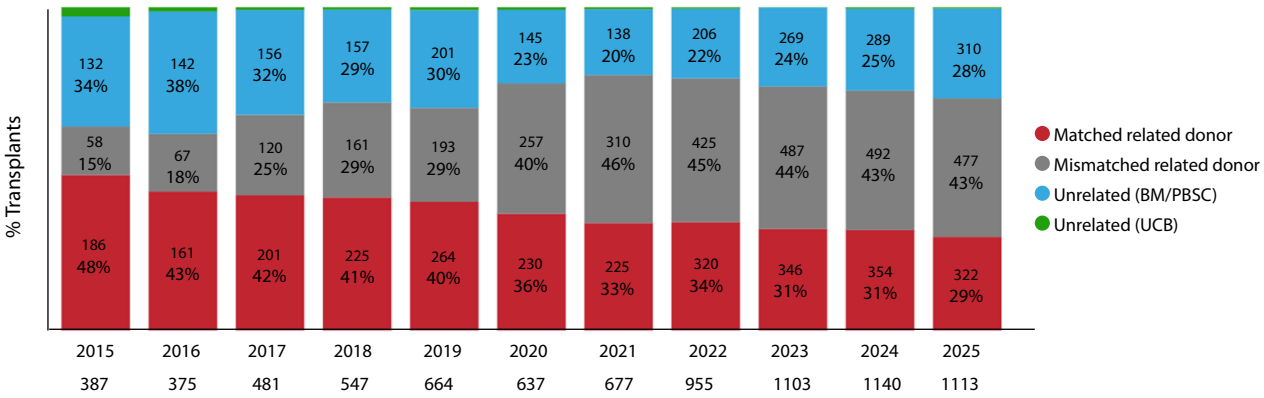
Source: Elaborated by the authors.

Figure 2. Number of Brazilian centers reporting new HCT to the CIBMTR by year.



Source: Elaborated by the authors.

Figure 3. HCTs performed in Brazil and reported in the CIBMTR by year.



Source: Elaborated by the authors.

Figure 4. Relative proportion of allogeneic HCTs in Brazil over time by donor type.

Mismatched related donors were used to treat acute myelogenous leukemia (AML) (31.6%), followed by acute lymphoblastic leukemia (ALL) (24.6%) and non-malignant diseases (21.1%); 54% of them used MAC, and 46% used RIC/NMA.

In 2025, a total of 2,273 HCTs were performed in Brazil, including 1,160 autologous and 1,113 allogeneic transplants. As shown in Fig. 6, the indications for HCT varied according to transplant type. For autologous HCT, the main indications were multiple myeloma (MM) (662; 57%), followed by Hodgkin disease (HD) (192; 17%) and non-Hodgkin lymphoma (NHL) (189; 16%). For allogeneic HCT, the main indications were acute myeloid leukemia (AML) (322; 29%), ALL (215; 19%), and MDS (164; 15%).

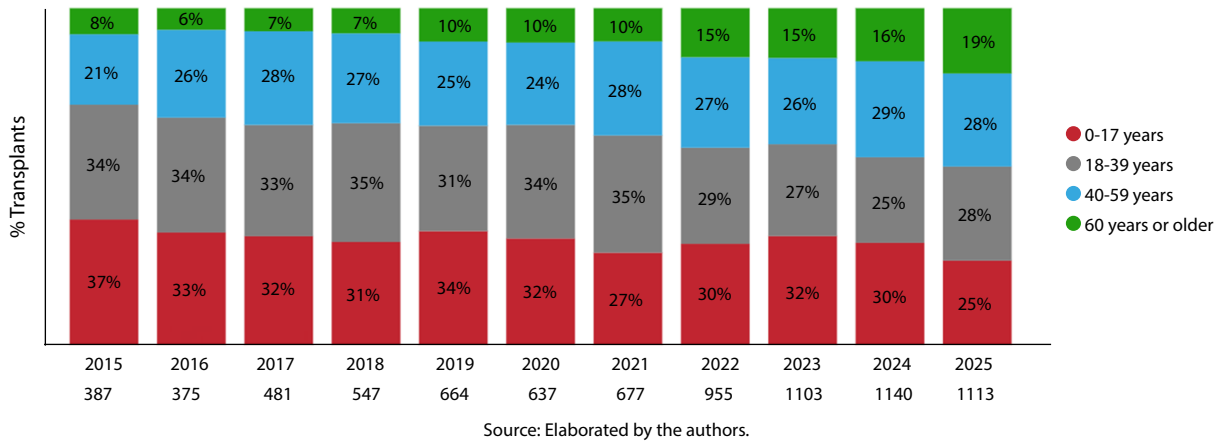
Among pediatric allogeneic HCT recipients, the main indications were ALL (22%) and AML (16%), followed by severe aplastic anemia (14%). Among adult patients, the main indications for allogeneic HCT were AML (33%), ALL (19%), and MDS (18%). Most patients transplanted for acute leukemias were in first remission; 55% for AML and 51% for ALL. Most HCTs were from a mismatched related donor in both AML (39%) and ALL (39%) (Table 4).

For autologous HCT, MM (62%), NHL (17%), and HD (17%) were the predominant indications in adults, whereas in pediatric patients, neuroblastoma (35%) and other malignant diseases (30%) were the most frequent indications.

Table 3. Source of cells used by donor type, age, and year of HCT.

