

EPICOVIDEHA survey: COVID-19 infections in patients with Hematological Malignancies - Results from EHA-IDWP registry



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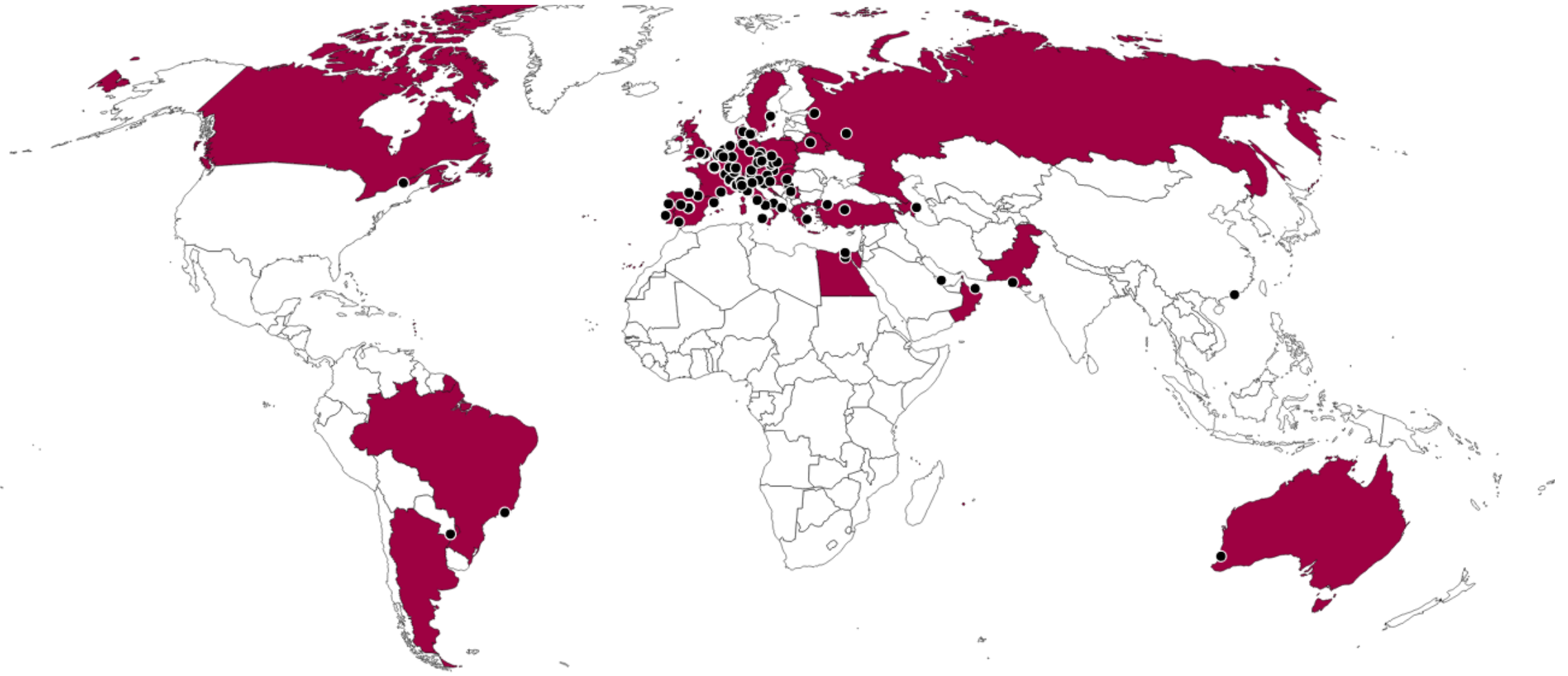
Background

- EPICOVIDEHA is an international open web-based registry for patients with haematological malignancies infected with SARS-CoV-2.
- The survey has been approved by the Institutional Review Board and Ethics Committee of the participating centres
- EPICOVIDEHA has been registered at www.clinicaltrials.gov with the identifier NCT04733729.
- Participating institutions documented episodes of COVID-19 in their patients with baseline HM between March 2020 and December 2020. The last follow-up for all patients was 30 April 2021.
- Data were collected via the EPICOVIDEHA electronic case report form (eCRF), available at www.clinicalsurveys.net.

Project Partnership

- EHA- IDWG Infectious Diseases
- EHA-SWG Aging and Hematology
- Supportive Treatment Group of the Croatian Cooperative Group for Hematological Diseases
- SEIFEM Group (Sorveglianza Epidemiologica InFezioni nelle Emopatie)
- Danish National Registry of COVID-19
- SIE (Società Italiana di Ematologia)
- CELL (Czech Leukemia Study Group – for Life)
- SEHH (Societat Espanola de Hematologia y Hemoterapia)
- Israel Hematology Association

Sites contributing to EPICOVIDEHA



132 centers in 34 countries are participating in this survey

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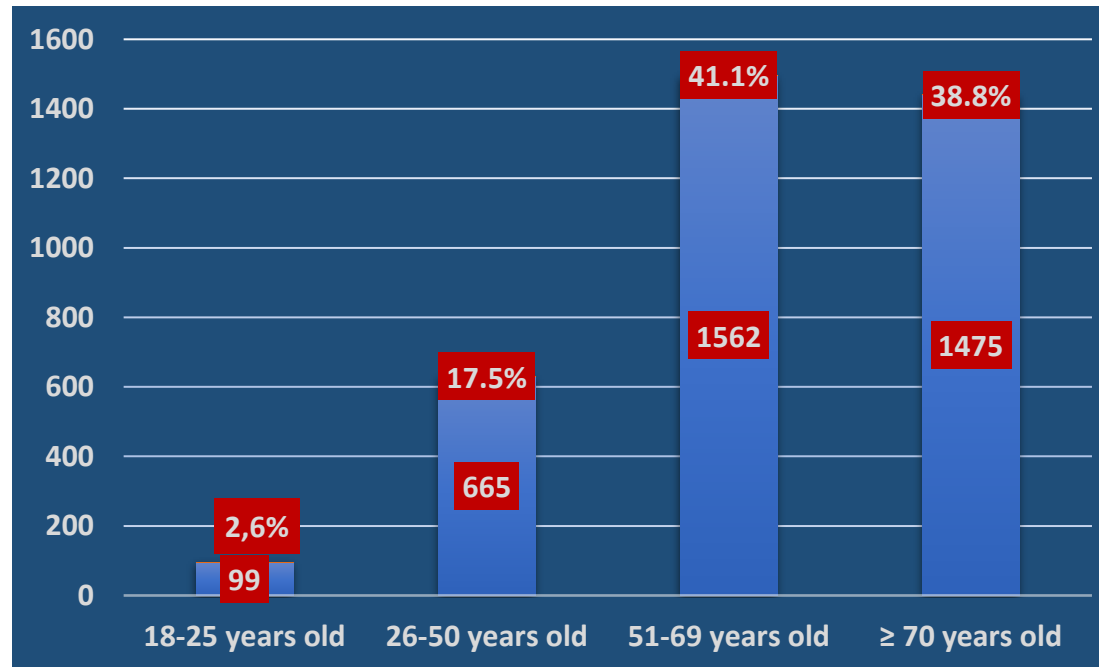
4117 cases registered in the EPICOVIDEHA platform

Ethnic origin		
American Indian/Alaska Native	2	0.1%
Asian	83	2.2%
Black/African American	33	0.9%
Pacific Islander/Native Hawaiian	0	0.0%
Caucasian	3284	86.3%
Unknown	399	10.5%

3801 valid cases

316 cases excluded

- Age <18 y.o.
- Clinical diagnosis of COVID-19
- Double entry
- Hem. diseases/Solid cancer
- Hem. malignancy after COVID-19
- Incomplete information
- More than 5 y. off-therapy



Age, median (range)	65 (18-95)
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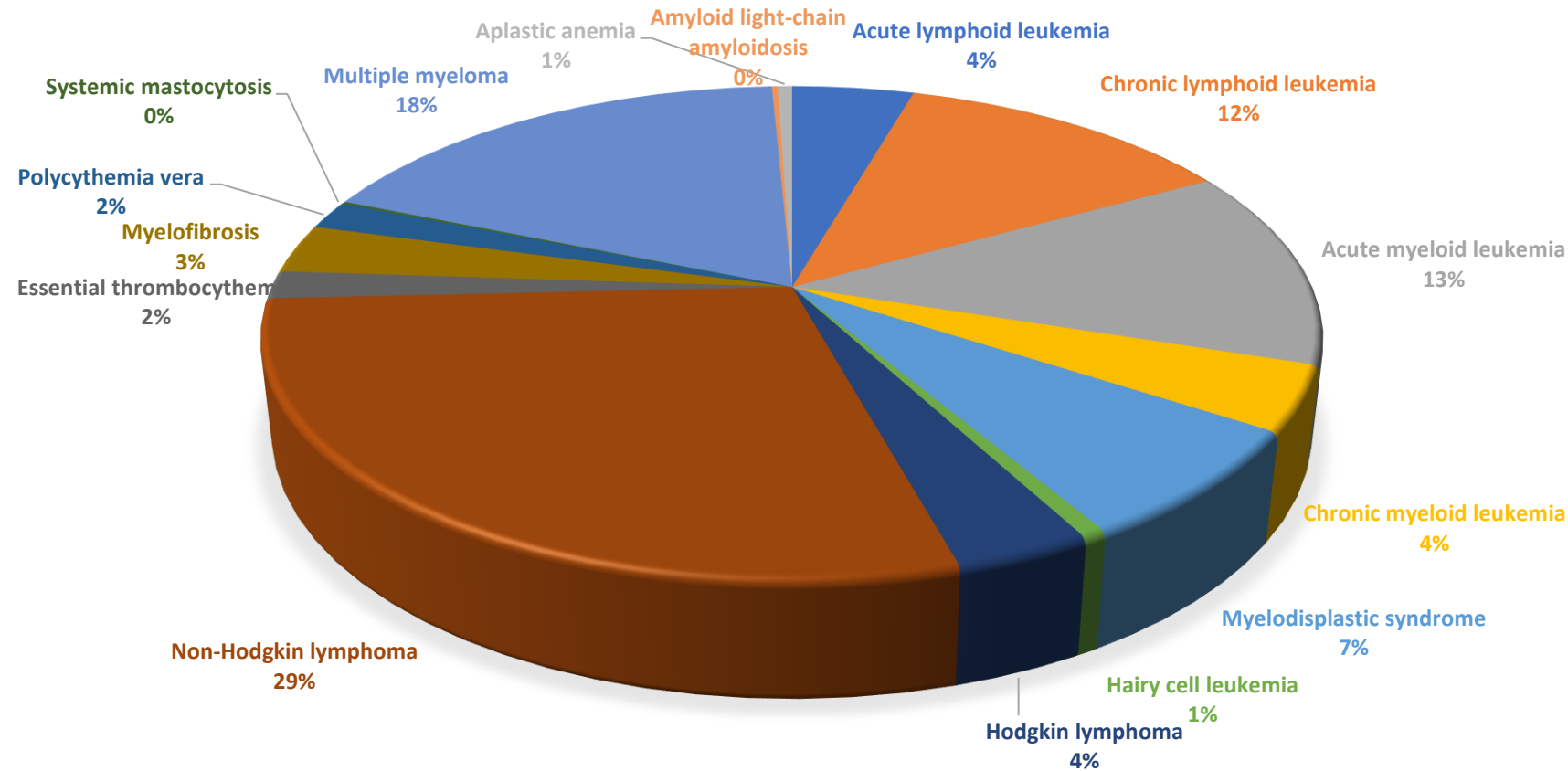
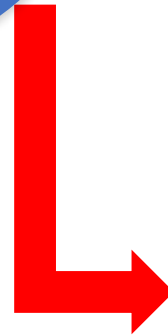
Female	1579	41.5%
Male	2222	58.5%

