



HELP FOR UKRAINIAN HEMATOLOGY PATIENTS (HUP) – A GLOBAL INITIATIVE SUPPORTING THE ESTABLISHMENT OF HEMATOLOGY CENTERS AND HEMATOPOIETIC CELL TRANSPLANTATION PROGRAMS IN DIFFICULT SITUATIONS

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BACKGROUND:

In 2021 most of the Ukrainian patients with hematological diseases and in need of allogeneic hematopoietic cell transplantation (HCT) were treated abroad with governmental funding or not treated. Only 147 autologous and only 6 allogeneic HCT were reported to the EBMT and Worldwide Network for Blood and Marrow Transplantation (WBMT) in adults from a country of 44 million population in 2021. In the same year, the European Leukemia Net (ELN) and the WBMT/EBMT were approached to support or establish HCT programs for adults in the country.

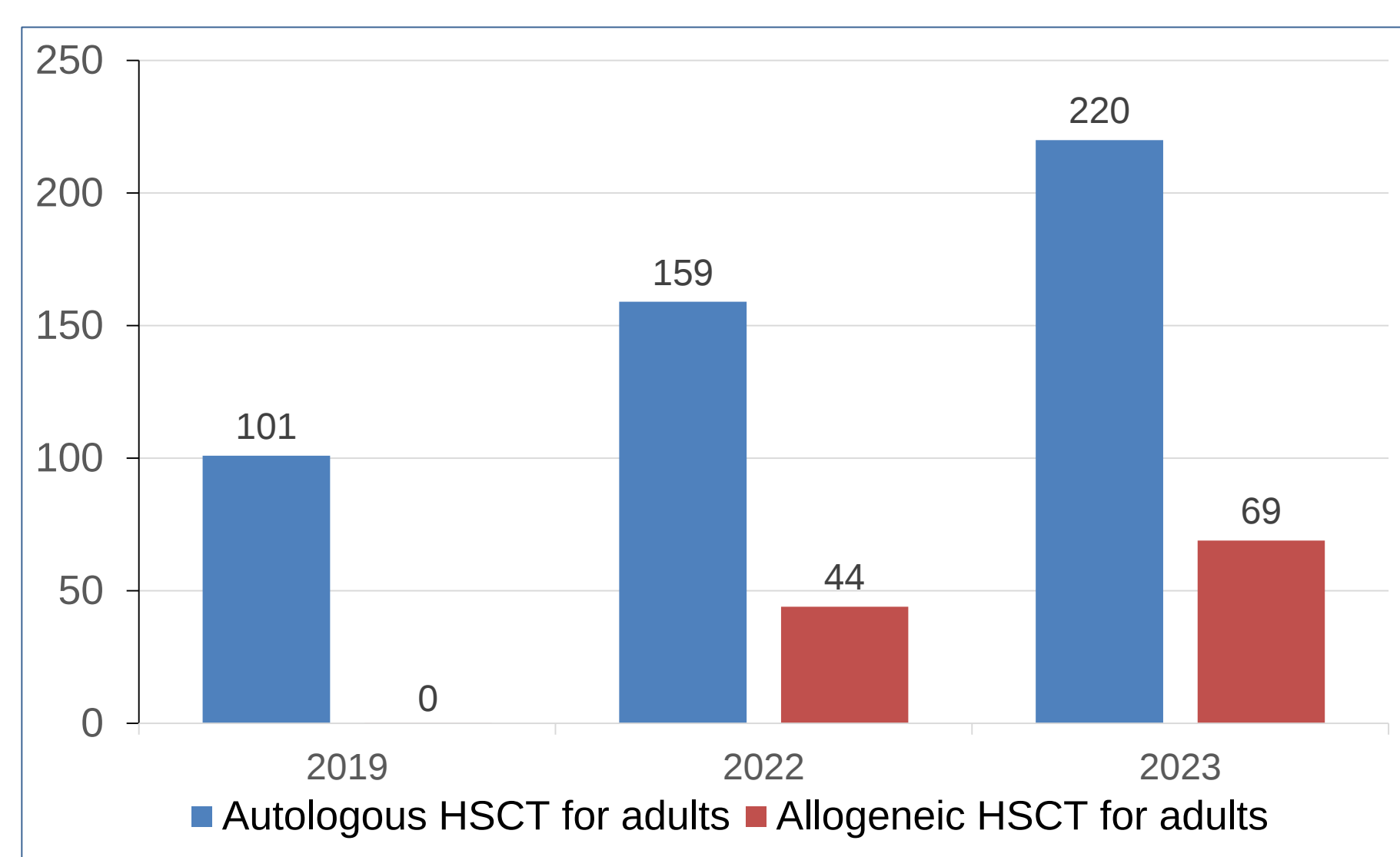
METHODS:

After a site visit at different Ukrainian hospitals, daily supervisory telemedicine was initiated in January 2022. A few days after the war started in February, representatives from major hematology societies (ASH, ASCO, EHA, DGHO, ECO, Lymphoma Coalition), transplant organizations (WBMT, EBMT, ASTCT) and physicians from Ukrainian institutions formed the HUP (Help for Ukrainian Hematology Patients) network with participation of the Ministry of Health (MOH) and the World Health Organization (WHO). On weekly video conference meetings, the needs were discussed and provided.

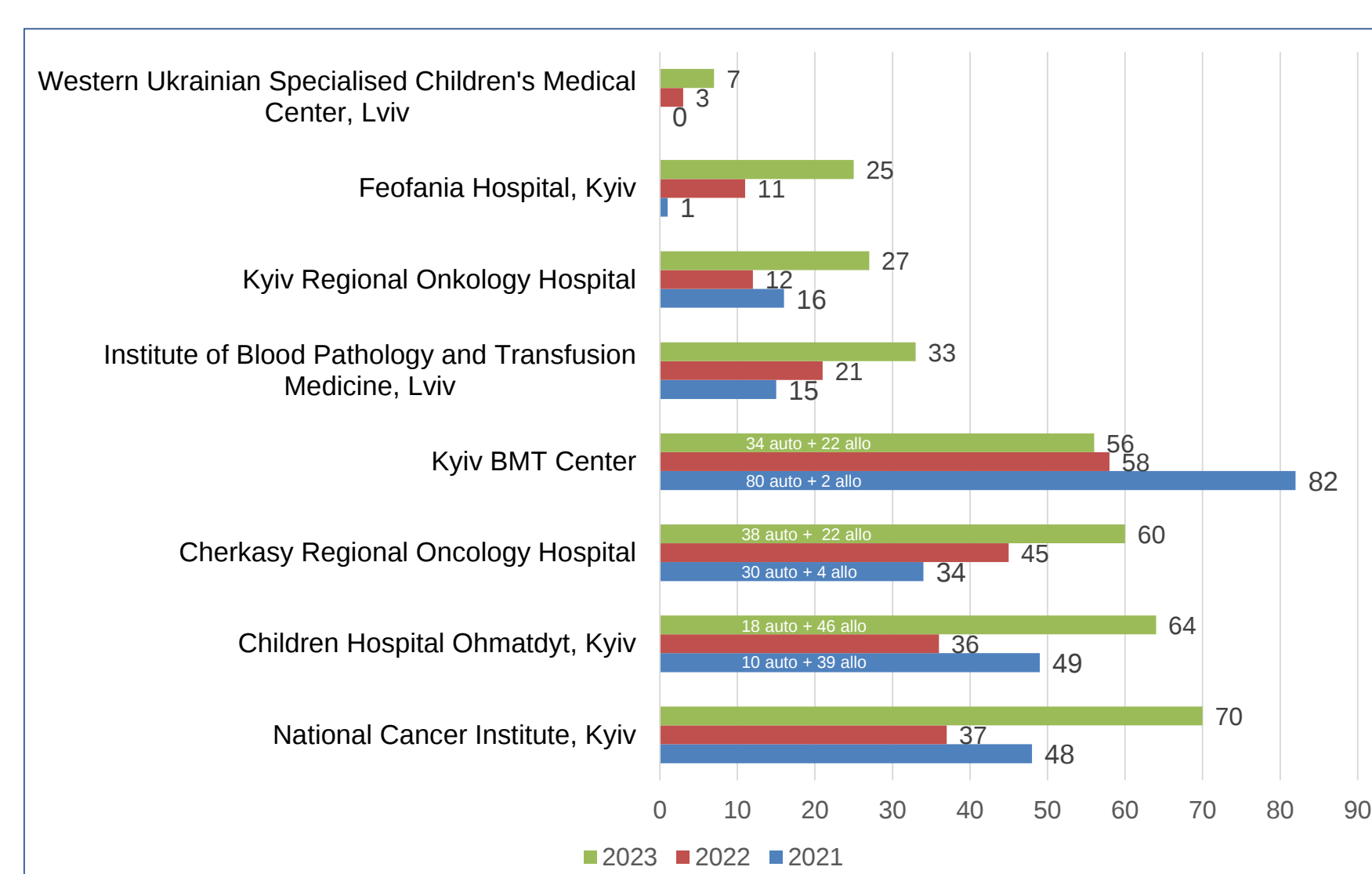
RESULTS:

