EBMT European Society for Blood and Marrow Transplantation

The challenge of COVID-19 for HSCT; EBMT recommendations and prospective registry study data in the EBMT registry

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For the Infectious Diseases Working Party

Disclosures

- None on this topic

What have been the EBMT activities during COVID-19?

Produced recommendations (9 editions + one publication) for transplant centers how to deal with COVID-19

These include:

Prevention policies and procedures

How to deal with patients waiting for transplantation (candidates)

Donor considerations (following WMDA recommendations)

Visitors/family members

Training of staff

Diagnosis and management of COVID-19 (not giving detailed treatment recommendations but rather collect information)

Advice to patients after transplantation

Bone Marrow Transplantation
https://doi.org/10.1038/s41409-020-0919-0

PERSPECTIVE

The challenge of COVID-19 and hematopoietic cell transplantation; EBMT recommendations for management of hematopoietic cell transplant recipients, their donors, and patients undergoing CAR T-cell therapy

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What have been the EBMT activities during COVID-19?

Collaboration with other societies

- ASTCT
- EHA
- WBMT
- WMDA

Information to authorities (EDQM)

EBMT registry data collection

- Initiated February 28, 2020
- Three steps:
  - A registration form,
  - An interim data form after 2 weeks
  - A follow-up form after the end of the episode.
- Performed in collaboration with the Spanish group (GETH)

Results will be presented on two cohorts

Analyzed cohort with COVID-19 diagnosed before April 10 (n = 272)

Total cohort registered as of August 4 (only descriptive data) - snapshot

Analyzed cohort - endpoints

Overall survival

Development of lower respiratory tract disease

Need for ICU

Resolution of COVID-19

EBMT COVID-19 registry; analyzed cohort

- 272 patients included from 19 countries
- 175 allogeneic
- 97 autologous

Reporting countries

		Type of most recent HSCT		
		Allogeneic (N=175)	Autologous (N=97)	Total (N=272)
		N	N	N
Country	Spain	62	57	119
	Italy	30	14	44
	United Kingdom	19	10	29
	France	17	6	23
	Belgium	10	3	13
	Germany	8	0	8
	Netherlands	5	2	7
	Turkey	4	0	4
	Sweden	5	0	5
	Switzerland	3	1	4
	Israel	2	1	3
	Iran	2	0	2
	Denmark	3	0	3
	Portugal	1	2	3
	Greece	0	1	1
	Norway	1	0	1
	Poland	1	0	1
	Ireland	1	0	1
	Czech Republic	1	0	1

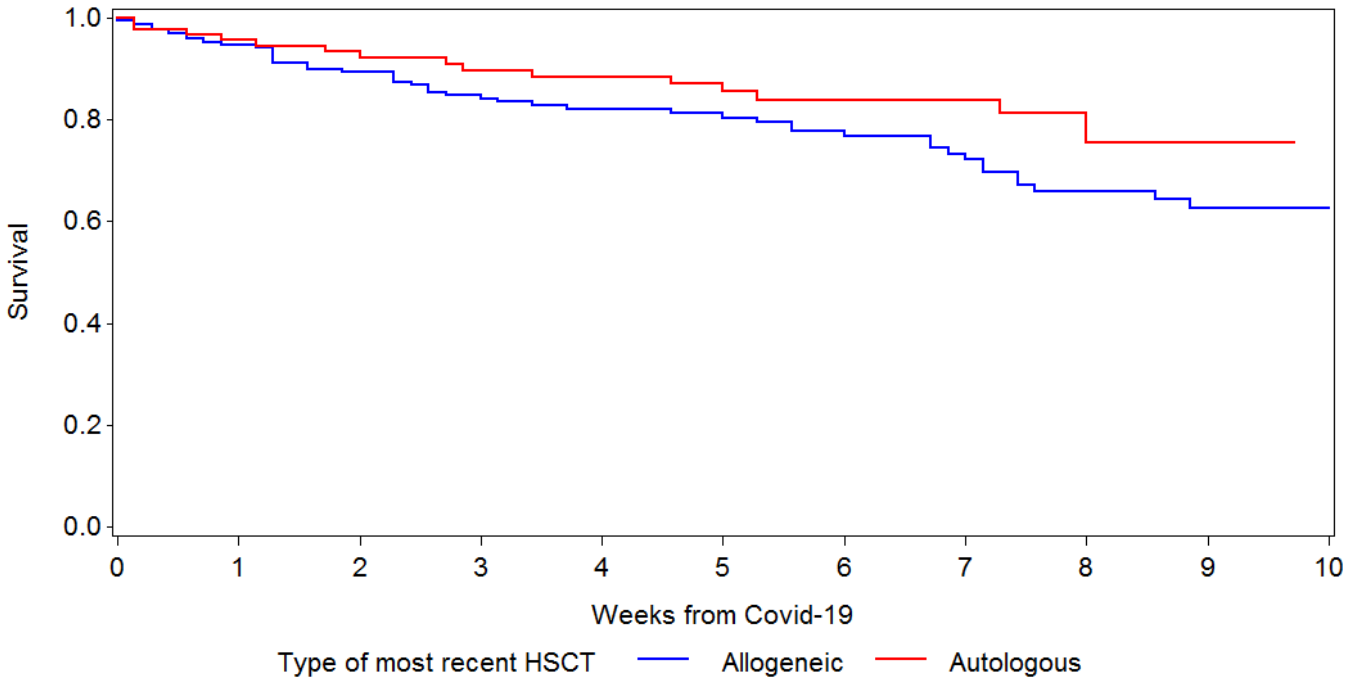
EBMT COVID-19 registry; analyzed cohort

- Time from transplant
  - Allo patients median 13.7 months (0.2 – 254)
  - Auto patients median 25.0 months (-0.9 – 350)
- Age
  - Allo patients median 54.4 years (1.0 – 80.3)
  - Auto patients median 60.9 years (7.7 – 73.4)