myeloproliferative
(1244) 33%

lymphoproliferative
2557 (67%)

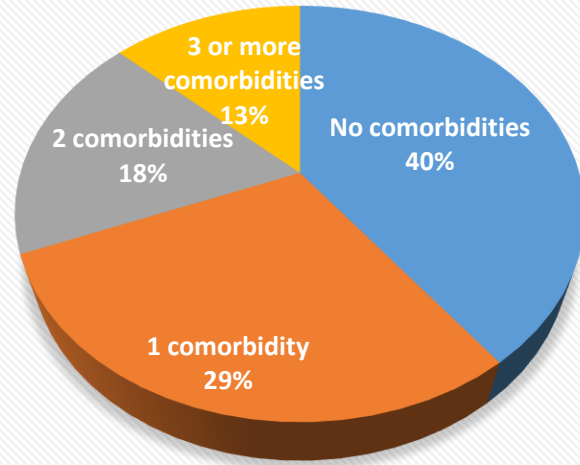
Distribution of COVID-19 among Hematological Malignancies

MALIGNANCY	CASES
Acute lymphoid leukemia	169
Chronic lymphoid leukemia	474
Acute myeloid leukemia	497
Chronic myeloid leukemia	161
Myelodysplastic syndrome	279
• Low - intermediate risk	138
• High risk	48
• Not stated	93
Hairy cell leukemia	23
Hodgkin lymphoma	135
Non-Hodgkin lymphoma	1084
• Indolent	497
• Aggressive	516
• Not stated	71
Essential thrombocythemia	69
Myelofibrosis	122
Polycythemia vera	70
Systemic mastocytosis	6
Multiple myeloma	684
Amyloid light-chain amyloidosis	8
Aplastic anemia	20

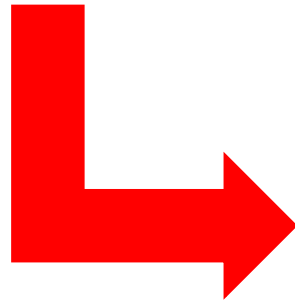


It was not possible to obtain the denominator for each HM, so it is not possible to evaluate the incidence in each HM subgroup

Comorbidities



The most frequent were cardio-vascular disorders



Smokers or ex: 477 (12.5%)

Chronic cardiopathy...

1146

Chronic pulmonary...

614

Diabetes (treated wit...

620

Liver disease

167

Obesity

345

Renal impairment...

325

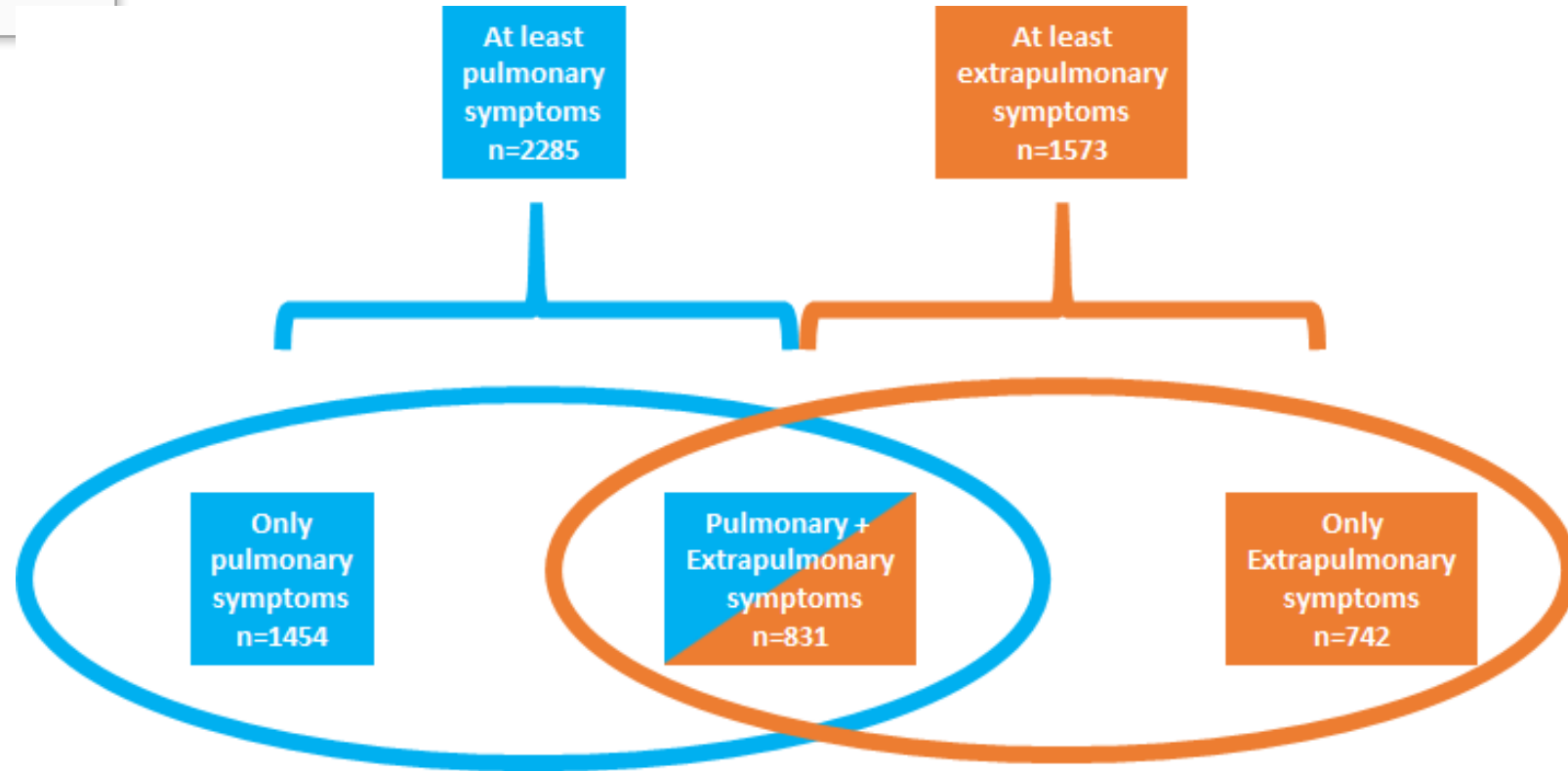
COVID-19 Diagnosis and reason for COVID-19 test