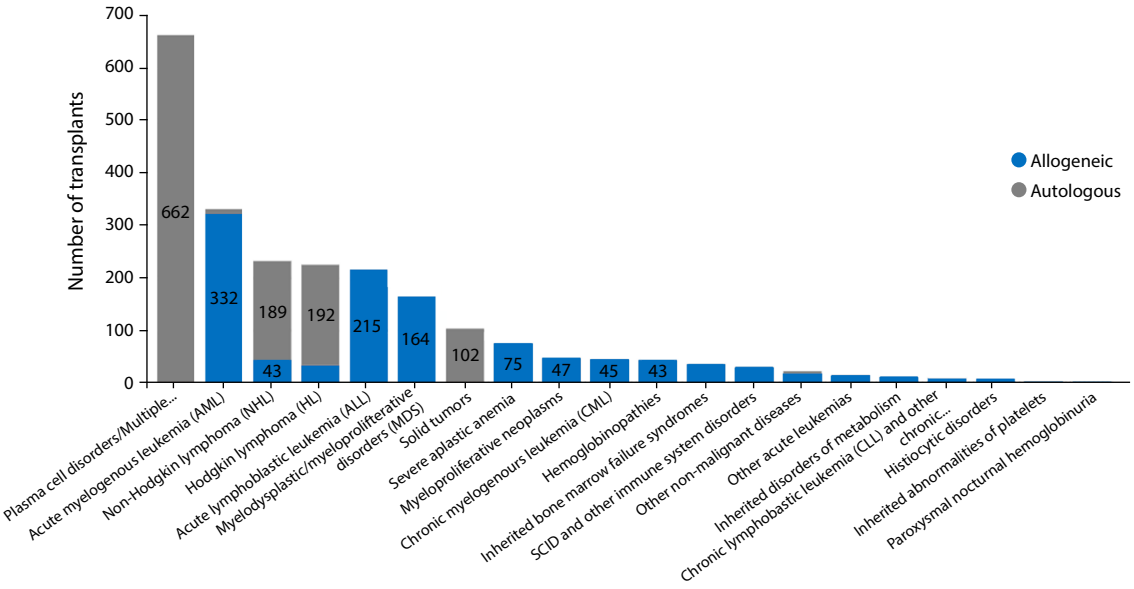
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Patients < 18 years											
Matched related donor (n = 510)											
PBSC	3%	9%	5%	9%	6%	2%	12%	13%	9%	7%	2%
BM	94%	91%	93%	85%	92%	98%	88%	77%	90%	91%	96%
UCB	3%	0%	2%	6%	2%	0%	0%	10%	1%	2%	2%
Unrelated donor (n = 863)											
PBSC	12%	7%	7%	13%	4%	22%	24%	23%	26%	29%	18%
BM	76%	86%	87%	81%	91%	75%	69%	72%	73%	65%	79%
UCB	12%	7%	6%	6%	5%	3%	7%	5%	1%	6%	3%
Mismatched related donor (n = 1,093)											
PBSC	14%	25%	21%	33%	25%	23%	22%	21%	16%	13%	13%
BM	86%	75%	79%	67%	75%	77%	78%	79%	84%	87%	87%
UCB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Patients ≥ 18 years											
Matched related donor (n = 2,324)											
PBSC	50%	46%	52%	54%	57%	63%	64%	74%	74%	79%	89%
BM	50%	54%	48%	46%	43%	37%	36%	26%	26%	21%	11%
UCB	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Unrelated donor (n = 1,335)											
PBSC	52%	51%	48%	57%	55%	58%	80%	79%	80%	81%	92%
BM	47%	49%	52%	43%	44%	39%	20%	21%	20%	19%	8%
UCB	1%	0%	0%	0%	1%	3%	0%	0%	0%	0%	0%
Mismatched related donor (n = 1,954)											
PBSC	34%	42%	45%	63%	65%	71%	76%	80%	83%	89%	93%
BM	66%	58%	55%	37%	35%	29%	24%	20%	17%	11%	7%

Source: Elaborated by the authors.



Source: Elaborated by the authors.

Figure 5. Relative proportion of allogeneic HCTs in Brazil over time by patient age.



Source: Elaborated by the authors.

Figure 6. Indications for autologous and allogeneic HCT in Brazil in 2025 (n = 2,273)

