



9th EUROPEAN
CONFERENCE on
INFECTIONS in
LEUKAEMIA

COVID-19 EPIDEMIOLOGY GROUP
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From September
15th to 17th 2022

Final
slide set

Covid-19, 2022 update of Epidemiology Group

Key points

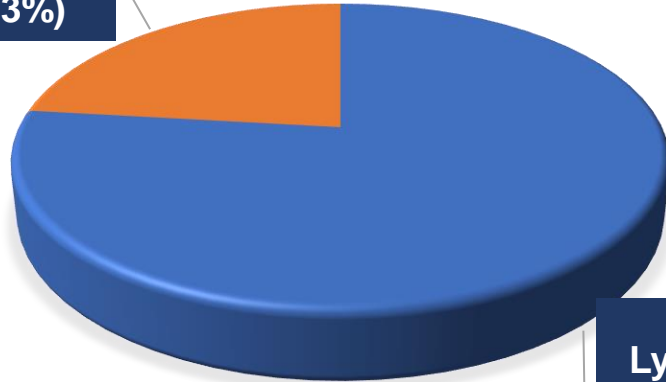
- 1) Changes of mortality and morbidity compared 2020 in general and for single category of HMs
 - Impact of vaccination on COVID-19 epidemiology of HM patients
 - Impact of antivirals/monoclonals on epidemiology of HM patients



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Comparison of HMs 2020-2022 Data from EPICOVIDEHA Survey

Myeloid
356 (23%)



Lymphoid
1181 (77%)

2021: 1548 pts

Pagano et al, Blood 2022 in press

Pagano et al, J Hematol Oncol 2021

2020: 3800 pts

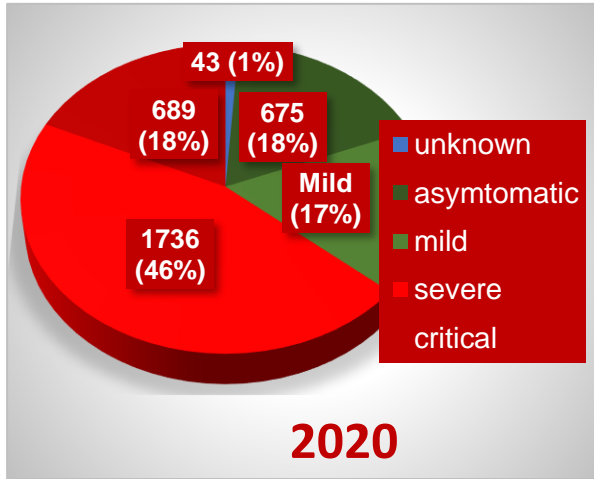
Myeloid
(1244) 33%

Lymphoid
2557 (67%)

356/1181 (30.1%) Vs 1244/2557 (48.6%)
p-value=0.0001

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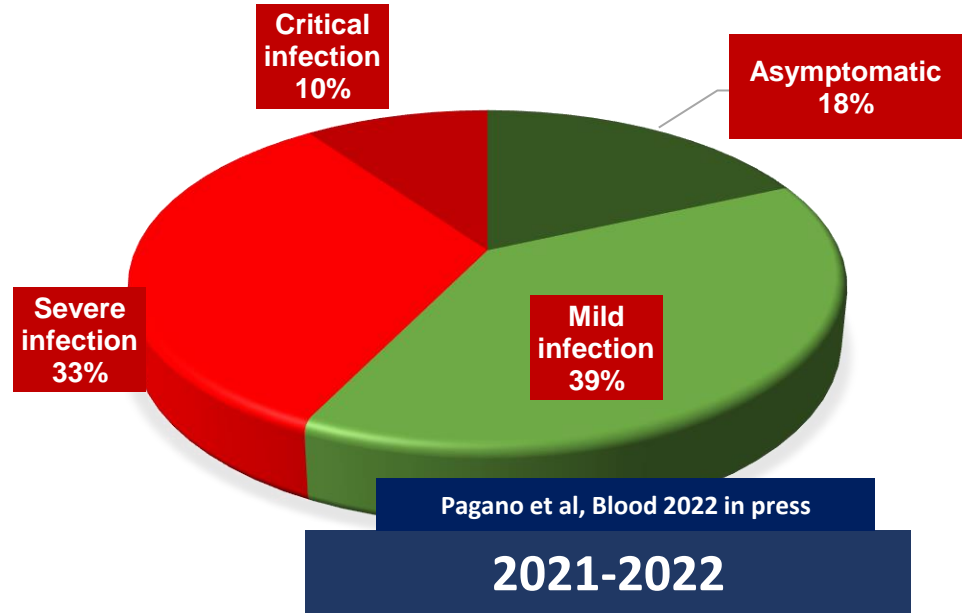
Stratification for Severity