Bronchoalveolar lavage positive for SARS-CoV-2

SARS-CoV-2 serology (60) 2%

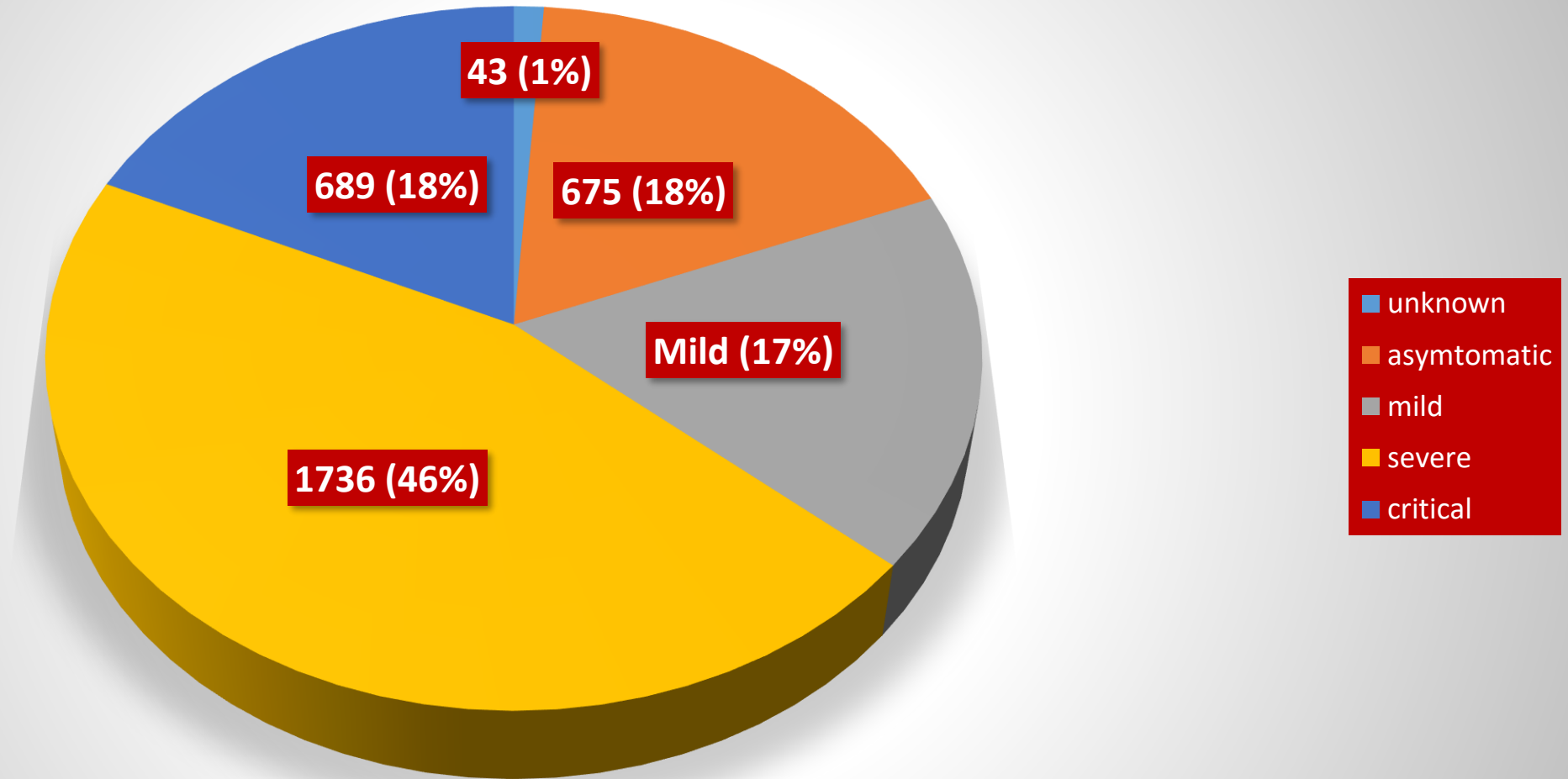
Nasopharyngeal swab positive for SARS-CoV-2 (3718) 96%

(*) in some cases. more than one of them was performed



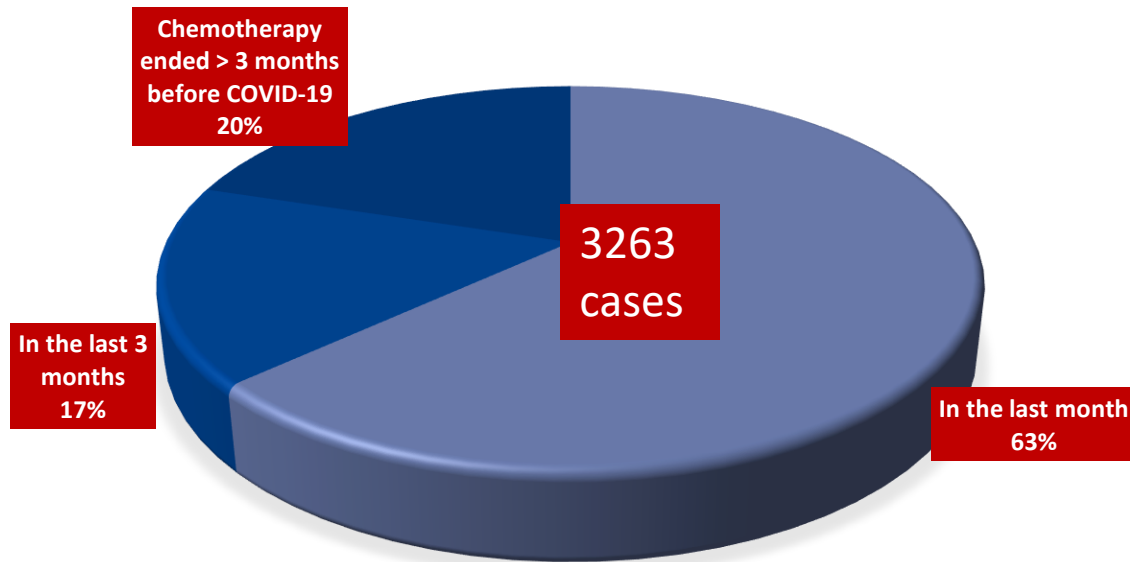
727 screening

Stratification for severity



The severity of COVID-19 at admission was graded according to the China Centers for Disease Control and Prevention definitions: mild (non-pneumonia and mild pneumonia). severe (dyspnoea. respiratory frequency ≥ 30 breaths per min. $SpO_2 \leq 93\%$. $PaO_2/FiO_2 < 300$. or lung infiltrates $> 50\%$). and critical (respiratory failure. septic shock. or multiple organ dysfunction or failure)

Chemotherapy programs

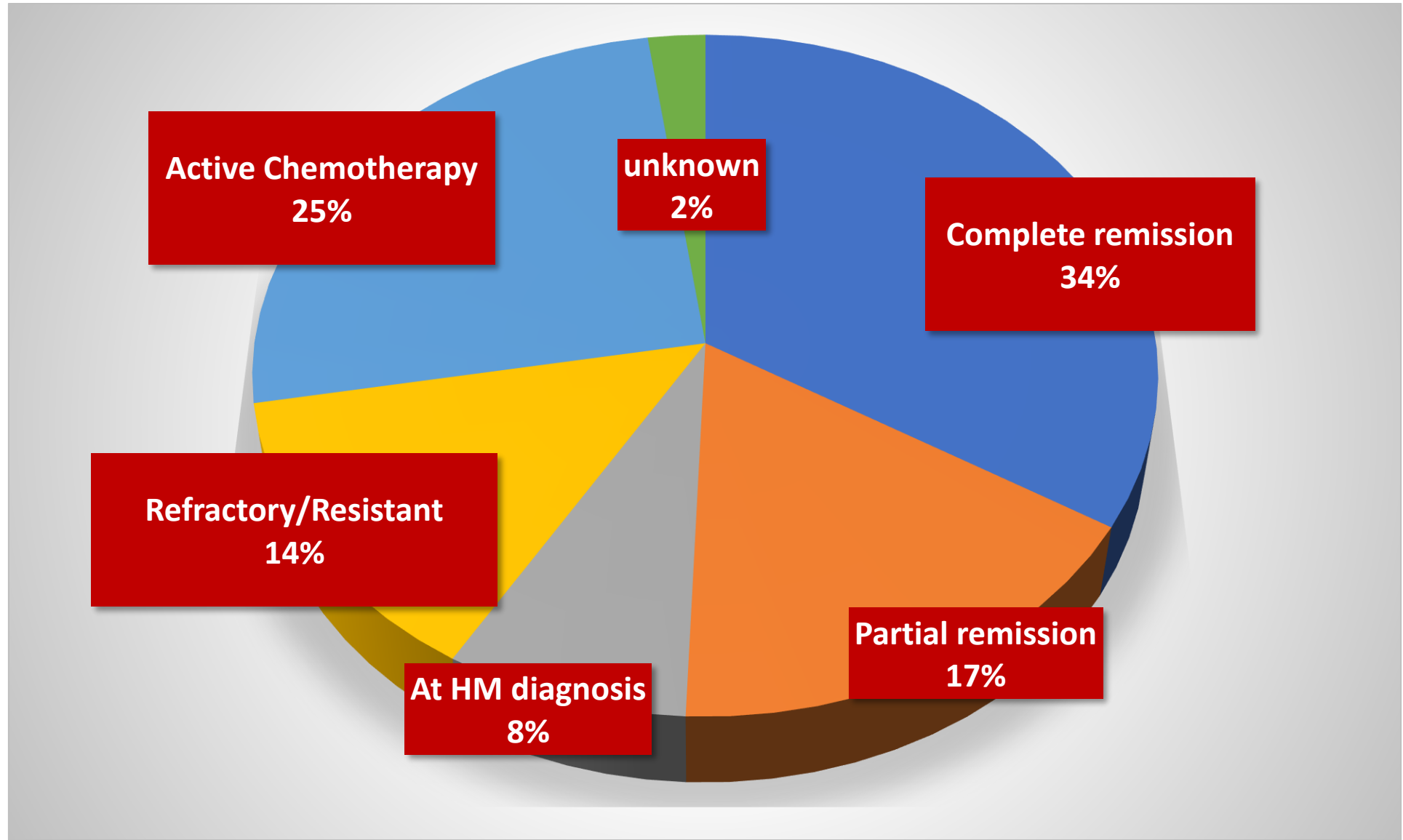


538 Patients did not received any Chemotherapy

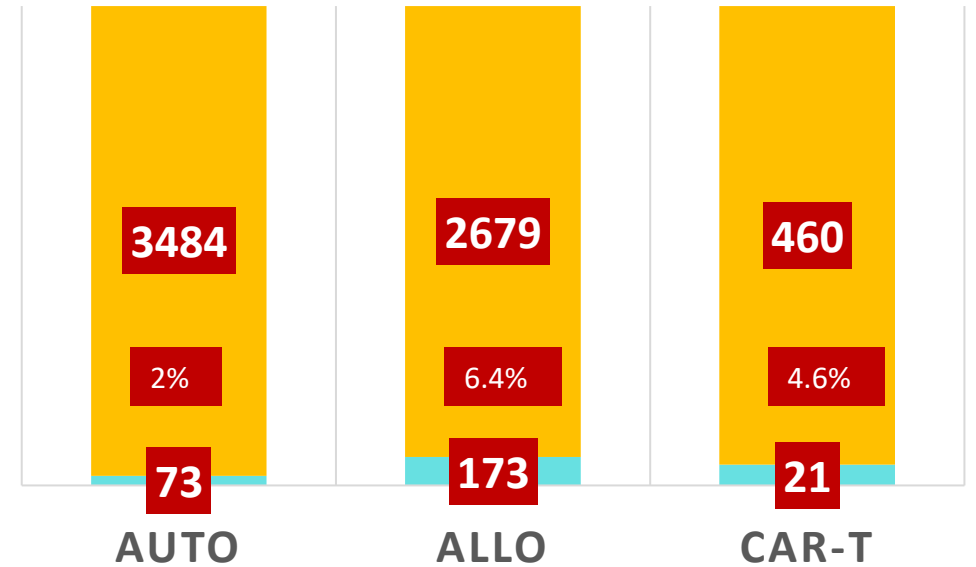
Chemotherapeutic regimen	No.
Anagrelide/HU	145
Conventional Chemotherapy	597
Demethylating agents	141
Immunotherapy only	125
Immuno-chemotherapy	857
IMiDs	218
Target Therapies*	607
Palliative/Supportive	226
Radiotherapy	10
AlloHSCT	173
AutoHSCT	74
CART	21
No treatment	538
Unknown	41
Other	28