Patients were allocated according to their wishes in Ukrainian Hospitals or abroad. Concomitantly, daily grand rounds were continued to help Ukrainian physicians to treat hematological patients in the country. Medicines not registered in the Ukraine were donated from different sources including sister cities, governments and EU commission. In parallel, standard operating procedures were provided to the institutions. Despite bombing, autologous HCT activities continued and allogeneic HCT programs for adults initiated.

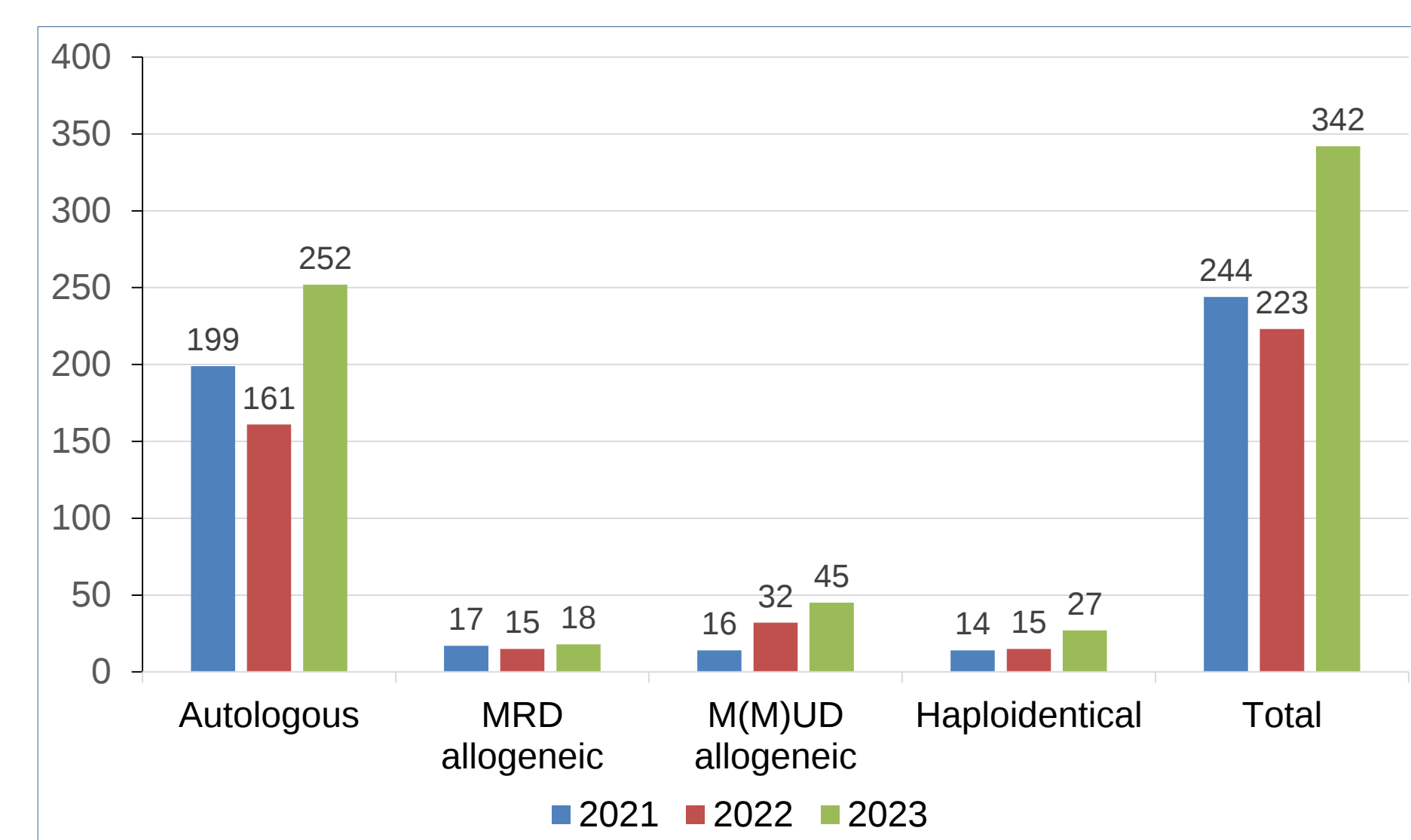
Allogeneic HCT activities (adults) pre-COVID-19 year (2019) and after aggression in Ukraine 2022-2023