2020

Critical + Severe
2394/380 Vs 661/1583
p-value=0.00001

Comparison of HMs 2020-2022 Data from EPICOVIDEHA Survey



Pagano et al, Blood 2022 in press

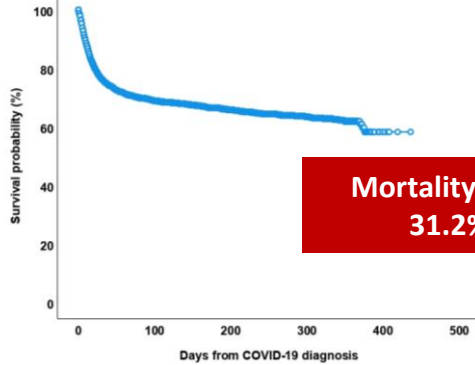
2021-2022

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)



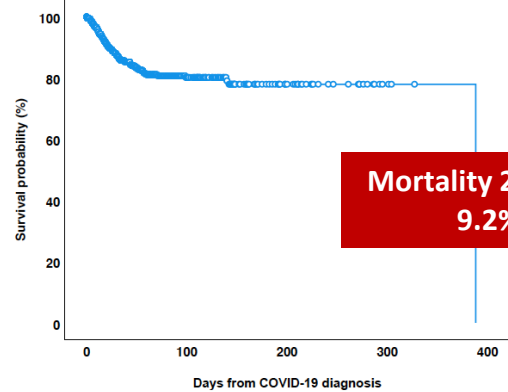
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Overall survival