* Ibrutinib. Idelalisib. Venetoclax. Ruxolitinib. Bortezomib. TKI

Underlying HM phase



Transplanted recipients ■ cases ■ population



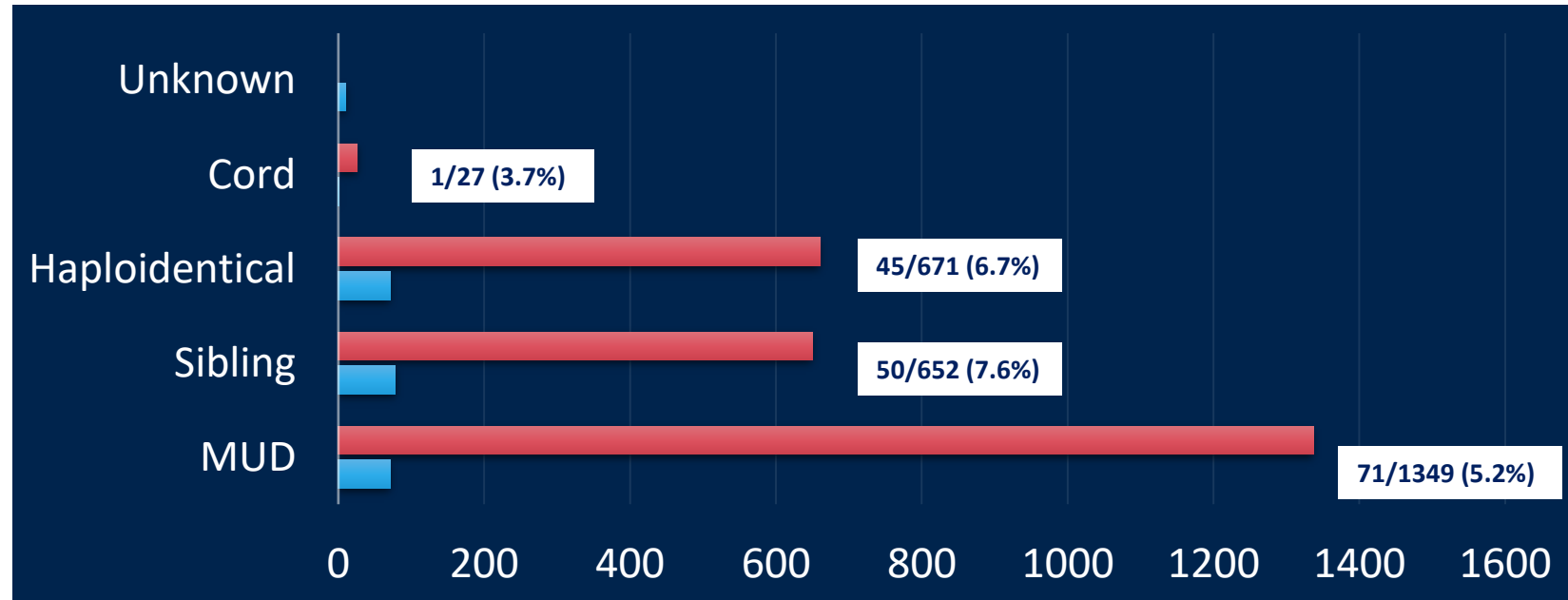
**Denominator available:
All transplanted patients during 2020**

261 patients have a history of allo-HSCT but only **173** underwent this procedure as their last therapy before COVID infection

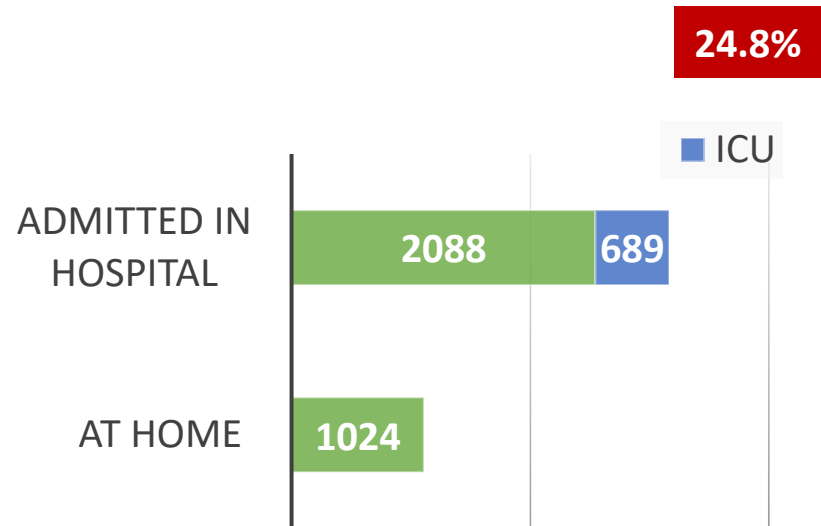
293 patients have a history of auto-HSCT but only **74** underwent this procedure as their last therapy before COVID infection



Kind of Allo-HSCT



Hospital admission during COVID-19



For patients who needed Hospital admission

Duration of hospital admission (days. median) **15 (8-27)**

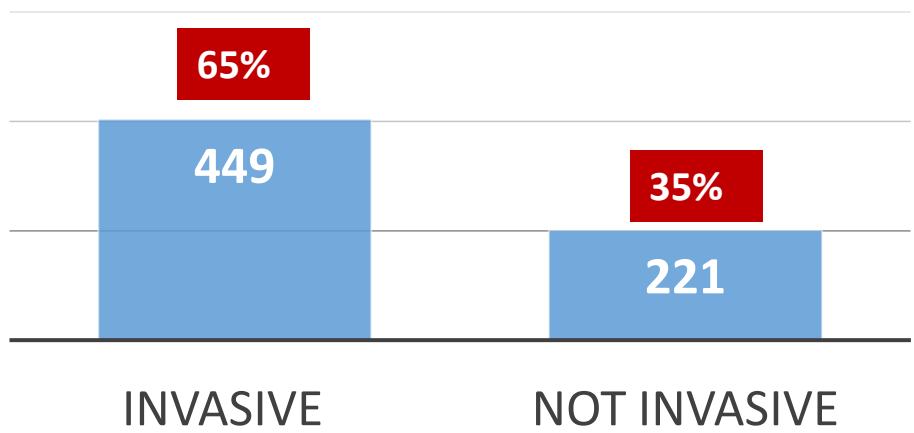
Normal ward. days (median) 11 (5-20)

Intermediate care. days (median) 10 (5-19)

Intensive care unit. days (median) 11 (5-20)

COVID-19/Other ward. days (median) 12 (7-20)

Mechanical ventilation



Overall crude mortality rate *

Attributable to COVID-19

Contributable to COVID-19

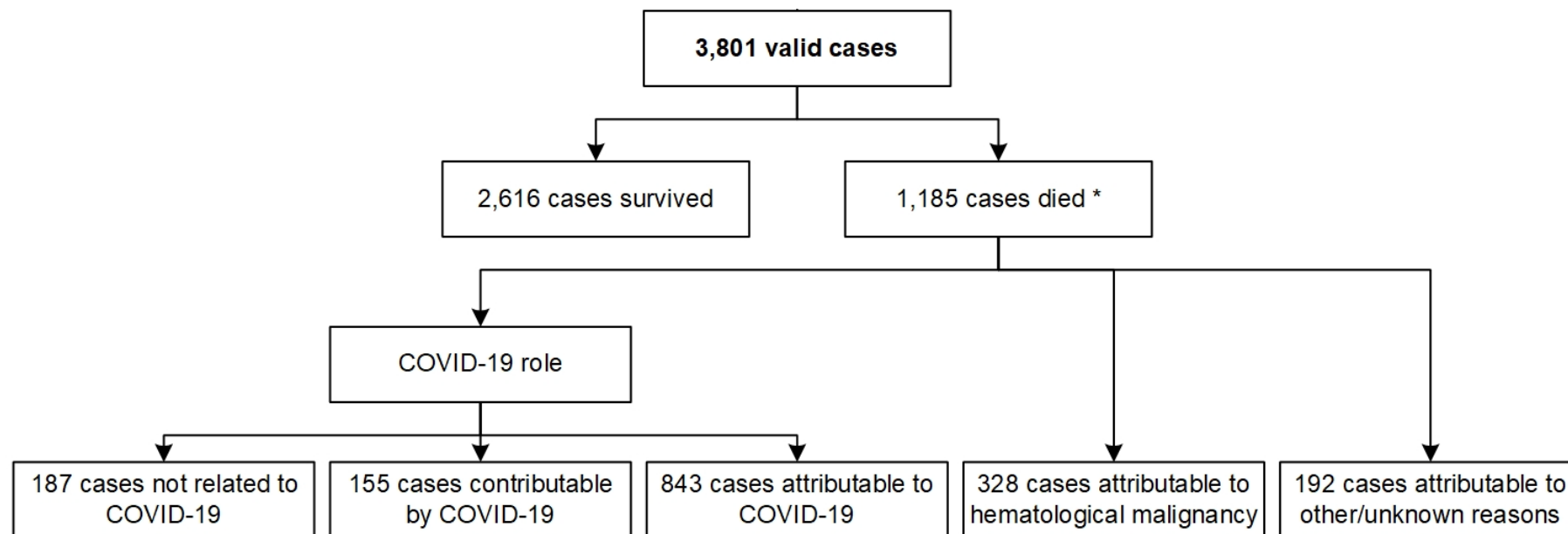
Attributable to HM

1185 (31.2%)

