

HEMATOPOIETIC STEM CELL TRANSPLANTATION ACTIVITY IN THE EASTERN MEDITERRANEAN REGION FROM 2018–2022: AN EASTERN MEDITERRANEAN BLOOD AND MARROW TRANSPLANTATION (EMBMT) GROUP REPORT

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INTRODUCTION

- Hematopoietic stem cell transplantation (HSCT) is a therapeutic procedure used for a variety of malignant and non-malignant hematological disorders.
- These procedures are performed across many countries in the Eastern Mediterranean (EM) region; however, utilization remains lower than in other regions.
- Transplant centers in the EM region report activity annually to the Eastern Mediterranean Blood and Marrow Transplantation (EMBMT) group, which has previously reported on activity for 1984–2007, 2008–2009, and 2011–2012. Here we present a contemporary analysis of HSCT activity in the EM region from 2018–2022.

OBJECTIVES

- To report allogeneic and autologous HSCT activity in the Eastern Mediterranean region from 2018 to 2022.
- To describe transplant types, donor types, graft source, and transplant indications across reporting countries.

METHODS

- This is a retrospective review of the EMBMT registry, including data from 12 countries with active HSCT programs (Algeria, Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, and Tunisia).
- To be eligible to contribute data, centers must perform at least five transplants over three consecutive years.
- Active centers complete an annual electronic form reporting the number of transplants, transplant indication, remission status, donor type (in allogeneic HSCT), and graft type (bone marrow vs. peripheral blood vs. cord).
- Indications were classified as leukemias, lymphoproliferative disease, solid tumors, bone marrow failure, and other conditions; for AML and ALL, disease status at transplant (CR1 or not) was also recorded.
- Categorical and nominal variables are reported as counts and percentages; continuous variables as medians and ranges.

RESULTS

10,054

Total HSCTs
reported (2018–2022)

53%

Allogeneic HSCT
(n = 5,368)

47%

Autologous HSCT
(n = 4,686)

OVERALL ACTIVITY

- 25 or more centers across 12 countries reported data to the EMBMT in each study year (2018–2022).
- Annual totals ranged from 1,557 HSCTs (2020) to 2,179 HSCTs (2022); the 2020 dip reflects a 26% decrease vs. 2019, coinciding with the COVID-19 pandemic, a 33% decrease in allogeneic HSCT vs. 17% in autologous HSCT.
- Total activity rose 5% between 2018 (n = 2,075) and 2022 (n = 2,179).
- Saudi Arabia and Egypt reported the highest total activity; Saudi Arabia led allogeneic HSCT every year (297–449/yr).
- HSCT rate per 10 million inhabitants (2022) was highest in Lebanon (353), Jordan (228), and Saudi Arabia (194), and lowest in Iraq (8) and Pakistan (9).

TRANSPLANT INDICATIONS

- Autologous HSCT: multiple myeloma was the leading indication (40–45% of autologous HSCTs; n = 2,022 over 5 years), followed by Hodgkin lymphoma (n = 994) and non-Hodgkin lymphoma (n = 862). Solid tumors accounted for a median of 147 autologous HSCTs/year, most commonly neuroblastoma (68%).
- Allogeneic HSCT: myeloid malignancies were the leading indication every year (314–446/yr; >75% AML), followed by ALL and bone marrow failure syndromes (aplastic anemia most common).

DONOR TYPE & GRAFT SOURCE

- 80% of allogeneic HSCTs used HLA-matched related donors; haploidentical HSCT accounted for 17% and rose 54% from 2018 (n = 151) to 2021 (n = 232). Only 2–5% were from unrelated donors (171 total over 5 years).
- Peripheral blood stem cells (PBSC) were the predominant allogeneic graft source (65–71%/yr); only 20 cord transplants were reported over 5 years.

Figure 1. Reported HSCT activity by year, 2018–2022 (11 reporting countries).