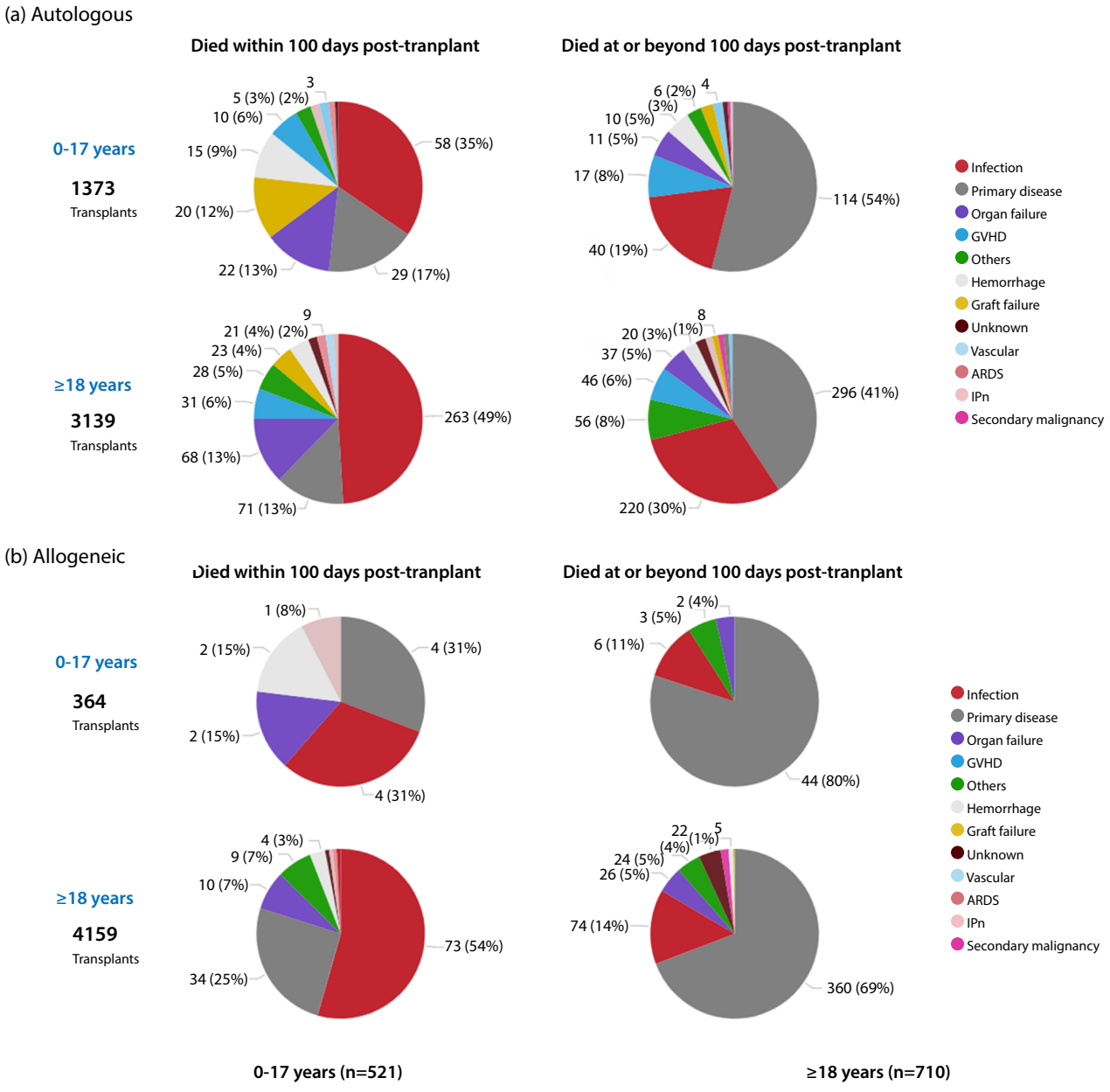
Table 4. Acute leukemia by disease stage, donor type, and HCT year.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AML											
Disease stage											
1st complete remission	44%	59%	51%	54%	54%	53%	54%	55%	56%	54%	62%
2nd or subsequent complete remission	40%	31%	30%	27%	26%	30%	19%	23%	25%	26%	19%
Relapsed disease/never in CR	16%	10%	19%	19%	20%	17%	27%	22%	19%	20%	19%
Donor type											
Matched related donor	49%	50%	50%	44%	42%	43%	36%	39%	30%	30%	32%
Mismatched related donor	17%	23%	23%	33%	33%	41%	48%	44%	50%	44%	39%
Unrelated donor (BM/PBSC)	33%	27%	27%	22%	25%	16%	15%	17%	20%	26%	29%
Unrelated donor (UCB)	1%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%
ALL											
Disease stage											
1st complete remission	59%	52%	40%	53%	39%	45%	45%	50%	59%	53%	63%
2nd or subsequent complete remission	40%	39%	52%	34%	50%	46%	45%	39%	35%	39%	32%
Relapsed disease/never in CR	1%	9%	8%	13%	11%	9%	10%	11%	6%	8%	6%
Donor type											
Matched related donor	44%	40%	36%	38%	32%	34%	29%	28%	32%	29%	26%
Mismatched related donor	8%	16%	25%	27%	29%	38%	48%	50%	48%	46%	47%
Unrelated donor (BM/PBSC)	43%	42%	38%	34%	36%	27%	22%	22%	20%	25%	28%
Unrelated donor (UCB)	5%	1%	1%	1%	3%	1%	1%	0%	0%	0%	0%

Source: Elaborated by the authors.

Infections were the most frequent cause of death within the first 100 days after HCT. Among autologous HCT recipients, infections accounted for 54% of deaths in adults, while infections and primary disease each accounted for 31% of deaths in pediatric patients during this period. After 100 days, primary disease was the most frequent cause of death, accounting for 69% of deaths in adults and 80% of deaths in pediatric patients. A similar pattern was observed in allogeneic HCT recipients. In the first 100 days, infections accounted for 49% of deaths in adults and 35% in pediatric patients. After 100 days, primary disease was the most frequent cause of death, representing 41% of deaths in adults and 54% in pediatric patients (Fig. 7).

The median follow-up for allogeneic HCT recipients was 35 months and 33 months for recipients of autologous HCT.