843 (22.2%)

155 (4.1%)

328 (8.6%)



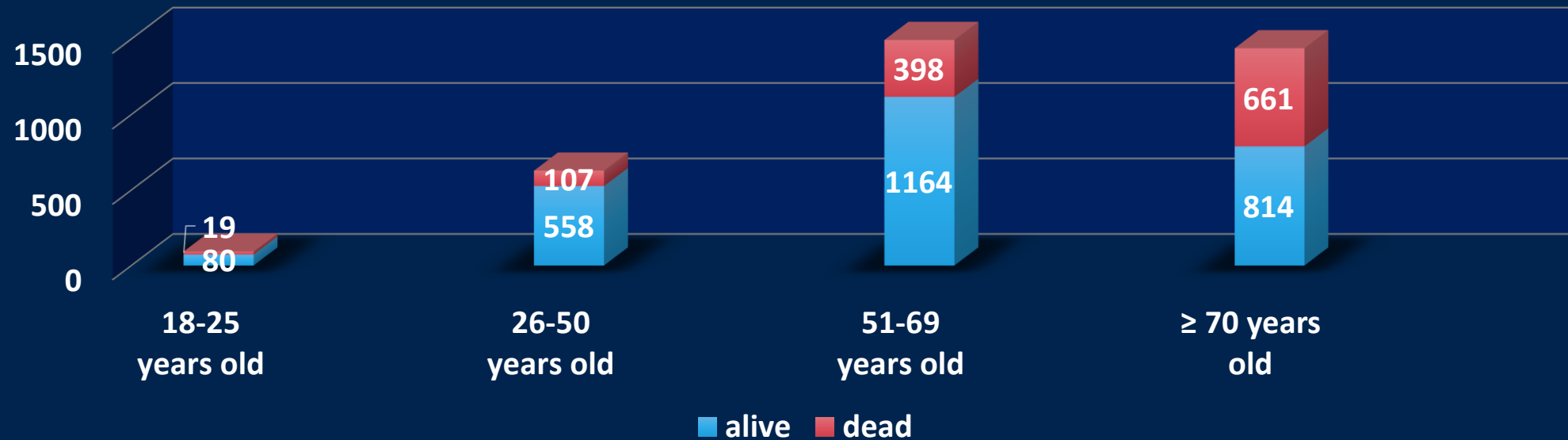
** The mortality in certain patients might be attributable to more than 1 factor*

Overall case-fatality rate (overall mortality) was defined as the proportion of deaths for any cause compared to the total number of patients registered during the observation time. Attributable or contributable deaths were defined on the basis of subjective judgment of the local physician.

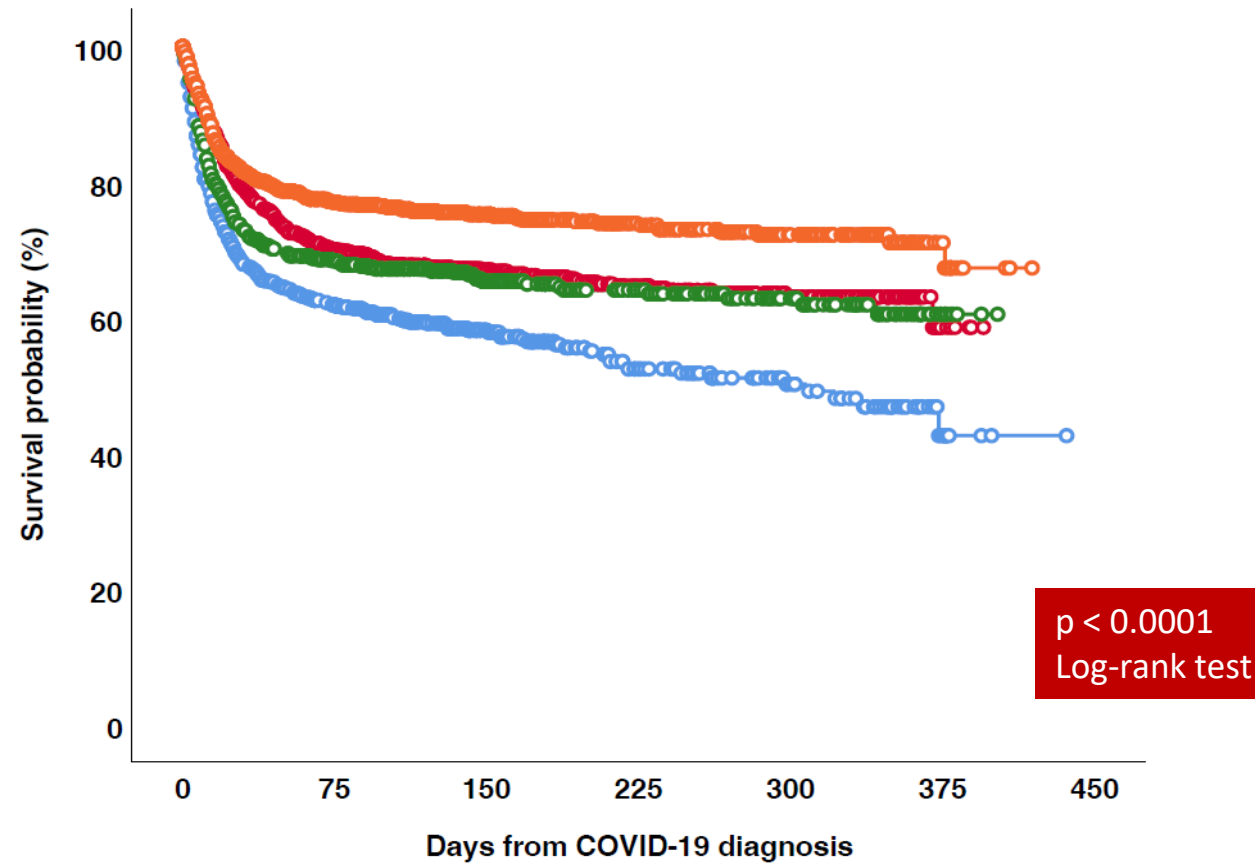
Overall mortality by age

Overall mortality rate by age in COVID-19 pts	%
18-25	19.2%
26-50	16.1%
51-69	25.5%
70 or older	44.8%