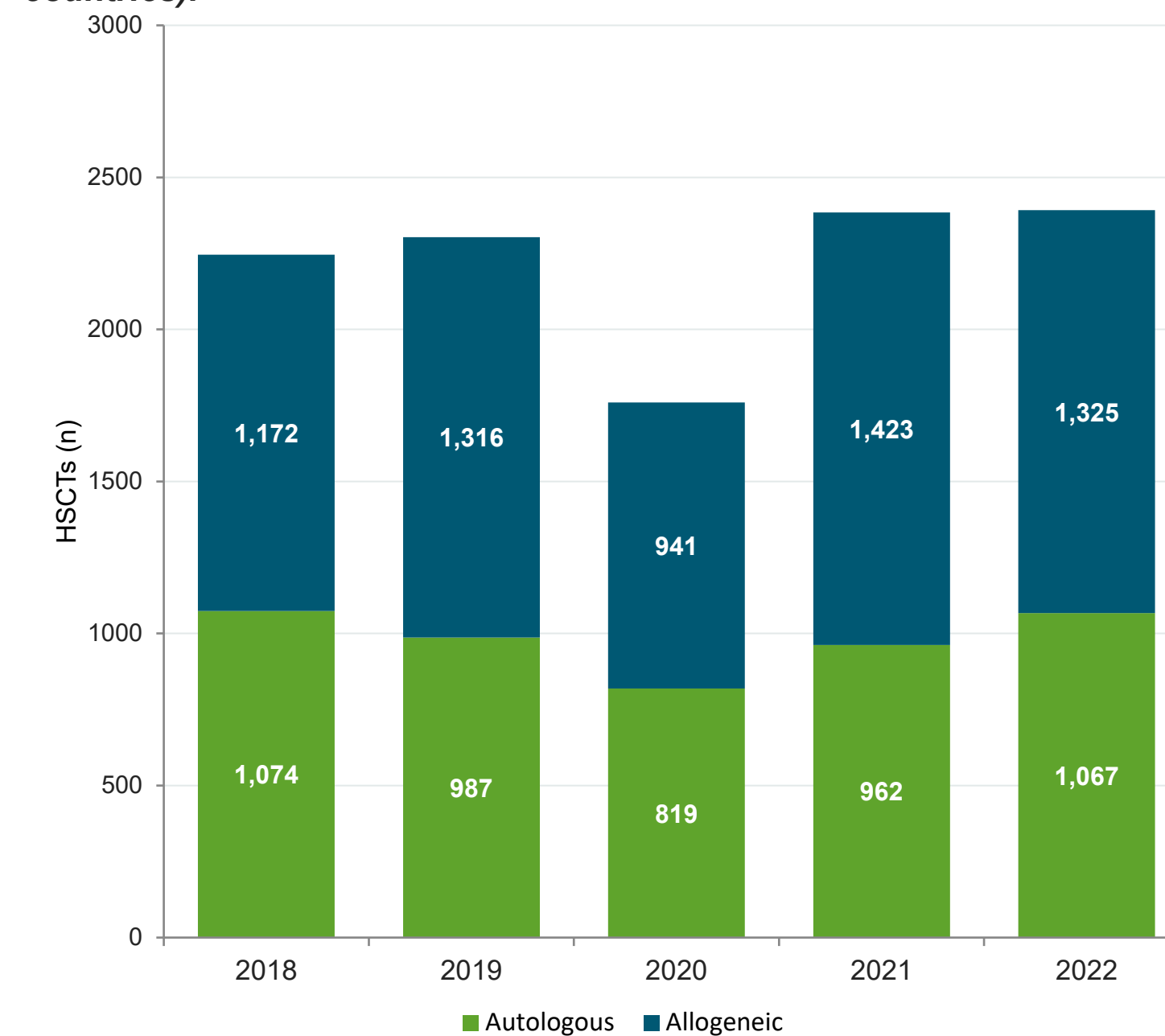


Figure 2. Autologous HSCT indications, 2018–2022 (n).