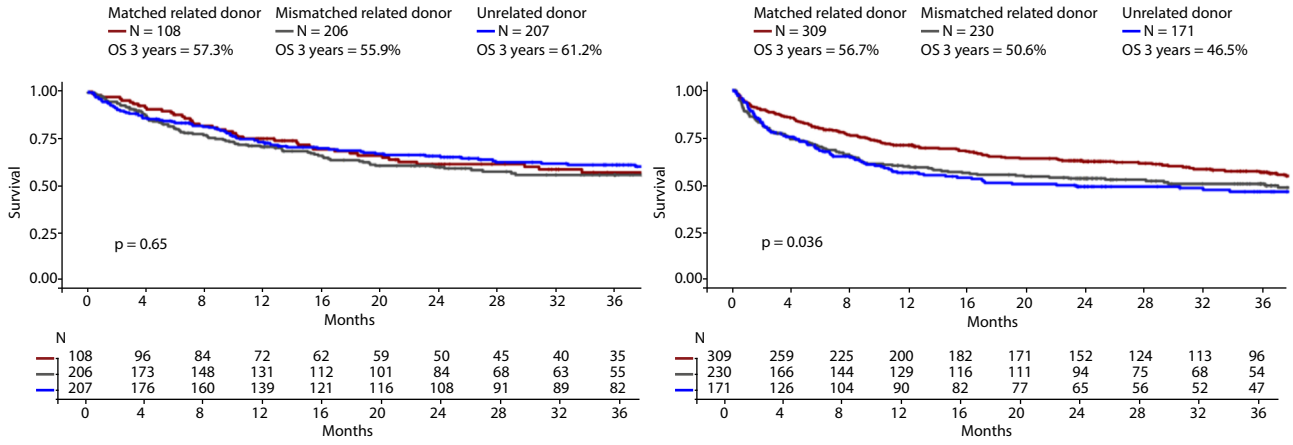
ARDS: acute respiratory distress syndrome; GVHD: graft versus host disease; IPN: interstitial pneumonitis. Source: Elaborated by the authors.

Figure 7. Causes of death after HCT in Brazil from 2020 to 2024.

Overall survive after allogeneic HCT according to patient age at transplant and donor type is displayed for ALL in Fig. 8, for MDS in Fig. 9, and for aplastic anemia in Fig. 10. Fig. 11 displays survival curves for patients transplanted for AML by age group and donor type. As shown in Table 5, patients transplanted for advanced-stage acute leukemias had lower survival rates compared to those in first complete remission. For patients transplanted for MDS, the 3-year OS according to donor type and disease risk groups is shown in Fig. 12.

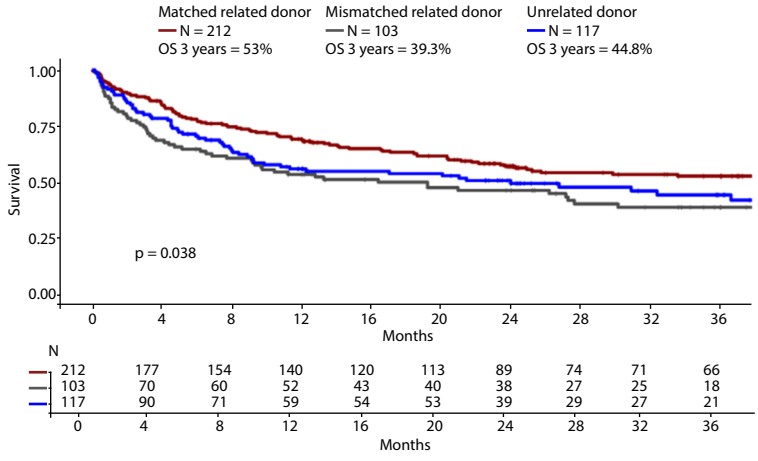
Patients with chronic myeloid leukemia (CML) had a 3-year OS of 61.7% after an allogeneic HCT from a matched related donor, 53.6% for those who received a mismatched related donor, and 55.8% for patients who received an unrelated donor (Fig. 13). Patients transplanted for myelofibrosis had a 3-year OS of 60.3% (Fig. 14).

Recipients of autologous HCT for chemotherapy-sensitive lymphomas had a higher 3-year OS estimate compared to those with chemoresistant disease, for both Hodgkin lymphoma (87.1% vs. 75.1%) and NHL (71.5% vs. 54.8%), respectively (Fig. 15). The 3-year OS estimate for patients transplanted for MM was 77.5% (Fig. 16). Patients were stratified by age groups to reflect historical transplant eligibility criteria in Brazil. The distribution of OS estimates across these groups is presented in Fig. 17.



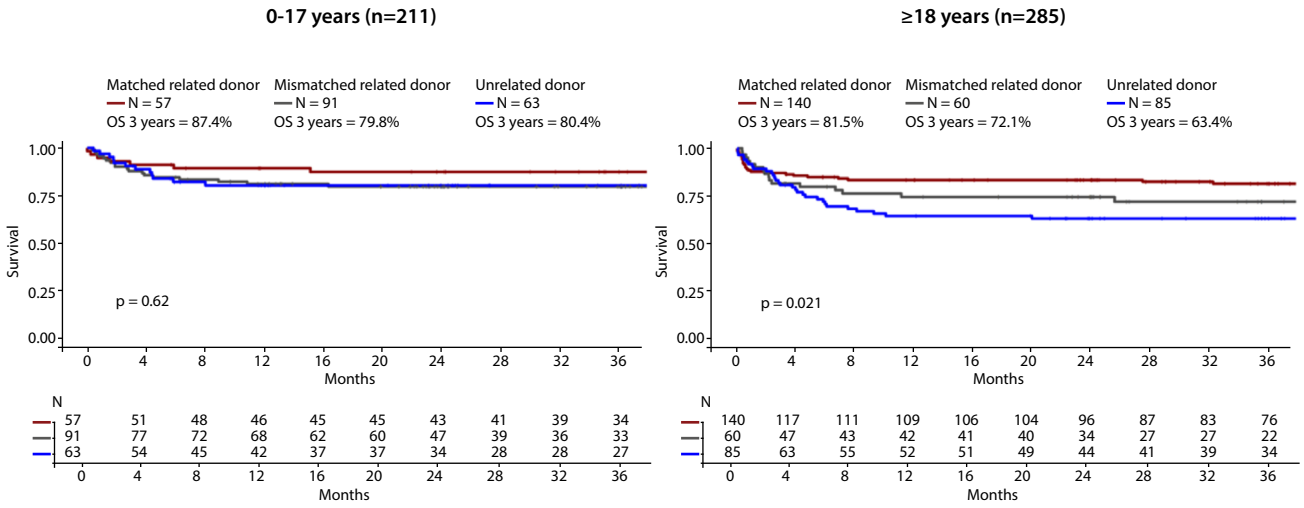
Source: Elaborated by the authors.