Mortality by age range



Overall survival by underlying disease group

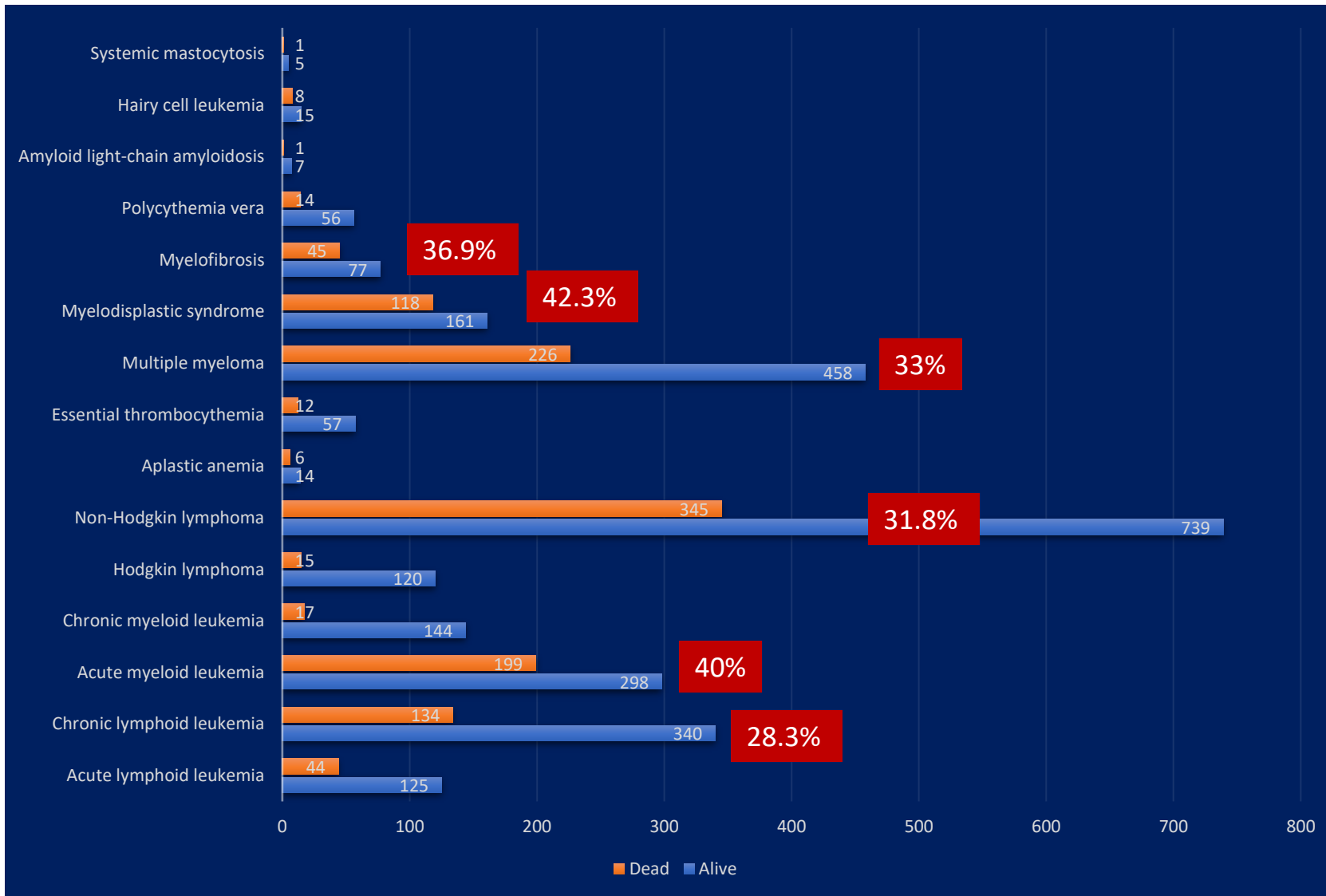


Number of patients at risk

	0	75	150	225	300	375	450
AML + MDS	774	365	189	92	52	8	0
NHL	1080	608	351	214	112	6	0
MM	682	358	192	122	73	8	0
Other malignancies	1254	714	412	251	136	20	0

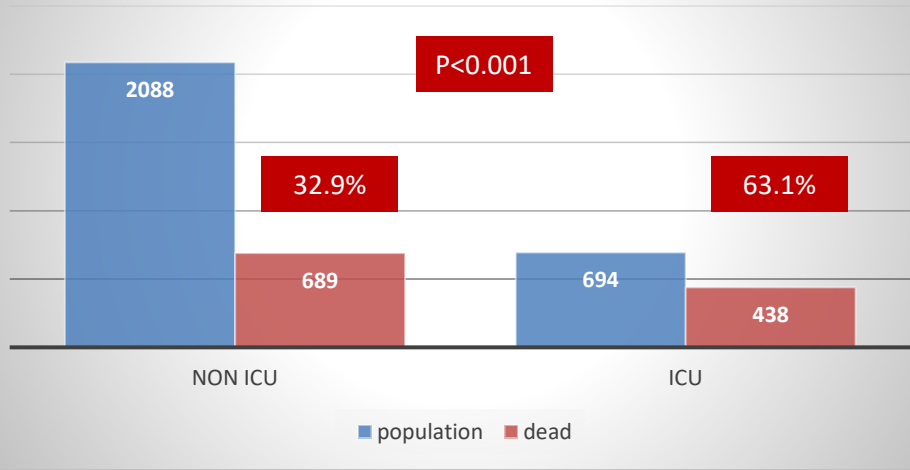
AML: acute myeloid leukemia; **MDS:** myelodysplastic syndrome; **NHL:** non-Hodgkin lymphoma; **MM:** multiple myeloma

Overall mortality by hematological malignancies



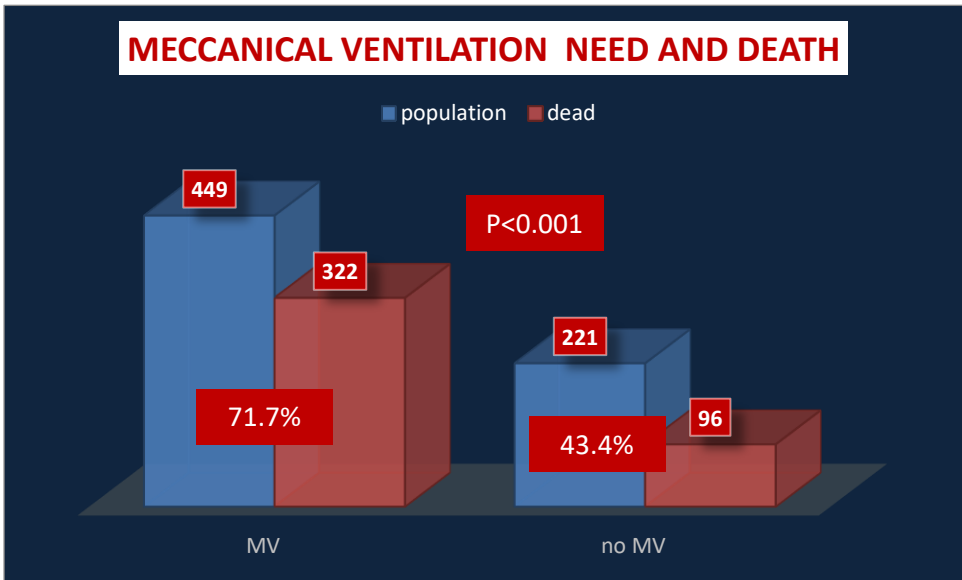
Aggressive/Indolent Lymphoma	Alive	Dead
Indolent	354	143
Aggressive	337	179
Not stated	48	23
B or T cell-lymphoma		
T-cell Lymphoma	58	32
B-cell Lymphoma	636	293
Not stated	45	20
MDS risk		
Low - intermediate risk	77	61
High risk	26	22
Not stated	58	35