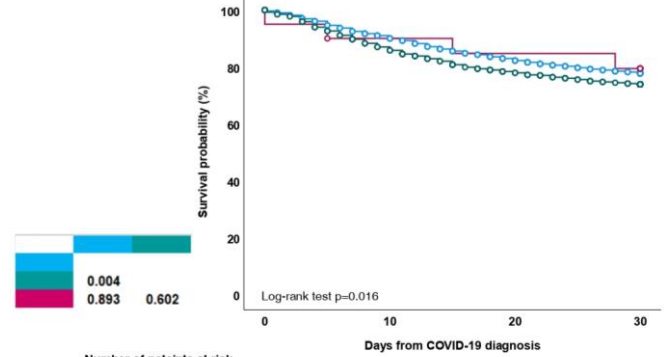
Mortality 2020
31.2%

Number of patients at risk	0	100	200	300	400	500
	3790	1755	792	373	5	0

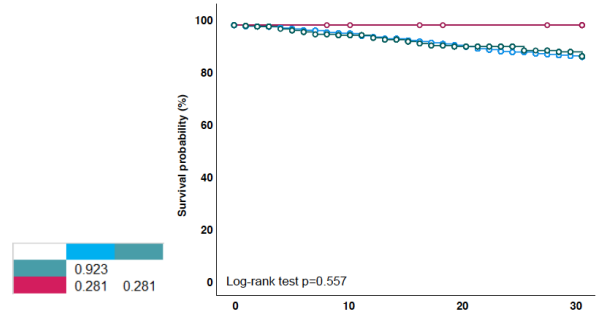


Mortality 2021/22
9.2%

Number of patients at risk	0	100	200	300	400
	1601	145	29	4	0



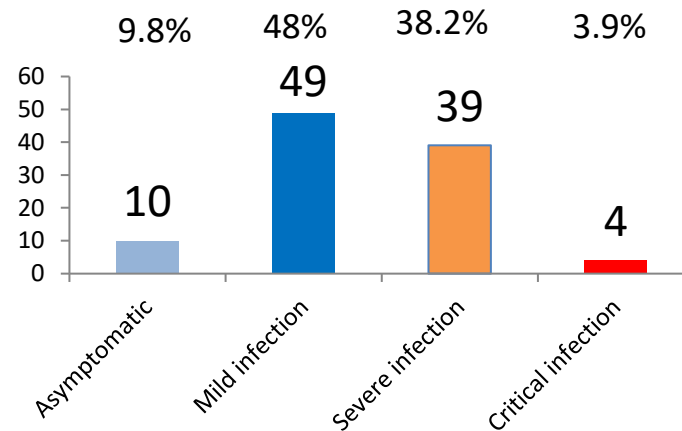
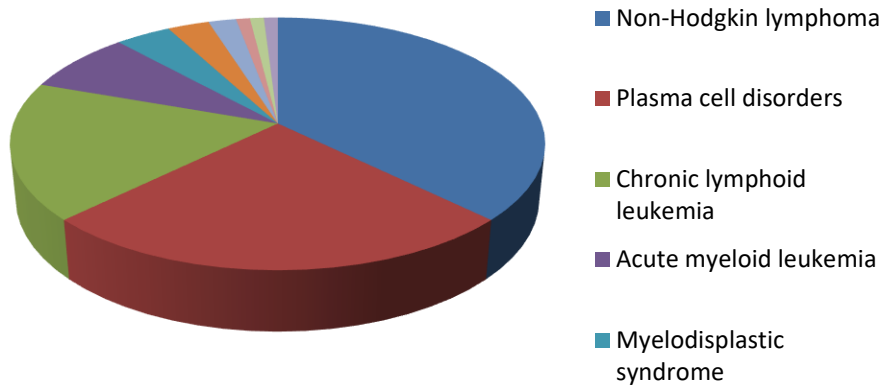
Number of patients at risk	0	10	20	30
Lymphoproliferative malignancies	2568	2280	2019	1831
Myeloproliferative malignancies	1202	1014	868	786
Aplastic anemia	20	17	16	14



Number of patients at risk	0	10	20	30
Lymphoproliferative malignancies	1181	951	717	506
Myeloproliferative malignancies	356	285	209	148
Aplastic anemia	11	10	7	6

Improved clinical outcome of COVID-19 in hematologic malignancy patients receiving a fourth dose of anti-SARS-CoV-2 vaccine: an EPICOVIDEHA report

As of August 2022, **102** out of all patients reported in the EPICOVIDEHA registry were diagnosed with COVID-19 after **having received a fourth vaccine dose**



- Only 21.6% of all patients needed oxygen administration
- About half did not receive any specific anti-SARS-CoV-2 treatment
- **Only 4 patients (3.9%) died**

Myeloid Malignancies

- The incidence of COVID-19 in CML patients after the first wave is similar to that in general population (Breccia et al Br J Haematol 2022)
- The overall mortality of patients with AML and MDS from COVID-19 in 2021 is markedly decreased (Marchesi et al Haematologica 2022)
- The impact of a third and fourth booster vaccine, improved care for patients with myeloproliferative disorders and COVID-19 and differences in severity between SARS-CoV-2 variants (Pagano et al, Blood 2022)
- Risk of early death still increases with age and relapsed/refractory disease
- Ruxolitinib can cause a reduced efficacy of vaccination and risk of death was higher in those patients who abruptly discontinued ruxolitinib in MPN (Pimpinelli et al, J Hematol Oncol 2021)