Figure 8. Diagnosis ALL: OS after first allogeneic HCT by donor type according to patient age group.



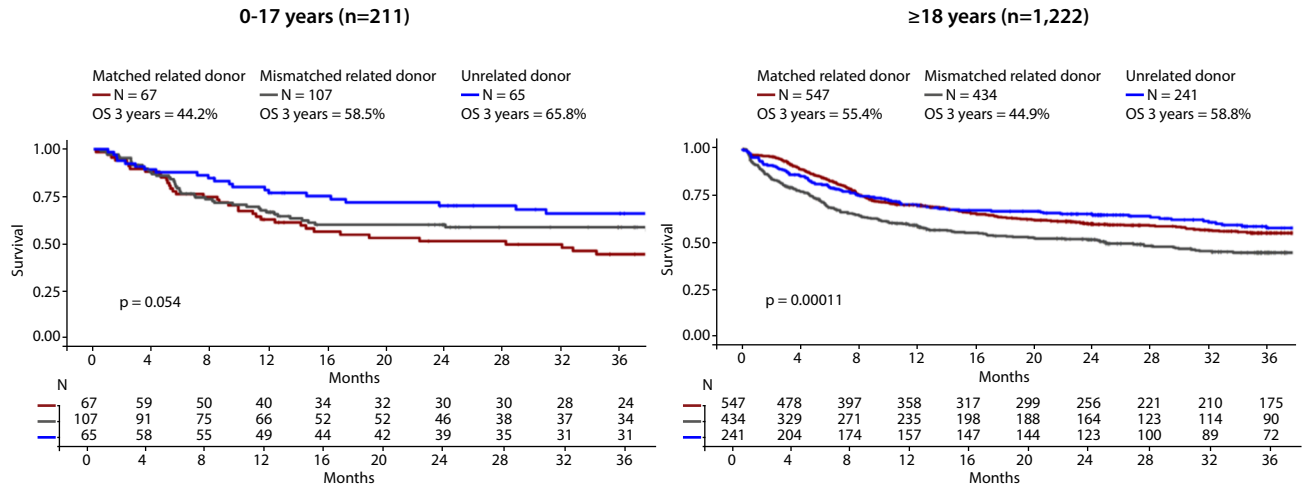
Source: Elaborated by the authors.

Figure 9. Diagnosis MDS: OS after first allogeneic HCT by donor type.



Source: Elaborated by the authors.

Figure 10. Diagnosis aplastic anemia: OS after first allogeneic HCT by donor type according to patient age group.



Source: Elaborated by the authors.

Figure 11. Diagnosis AML: OS after first allogeneic HCT by donor type according to patient age group.

Table 5. Three-year OS estimates after allogeneic HCT for acute leukemias.

	n	OS in 3 years	p-value
AML			
Patients age 0-17 years			
Donor type			
Matched related donor	67	44.2%	
Mismatched related donor	107	58.5%	0.054
Unrelated donor	65	65.8%	
Patients age ≥ 18 years			
Donor type			
Matched related donor	547	55.4%	
Mismatched related donor	434	44.9%	0.0001
Unrelated donor	241	58.8%	
Matched related donor			

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Patients age 0-17 years			
Disease stage			
1st complete remission	31	58.1%	
2nd or subsequent complete remission	20	33.8%	0.052
Relapsed disease/never in CR	16	26.2%	
Patients age ≥ 18 years			
Disease stage			
1st complete remission	378	62.4%	
2nd or subsequent complete remission	96	46.7%	< 0.001
Relapsed disease/never in CR	73	30.2%	
Patients age 0-17 years			
Disease stage			
1st complete remission	41	71.6%	
2nd or subsequent complete remission	41	63.5%	0.002
Relapsed disease/never in CR	25	30.8%	
Patients age ≥ 18 years			
Disease stage			
1st complete remission	243	50.1%	
2nd or subsequent complete remission	106	50.2%	< 0.001
Relapsed disease/never in CR	85	23.2%	
Unrelated donor			
Patients age 0-17 years			
Disease stage			
1st complete remission	33	80.4%	
2nd or subsequent complete remission	18	65.2%	0.0009
Relapsed disease/never in CR	14	32.1%	
Patients age ≥ 18 years			
Disease stage			
1st complete remission	119	63.2%	
2nd or subsequent complete remission	79	63.0%	0.0001
Relapsed disease/never in CR	43	38.9%	
ALL			
Patients age 0-17 years			
Donor type			
Matched related donor	108	57.3%	
Mismatched related donor	206	55.9%	0.65
Unrelated donor	207	61.2%	
Patients age ≥ 18 years			
Donor type			
Matched related donor	309	56.7%	
Mismatched related donor	230	50.6%	0.036
Unrelated donor	171	46.5%	
Matched related donor			
Patients age 0-17 years			
Disease stage			
1st complete remission	35	81.8%	
2nd or subsequent complete remission	58	42.0%	0.007
Relapsed disease/never in CR	15	59.7%	
Patients age ≥ 18 years			
Disease stage			
1st complete remission	228	61.4%	
2nd or subsequent complete remission	59	48.9%	< 0.001
Relapsed disease/never in CR	22	24.1%	
Mismatched related donor			
Patients age 0-17 years			
Disease stage			
1st complete remission	48	75.3%	
2nd or subsequent complete remission	138	53.6%	0.0005
Relapsed disease/never in CR	20	27.9%	