ICU admission and mortality

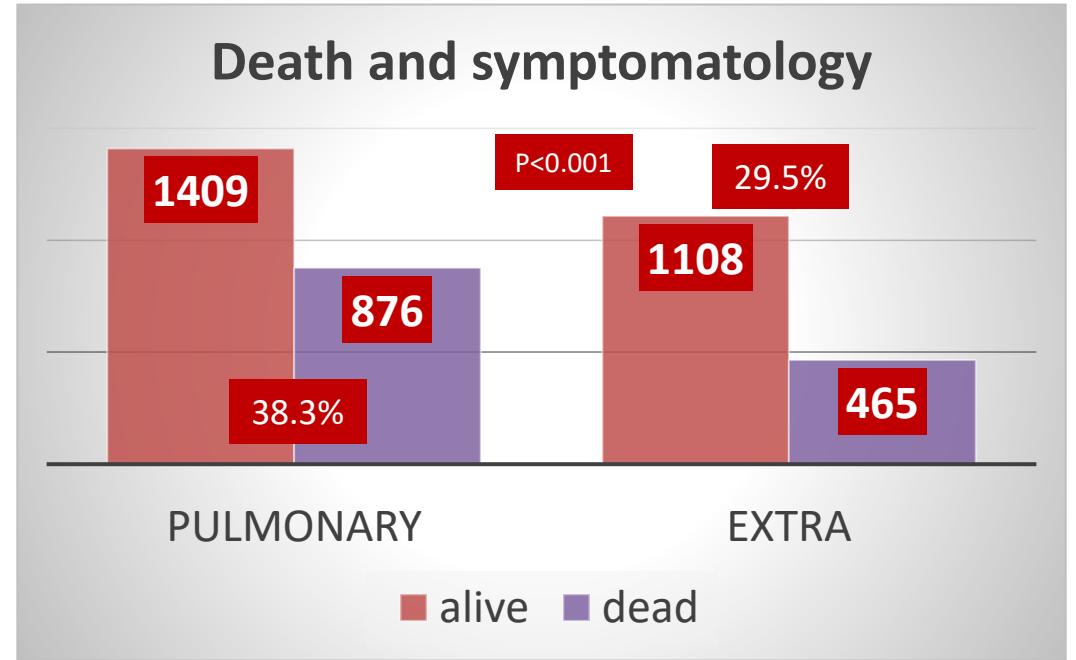


Only patients admitted in Hospital

MECCANICAL VENTILATION NEED AND DEATH



Death and symptomatology

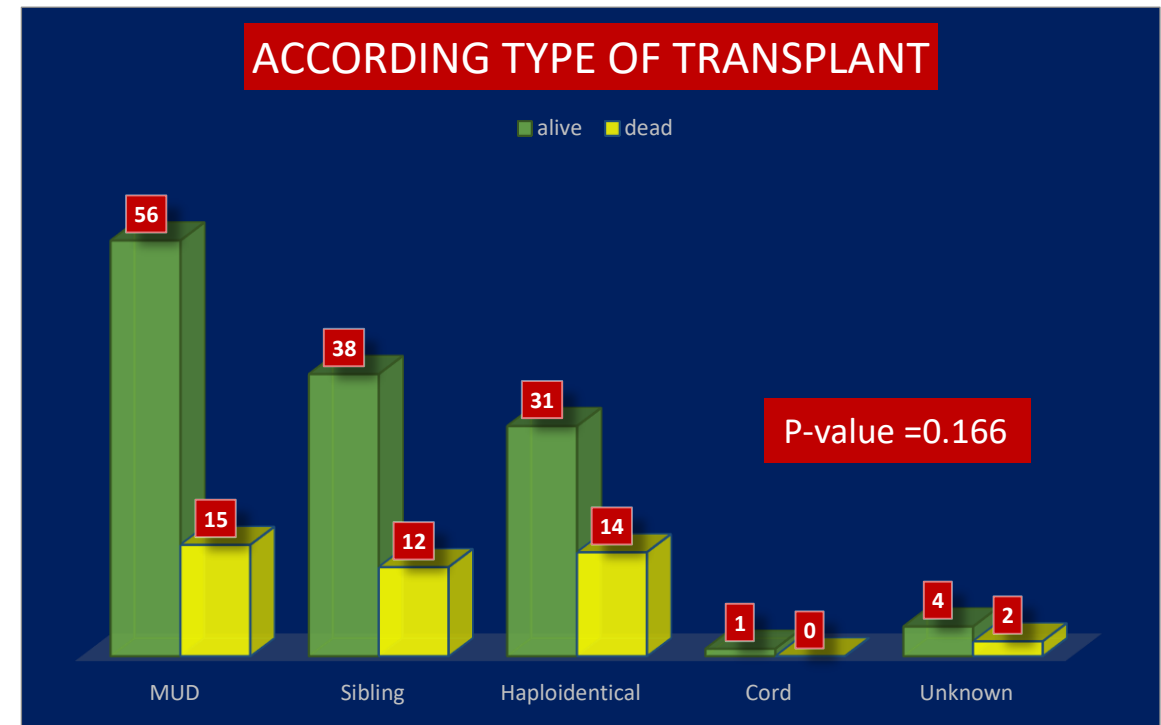
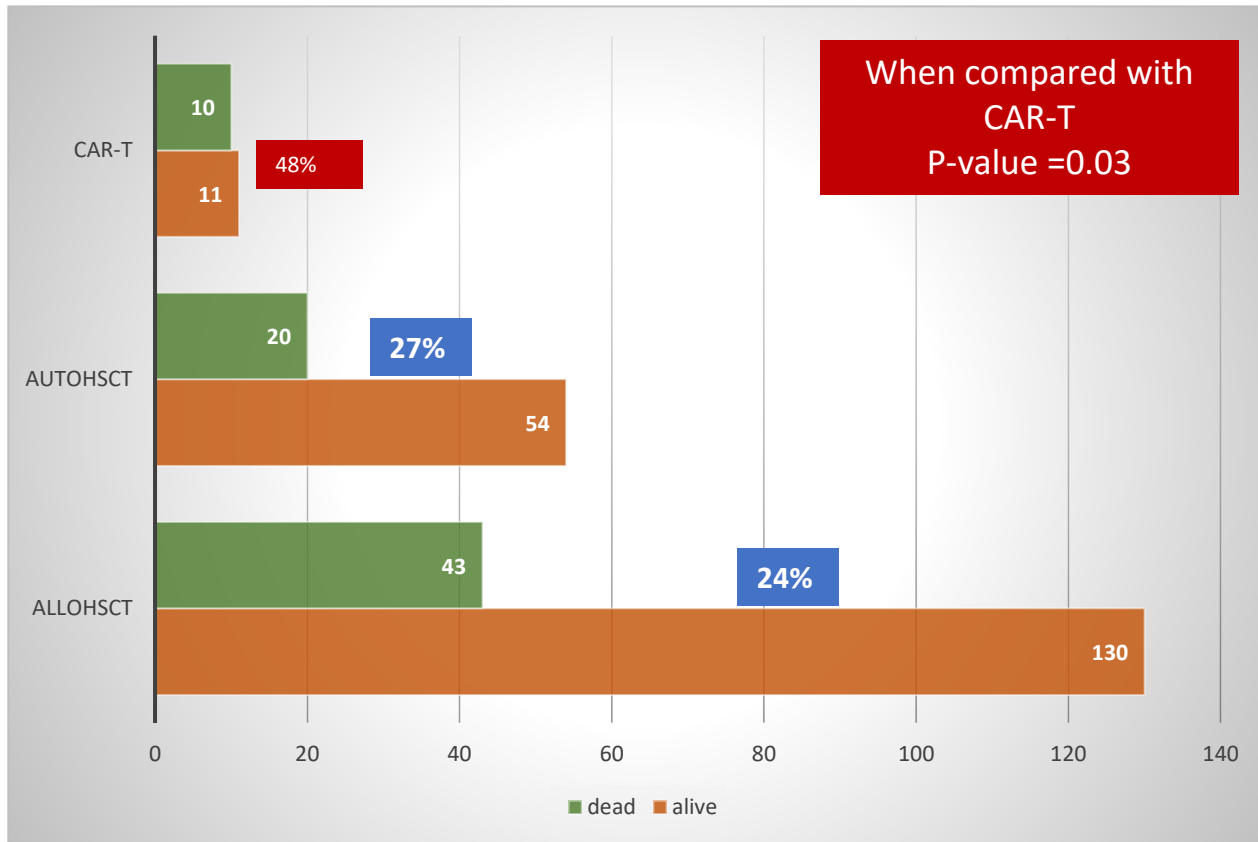


Overall mortality by last treatment

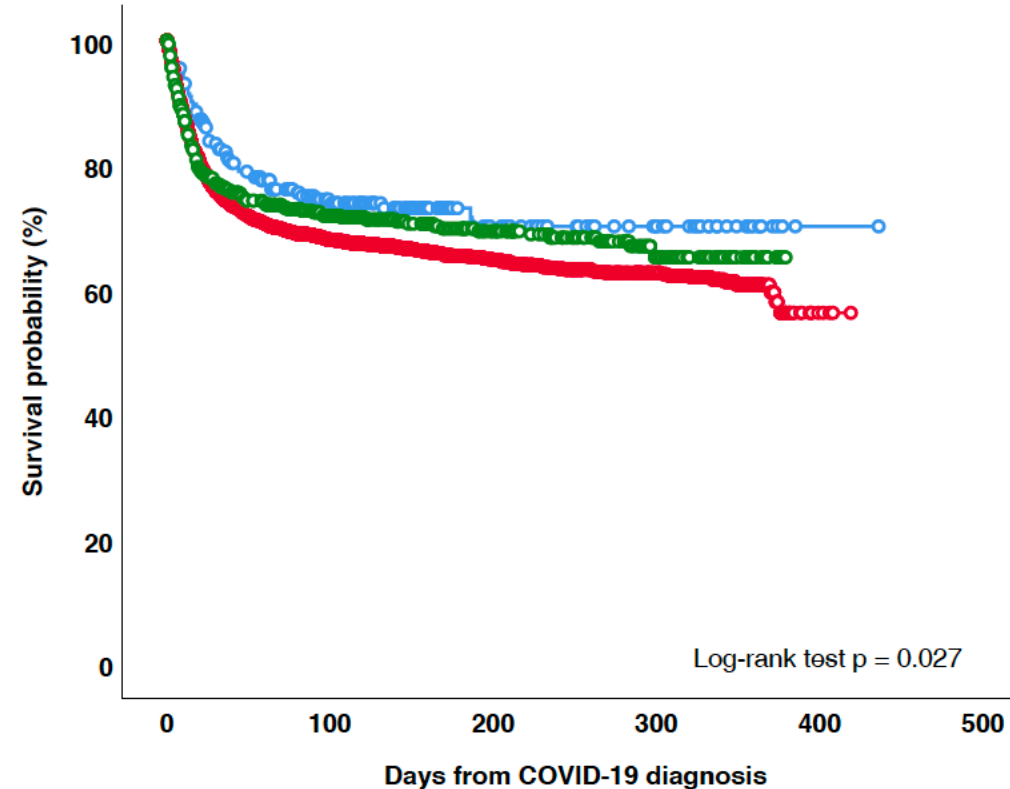
Chemotherapeutic regimen	No.	Dead	%
Anagrelide/HU	145	39	26.8
Conventional Chemotherapy	597	171	29.8
Demethylating agents	141	83	58.8
Immunotherapy only	125	36	28.8
Immuno-chemotherapy	857	262	30.6
IMiDs	218	79	36.2
Target Therapies*	607	154	25.3
Palliative/Supportive	122	104	53.7
Radiotherapy	10	1	10
AlloHSCT	173	43	24.8
AutoHSCT	74	20	27.0
CART	21	10	47.6
No treatment	538	156	29.0
Unknown	41	13	31.7
Other	28	20	26.6

* Ibrutinib. Idelalisib. Venetoclax.
Ruxolitinib. Bortezomib. TKI

COVID-19 Mortality in HSCT



Overall survival by transplant received (vs no transplant)



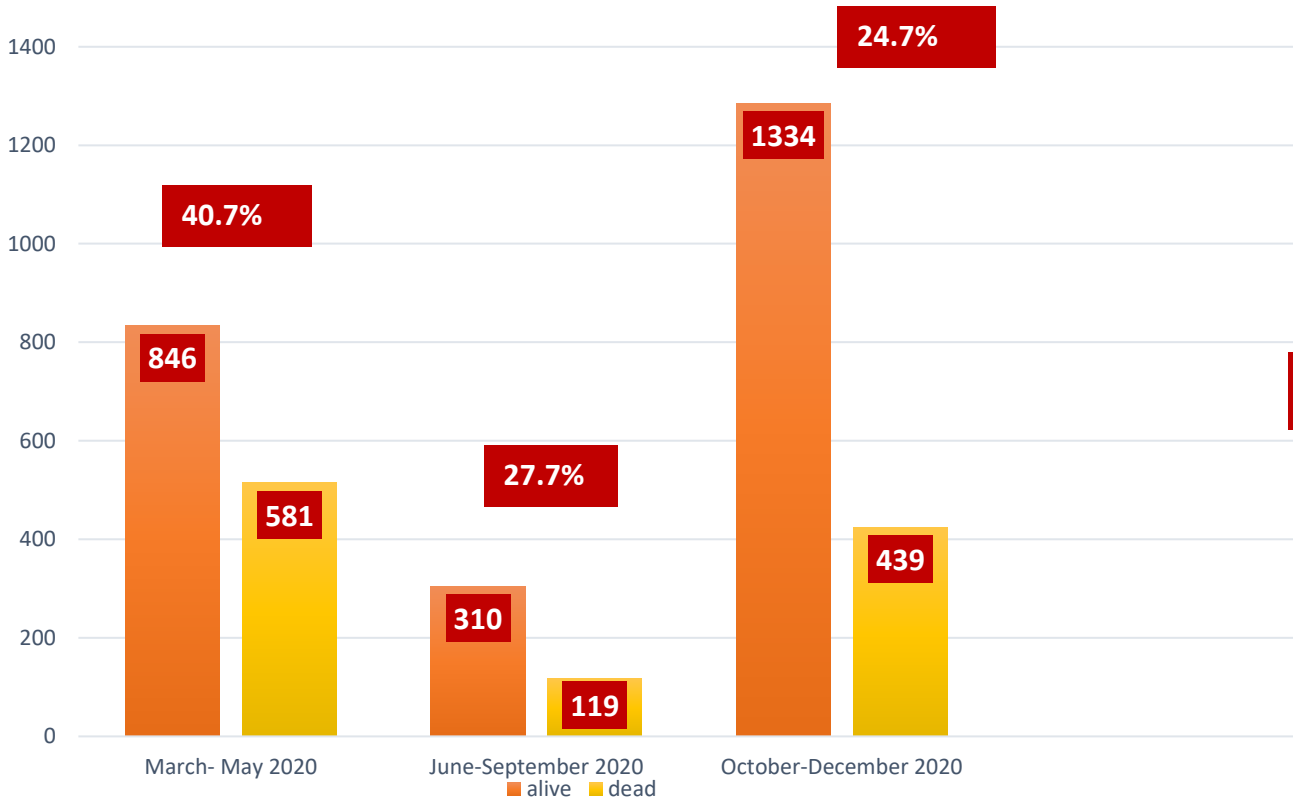
Number of patients at risk

<i>Allogeneic/Autologous HSCT</i>	247	125	44	25	0	0
<i>No HSCT</i>	3008	1363	594	278	9	0
<i>No treatment</i>	535	267	154	70	0	0