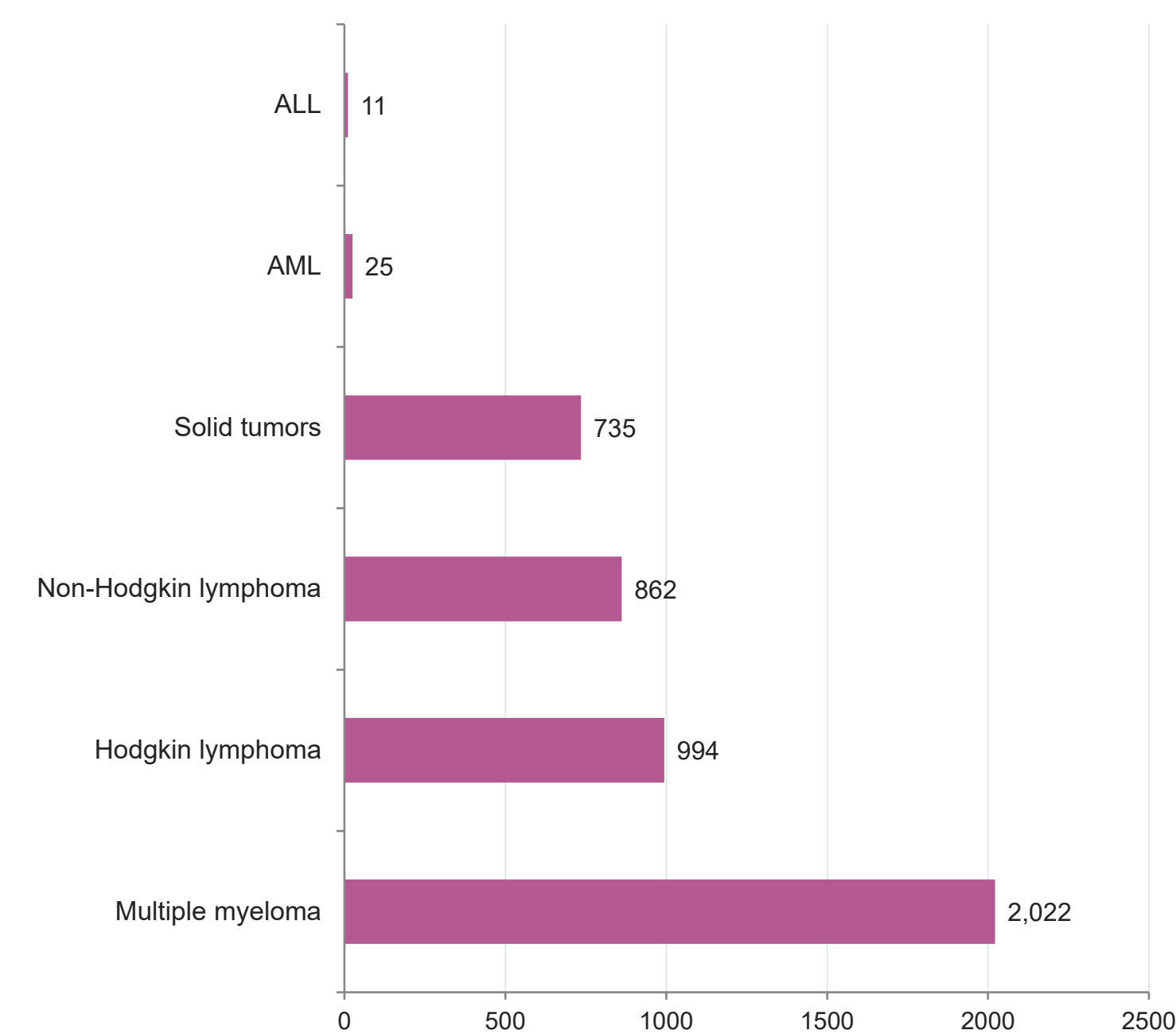
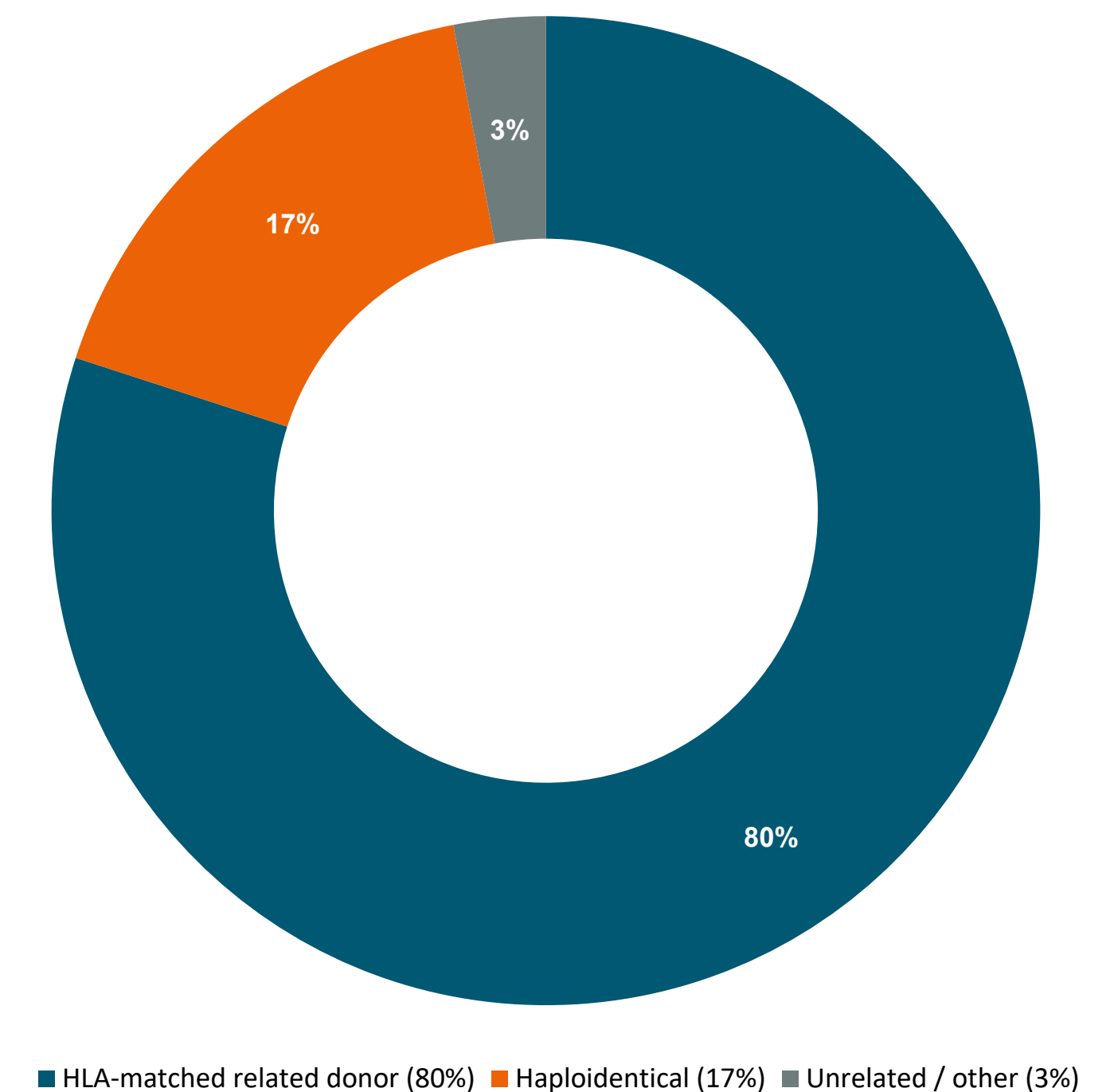


Figure 3. Allogeneic donor type, 2018–2022 (% of allogeneic HSCT).



CONCLUSIONS

- Haploidentical HSCT utilization in the EM region increased substantially between 2018 and 2022, likely reflecting improved GVHD prophylaxis strategies (e.g., post-transplant cyclophosphamide).
- Use of unrelated donors remains limited in the EM region compared with other regions.
- Except for a few countries, HSCT activity per capita remains low relative to Europe and North America.
- The COVID-19 pandemic measurably reduced transplant activity, particularly in 2020.
- Not all EM region centers report to the EMBMT (e.g., no data from Iran), so true regional activity is likely underestimated.