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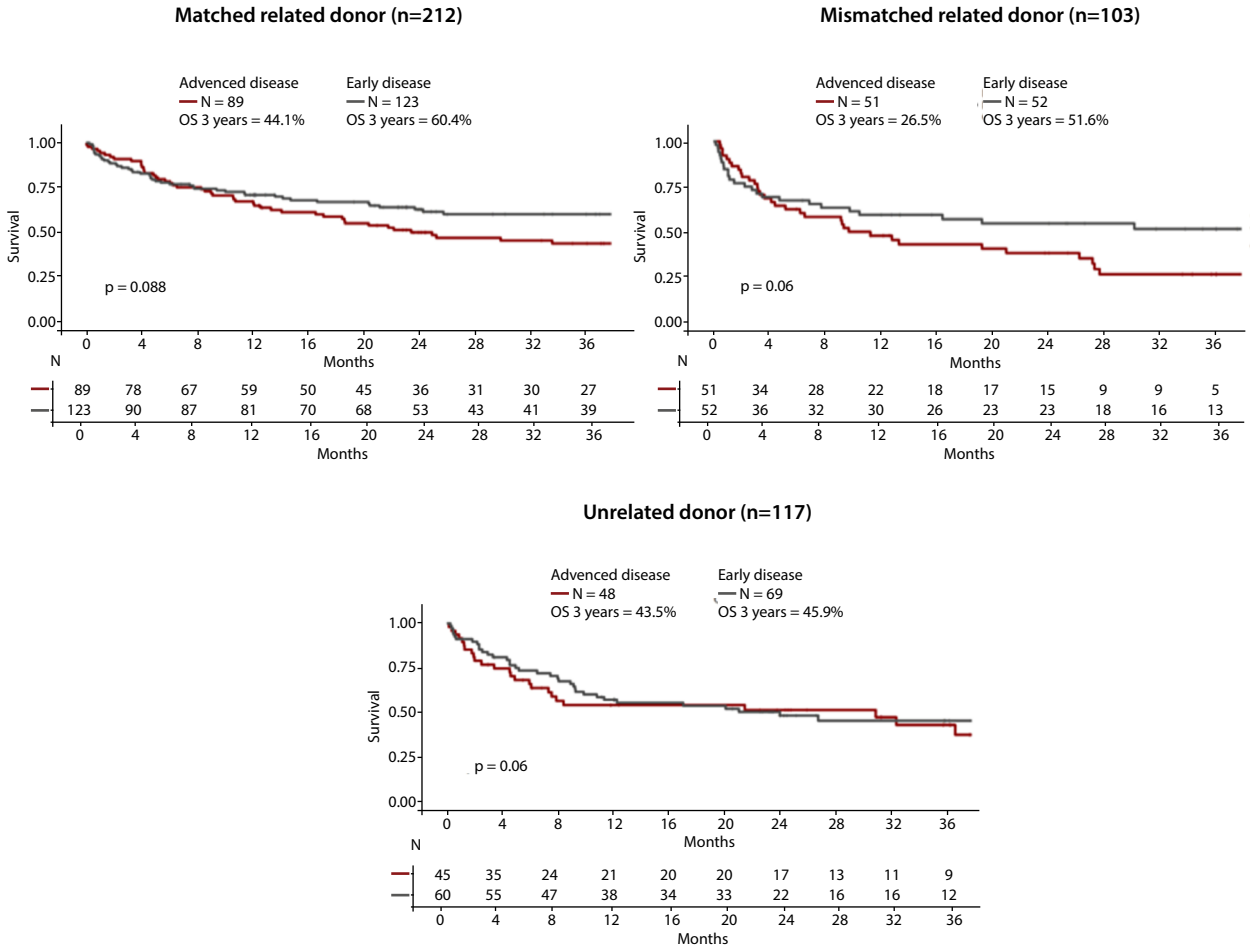
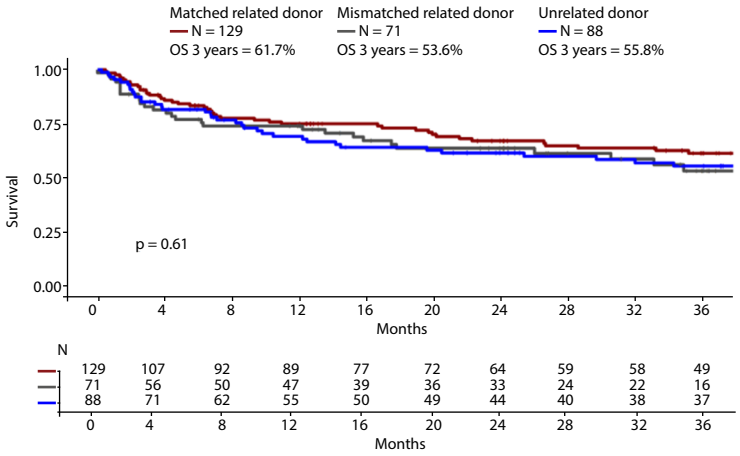
Patients age ≥ 18 years			
Disease stage			
1st complete remission	148	59.8%	
2nd or subsequent complete remission	68	36.6%	0.003
Relapsed disease/never in CR	14	18.3%	
Unrelated donor			
Patients age 0-17 years			
Disease stage			
1st complete remission	70	72.8%	
2nd or subsequent complete remission	117	56.7%	0.029
Relapsed disease/never in CR	20	43.8%	
Patients age ≥ 18 years			
Disease stage			
1st complete remission	111	51.9%	
2nd or subsequent complete remission	50	40.4%	0.017
Relapsed disease/never in CR	10	20.0%	

Source: Elaborated by the authors.