HCT activity (all ages) in Ukraine 2022-2023: more centers, more alloHCT



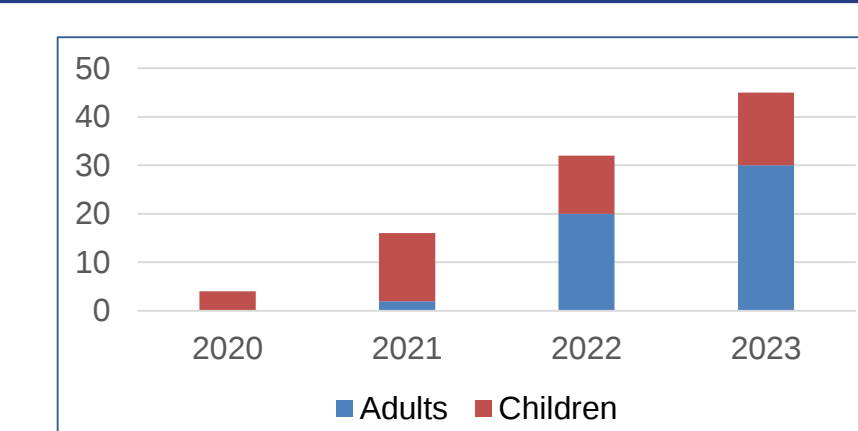
HCT activities (all ages) before (2021) and after (2022-2023) invasion



The EBMT established a routine tumor board with global experts to discuss treatments in the country or, if not available (e.g. CAR-T cell, bispecific antibody treatment), organized abroad.

The Ukrainian unrelated donor registry was supported by the ZKRD to identify unrelated donors. The first unrelated transplant from a Ukrainian donor was performed in 2023. In total, 6 transplants have already been performed for Ukrainian patients from Ukrainian donors.