HSCT: Hematopoietic stem-cell transplantation

HSCT: hematopoietic stem cell transplantation

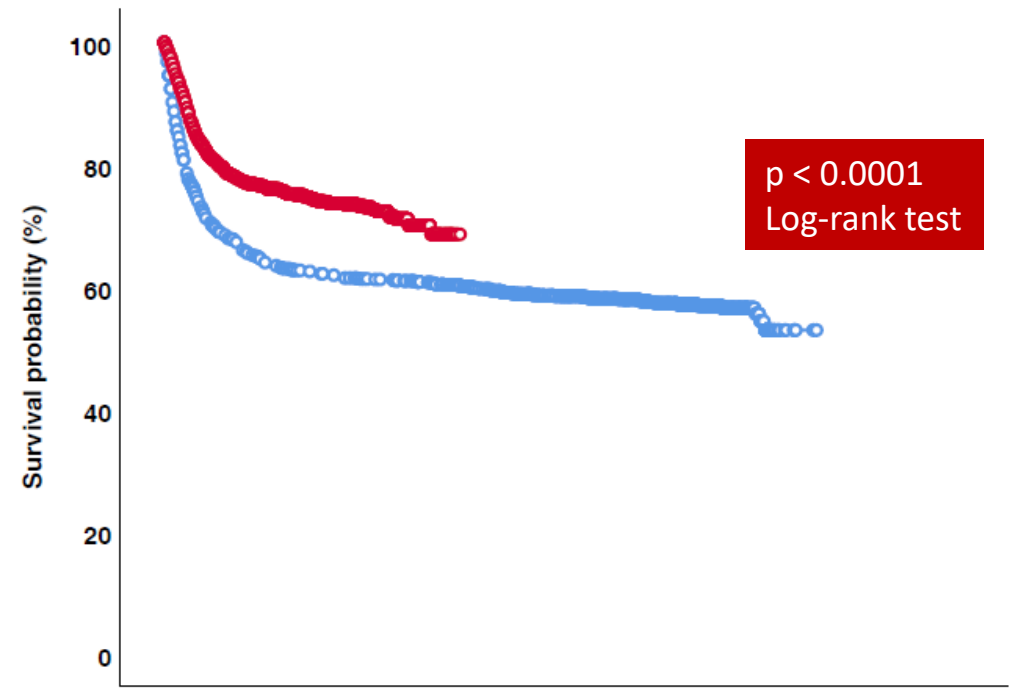
Time COVID distribution and mortality



First wave

Second wave

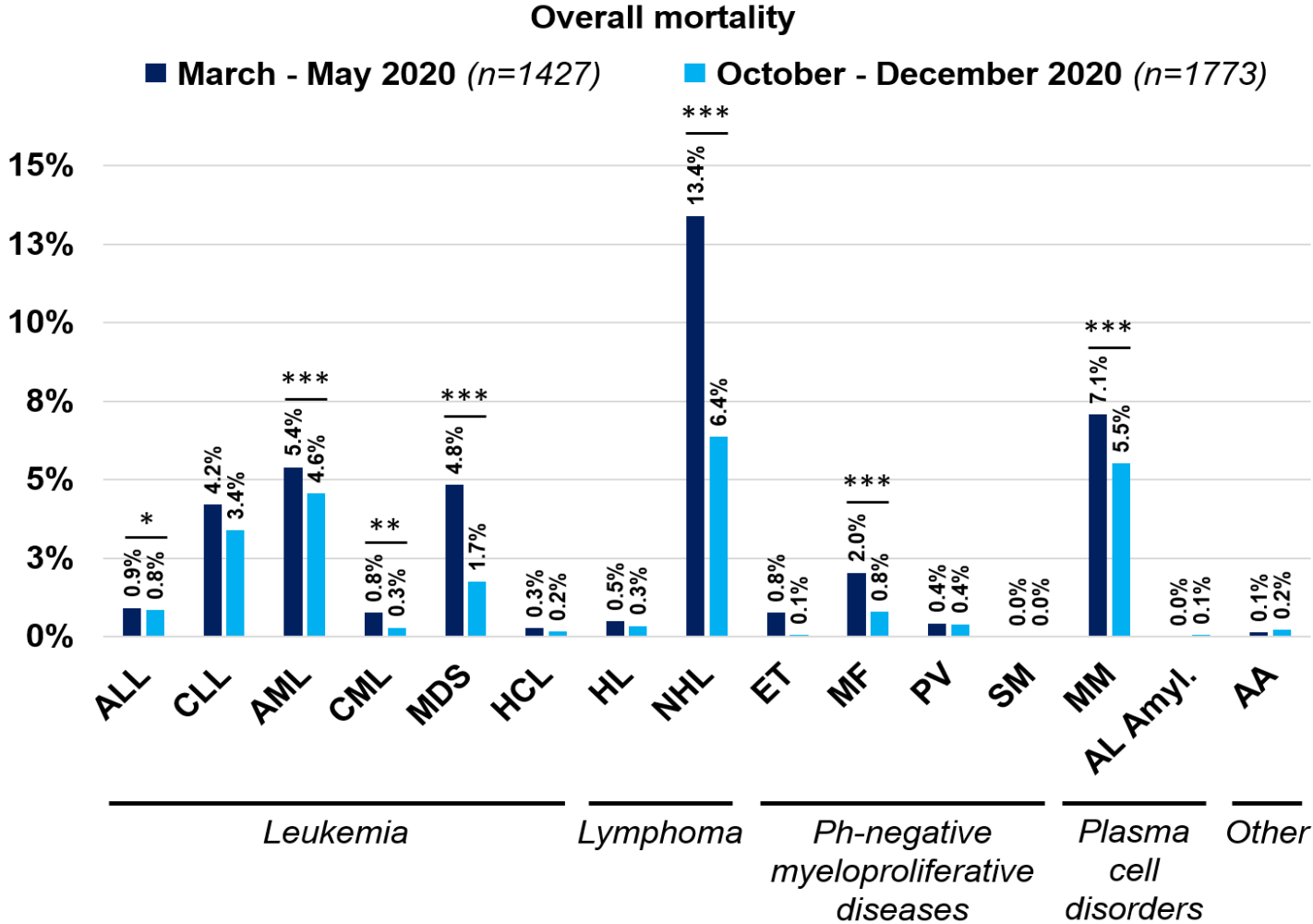
Overall survival by time distribution (first vs second wave)



Number of patients at risk

	0	100	200	300	400	500
<i>March-May 2020</i>	1425	798	665	365	2	0
<i>October-December 2020</i>	1768	690	0	0	0	0

Overall mortality in the different HMS by time distribution (first vs second wave)



*. p<0.05; **. p<0.01; ***. p≤0.001. Mortality proportions between first (March-May 2020) and second wave (October-December 2020) were compared using X² or Fisher’s exact test when an expected cell value was <5 (In this graphic essential thrombocytopenia).

AA. aplastic anaemia (first wave n=7. 0.5%; second wave n=6. 0.3%); **AL Amyl.** amyloid light-chain amyloidosis (first wave n=1. 0.1%; second wave n=7. 0.4%); **ALL.** acute lymphoid leukaemia (first wave n=37. 2.6%; second wave n=91. 5.1%); **AML.** acute myeloid leukaemia (first wave n=140. 9.8%; second wave n=251. 14.2%); **CLL.** chronic lymphoid leukaemia (first wave n=199. 13.9%; second wave n=209. 11.8%); **CML.** chronic myeloid leukaemia (first wave n=52. 3.6%; second wave n=81. 4.6%); **ET.** essential thrombocythemia (first wave n=31. 2.2%; second wave n=31. 1.7%); **HCL.** hairy cell leukaemia (first wave n=12. 0.8%; second wave n=8. 0.5%); **HL.** Hodgkin lymphoma (first wave n=34. 2.4%; second wave n=76. 4.3%); **MDS.** myelodysplastic syndrome (first wave n=120. 8.4%; second wave n=119. 6.7%); **MF.** myelofibrosis (first wave n=54. 3.8%; second wave n=59. 3.3%); **MM.** multiple myeloma (first wave n=241. 16.9%; second wave n=353. 19.9%); **NHL.** non-Hodgkin lymphoma (first wave n=474. 33.2%; second wave n=443. 25.0%); **PV.** polycythaemia vera (first wave n=22. 1.5%; second wave n=37. 2.1%); **SM.** systemic mastocytosis (first wave n=3. 0.2%; second wave n=2. 0.1%).