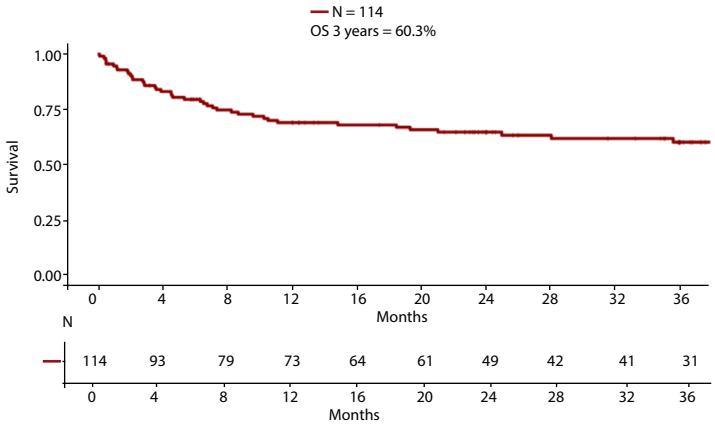
Source: Elaborated by the authors.

Figure 12. Diagnosis MDS: OS after first allogeneic HCT by disease risk and donor type.



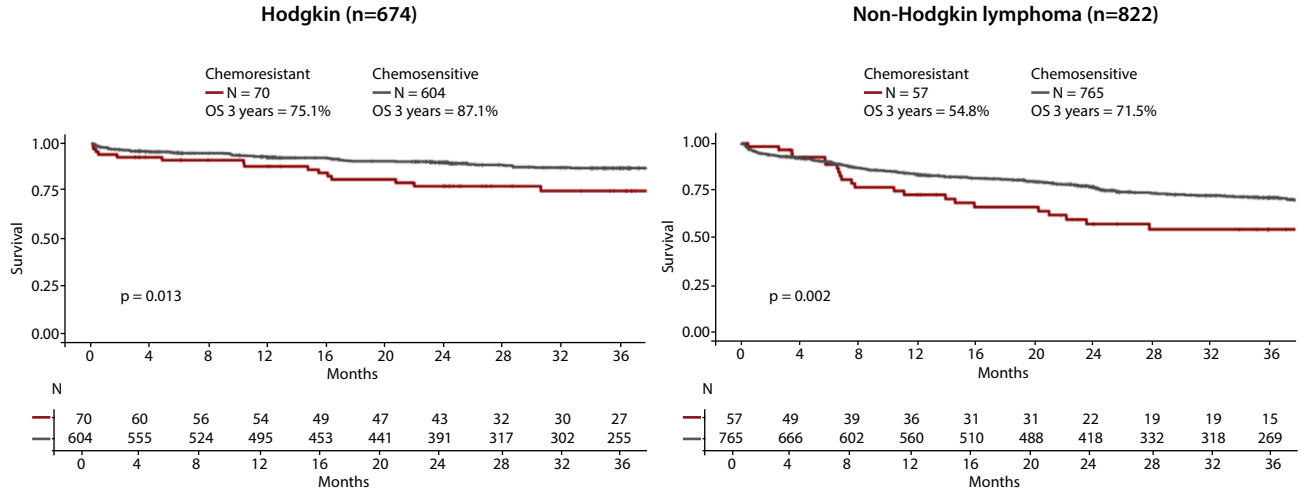
Source: Elaborated by the authors.

Figure 13. Diagnosis CML: OS after first allogeneic HCT by donor type.



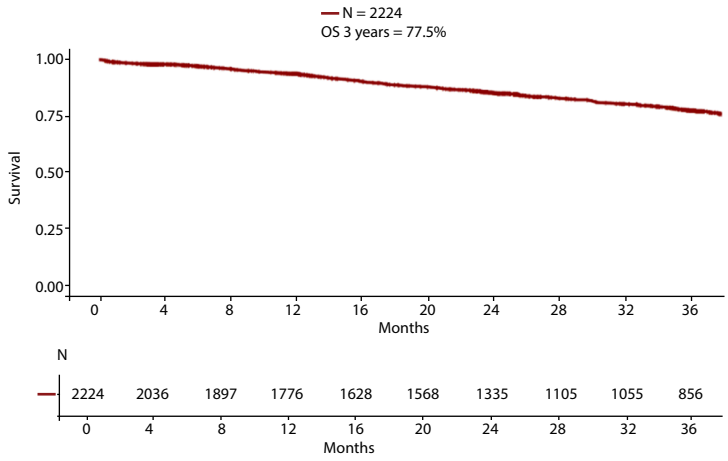
Source: Elaborated by the authors.

Figure 14. Diagnosis Myelofibrosis: OS after first allogeneic HCT.