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Lymphoid Malignancies

- In the era of the Omicron variant of COVID-19, **milder disease** along with **lower fatality rates (5%) are observed**. (Blennow et al, Am J Hematol 2022)
- **In CLL ICU admission rates were highest prior to emergence of omicron (12-12.5% vs 0-3%)** (Niemann *et al. Blood. 2022*)
- Among 164 patients with plasma cell dyscrasias that completed vaccination with an 8-month median follow up after vaccination, **only 5 patients experienced a mild form of COVID-19 during the Delta-variant wave, more patients ($n = 12$) are tested positive with the emergence of the omicron variant, but there were no significant clinical manifestations, hospitalizations, or deaths.** (Hoornaert *et al. Blood. 2022*)
- **Risk of early death still increases with age and relapsed/refractory disease**



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Epidemiological summary in HSCT & Covid-19

	CIBMTR ¹	EBMT ²	EPICOVIDEHA ³	Metanalysis (Lim et al) ³
Patient cohort	Allo- 184 Auto- 134	Allo- 236 Auto- 146	Allo- 173 Auto- 74	Allo- 1191 Auto- 934
Median time from HSCT to Covid-19	17mo (allo); 23 mo (auto)	17.9 months (min–max; –0.9 to 350.3)	NA	16.4mo (allo) & 23.2mo (auto)
Severe disease/Mechanical ventilation	14% patients (45/383)	NA	45% severe disease –in overall study	14%
ICU admission	NA	22.5% patients	18% -in overall study	18%
Covid-19 as primary cause of death	14% (55/383)	25%	24.8% (auto)-27%(allo) (lower than non-transplant HMs)	21%
Auto vs Allo post Covid survival	NS	NS	NS	NS
Risk factors	<ol style="list-style-type: none"> Age ≥50yrs Male gender ≤12 months post allo-HSCT 	<ol style="list-style-type: none"> Older age Higher ISI group Need for ICU Poor PS (mainly allo) 	<ol style="list-style-type: none"> ICU admission Older age active disease, Renal/liver/cardiac disease smoking history 	<ol style="list-style-type: none"> Under 1 year since HSCT Within 6 months of immunosuppression Active GVHD Low lymphocyte count Older age

1.Sharma A et al, *Lancet Haematol.* 2021;8:e185–e193.

2. Ljungman, P., *Leukemia* (2021)

3. Pagano et al, *J Hematol Oncol* 14, 168 (2021)

4. Lim YJ, *EJHaem.* 2022 Jun 14;10.1002/jha2.465.

Pediatric and adolescent onco-hematological population

- Confirmed lower morbidity and mortality compared with adult population
- Morbidity and mortality higher than otherwise healthy pediatric and adolescent population
- Low or no incidence of MIS-C in cancer pediatric patients
- Delay of chemotherapy is most frequent consequence in 35%-59% of pts for a median of 2 weeks

References:

Heusler et al. Eur J Cancer 2021; Weclawek-Tompol et al. J Hematol Oncol 2021; Zama et al Ann Hematol 2022; Kahn et al. Cur Oncol Rep 2022; Global Health Research Group on Childre's Non-Communicable Diseases Collaborative BMJ Open 2022; Pellande-Marcotte et al CMAJ 2021

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- In 2022 the mortality rate observed in COVID-19 patients affected by HMs is markedly reduced.
- The severity and outcome of COVID-19 is worse in HM patients compared to the general population, with a higher mortality rate.
- In 2022 after the introduction of vaccination COVID-19 is mainly observed in patients with lymphoproliferative diseases such as NHL, CLL and MM.
- In all subset of HM patients, older age, cardiovascular and metabolic comorbidities, and active or not controlled (i.e. not in remission) malignancy remain the main risk factors for mortality.
- Children with HM have a lower prevalence of COVID-19 and associated mortality than adults with HM.