Unrelated HSCT in Ukraine



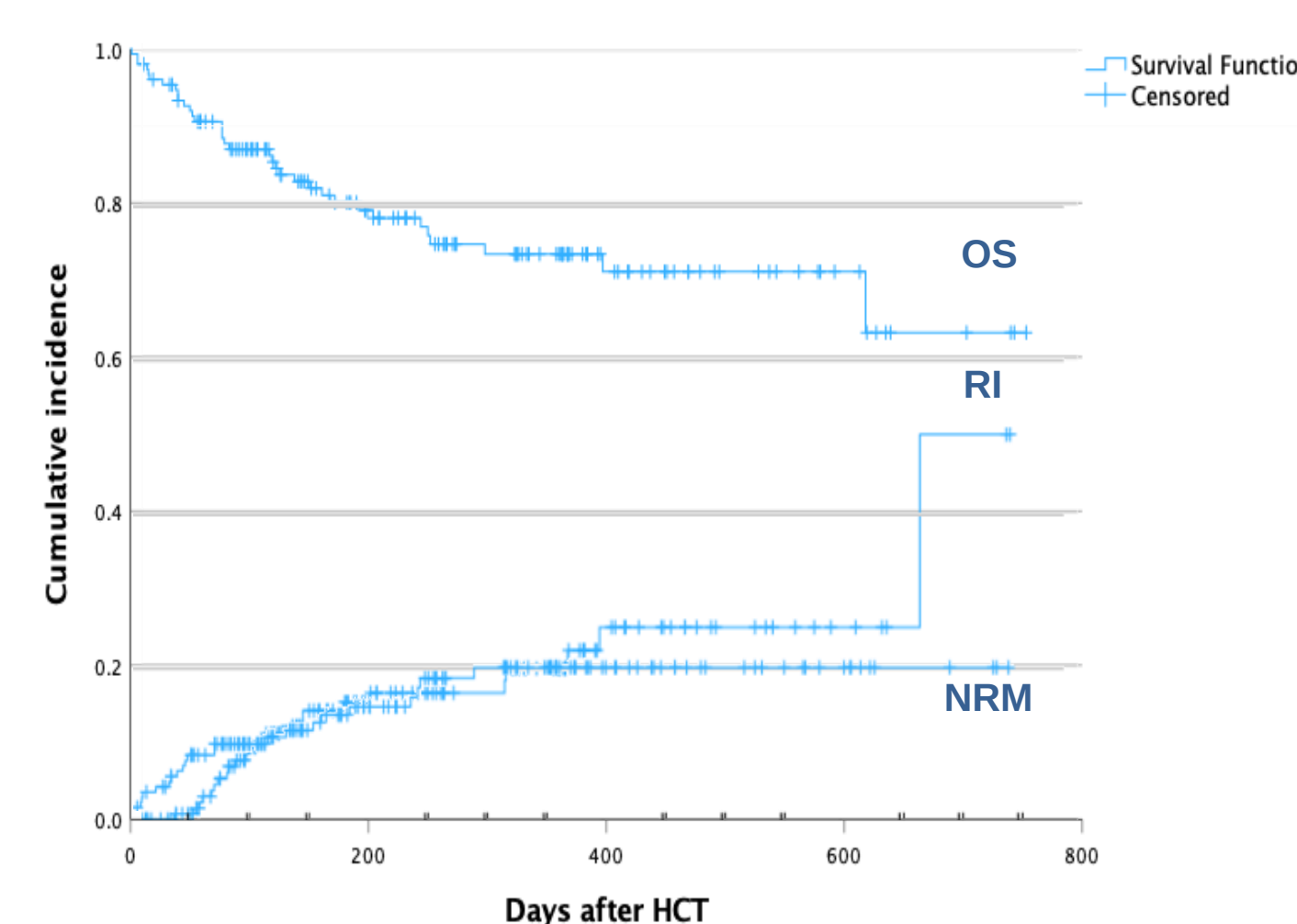
The activity of adult allogeneic HCT from related, unrelated and haploidentical donors rapidly increased from 0 in 2019 to 67 patients at the BMT center in Kyiv, Regional Hospital in Cherkasy, and Children Hospital "Ohmatdyt" in Kyiv in 2023. Autologous HCT also increased in these and other hospitals in Lviv and Kyiv. It rapidly became apparent that non-HCT infrastructure had to be improved.

Despite availability of basic hematological diagnostics, the most sophisticated diagnostics were provided with the help of ASH and ASTCT at the Munich Leukemia Lab (MLL). Samples from the whole country are shipped weekly for cytology, cytogenetics, immunophenotyping, and molecular analyses to MLL and results available free of charge within a few days. Up to now, 4288 analyses from 811 patients were provided. Transport of blood samples to Munich was organized by the Respublica (Ukraine) and financed by: ASTCT 10 000\$, The YOU Foundation 10 000\$ and EBMT 10 000\$.

MLL lab diagnostics for Ukrainian patients: samples characteristics tested 08/2022-03/2024

Entity	n	Analyses at MLL	n
AML	174	Molecular Genetics	992
MPN	102	Cytomorphology	945
MDS	89	Immunophenotyping	888
CML	65	Cytogenetics	745
MM	65	FISH	715
CLL	46	Laboratory medical analysis	3
Mature B-cell neoplasm	45	Sum	4288
ALL	42		
CMML	24	Status	n
MDS/MPN	15	Initial diagnosis	609
		Follow-Up samples	434
		Total	1043

Outcome after allogeneic HCT of Ukrainian patients



n = 152

diagnosis	n	diagnosis	n
AML	71	ALL	23
MDS	14	(S)AA	12
NHL/HL	6/9	MM	4
MF	2	others	11

The cooperation of the Ukrainian institutions was outstanding and culminated in the establishment of a national transplant society for adult and pediatric HCT (UABMT).

CONCLUSIONS:

Despite a hostile environment, international societies, politicians, private institutions, WHO with the personal involvement of local physicians and MOH provided an example on how to establish a sustainable healthcare system for hematological patients in a low resource country in extreme distress. This effort represents a model that by using solidarity and new technologies may greatly impact other countries affected by socio-economic, or conflict challenges.