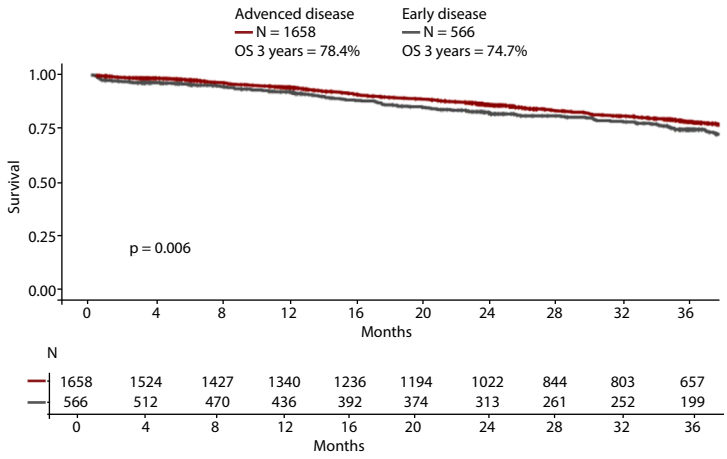
Source: Elaborated by the authors.

Figure 15. Diagnosis lymphomas: OS after first autologous HCT.



Source: Elaborated by the authors.

Figure 16. Diagnosis MM/plasma cell leukemia: OS after first autologous HCT.



Source: Elaborated by the authors.

Figure 17. Diagnosis MM/plasma cell leukemia: OS after first autologous HCT according to patient age group.

DISCUSSION

This is the 6th consecutive annual report of HCT activities in Brazil from the RBTCH-TC. A total of 51 centers contributed data from 2015 to 2025, highlighting the continued expansion of transplant activity and the increasing participation of reporting centers.

Over the study period, there has been a consistent increase in the number of Brazilian centers reporting to the registry, which has translated into a substantial rise in the number of registered transplants. This trend reflects not only improved access to HCT but also the impact of the RBTCH-TC data managers, including improvements in data collection initiatives and training programs, reinforcing the importance of sustained investment in registry data quality.

A notable finding is the high proportion of the use of mismatched related donors, which accounted for the majority of allogeneic transplants in our country. This differs from some international registries, where unrelated donors are more frequently used for HCT, and likely reflects differences in donor availability and access to donor registries.[15,16]

Patterns of graft source utilization in allogeneic HCT were broadly comparable to those observed internationally. BM was the predominant graft source in pediatric recipients, while PB was the main source in adult recipients.

Regarding transplant indications, for autologous HCT in adults, MM was the predominant indication, followed by NHL and HD, which is consistent with patterns reported in the United States (USA). In pediatric autologous HCT, neuroblastoma and other malignant diseases were the most frequent indications, consistent with those reported in the USA.[15]

For allogeneic HCT, in adult patients, AML, ALL, and MDS were the most common indications, broadly aligning with international data. In pediatric patients, ALL and AML were also the main indications; however, severe aplastic anemia represented a relevant proportion of transplants in Brazil, differing from patterns reported in the USA, where other indications, such as primary immune deficiency, are more frequently observed.

Another relevant comparison between Brazil (2020–2024) and the USA (2019–2023) relates to causes of early mortality (0–100 days after transplantation). In Brazil, infections were the leading reported cause of early mortality across most transplant settings, including adult autologous and adult and pediatric allogeneic HCT recipients. In pediatric autologous HCT recipients, infections and primary disease contributed similarly. In contrast, organ failure was the leading cause of early mortality across all transplant settings in the USA, irrespective of age group or transplant type.

When comparing survival outcomes between Brazil and the USA, differences should be interpreted with caution due to heterogeneity in patient selection, disease stage at transplantation, and donor type distribution.

In pediatric ALL, 3-year OS was consistently higher in U.S. centers across all disease stages.[15] Differences between Brazil and the USA were relatively small in patients transplanted in first complete remission, but became progressively more pronounced in those undergoing transplantation in second or subsequent complete remission, and were greatest in patients with relapsed disease or who were never in complete remission.

A similar OS pattern was observed among adult patients across all donor types. In matched related donor transplants, differences were smaller in early disease but increased substantially in advanced disease. Comparable OS trends were observed in unrelated and mismatched related donor settings, with the largest survival gaps seen in patients with relapsed disease or who were never in complete remission at the time of transplantation.

The Brazilian Summary Slides are fully available to active centers in the RBTCH-TC through the SBTMO data request flow.

CONCLUSION

The partnership between the SBTMO and the CIBMTR has enabled the development and consolidation of the RBTCH-TC. This report supports the generation of updated Brazilian Summary Slides, contributing to a better understanding of national transplant activity and outcomes and providing an important benchmark for both national and international comparison. The Brazilian Summary Slides are updated annually and made available through the SBTMO website.

Despite differences in case volume, follow-up structure, and data stratification between registries, transplant patterns and outcomes in Brazil showed a general alignment with international trends.

The growing number of participating centers and improved data collection across the country have strengthened RBTCH-TC as a reliable source for reporting utilization patterns and OS of patients receiving HCT in our country. Continued efforts are still required to strengthen reporting completeness, ensure long-term follow-up, and support ongoing training of data managers. Sustained institutional and governmental

support will be essential to further improve registry quality and, ultimately, to enhance the quality of care provided to patients undergoing HCT in Brazil. These data reinforce the importance of national strategies that expand equitable access to HCT and improve early post-transplant outcomes, especially with regard to infection-related mortality.

CONFLICTS OF INTEREST

Nothing to declare.

DECLARATION OF USE OF ARTIFICIAL INTELLIGENCE TOOLS

The authors declare that artificial intelligence tolls were used solely to assist with language editing, grammar refinement, and clarify of expression during manuscript preparation. No artificial intelligence tools were used for data analysis, interpretation of results, or generation of scientific content. The authors retain full responsibility for the content of this manuscript.

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AUTHOR CONTRIBUTIONS

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