EBMT COVID-19 registry;

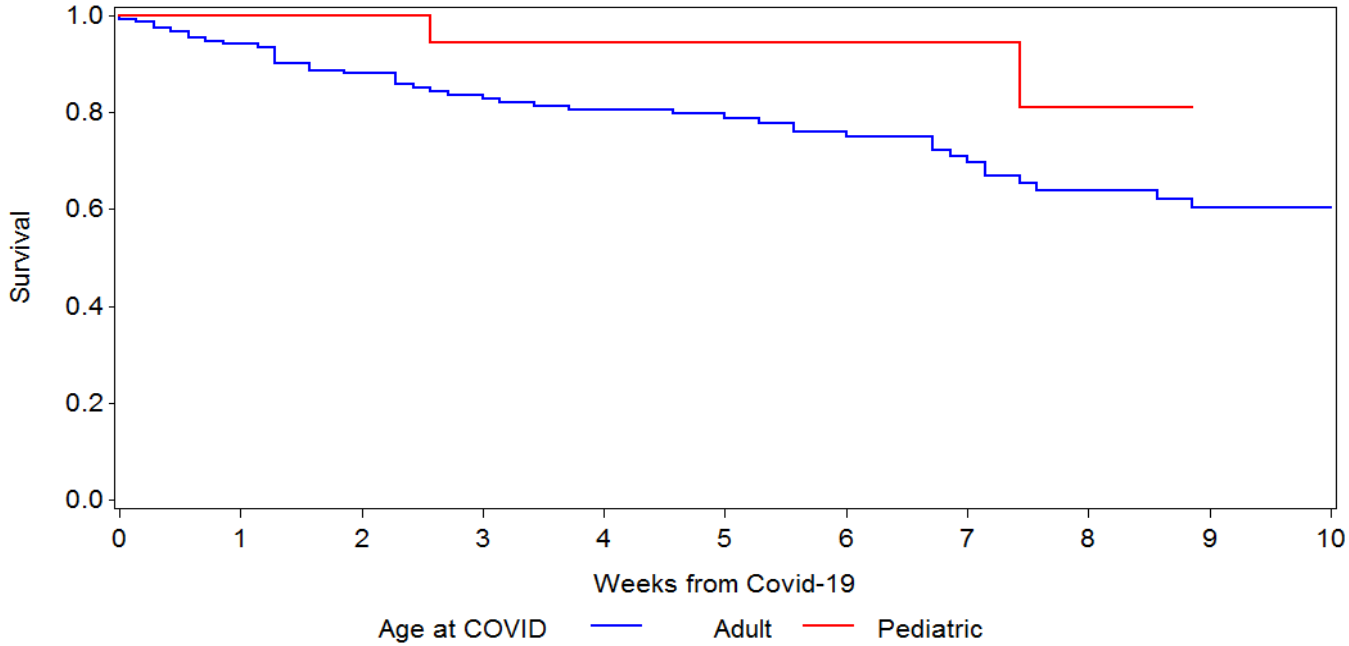
	Allogeneic N (%)	Autologous N (%)
Asymptomatic	8 (4.6)	8 (9.3)
Fever	108 (75.5)	56 (86.2)
Cough	97 (67.8)	37 (56.9)
Upper respiratory symptoms	29 (20.3)	44 (21.2)
Fatigue	68 (47.6)	35 (53.8)
Myalgia or arthralgia	25 (17.5)	15 (23.1)
Diarrhea	17 (11.9)	17 (26.2)
Vomiting	13 (9.1)	9 (13.8)
Oxygen requirement	62 (43.4)	33 (50.8)

Overall survival by type of HCT



Type HSCT	Pts.	Events	2-week OS	4-week OS	6-week OS	p – log rank
Allo	171	46	89.3 (83.6-93.1)	82.0 (75.2-87.2)	76.8 (69.1-82.9)	0.23
Auto	93	19	92.2 (84.3-96.2)	88.5 (79.6-93.6)	83.8 (73.6-90.4)	

Overall survival by age; allo HCT



Type HSCT	Pts.	Events	2-week OS	4-week OS	6-week OS	p – log rank
Adults	153	44	88.0 (81.7-92.3)	80.6 (73.1-86.2)	74.9 (66.6-81.5)	0.12
Children	18	2	100.0	94.4 (66.6-99.2)	94.4 (66.6-99.2)	

EBMT COVID-19 registry; analyzed cohort
Risk factors influencing outcome (multivariate analysis)

- All patients

Variable		HR (95% C.I.)	p
Age at covid	Continuous (10-yr effect)	1.26 (1.05-1.51)	0.01
Performance status	Continuous	0.79 (0.69-0.90)	0.0003

- Allo patients

Variable		HR (95% C.I.)	p
Age at covid	Continuous (10-yr effect)	1.28 (1.05-1.55)	0.01
Performance status	Continuous	0.79 (0.68-0.92)	0.002

Other factors

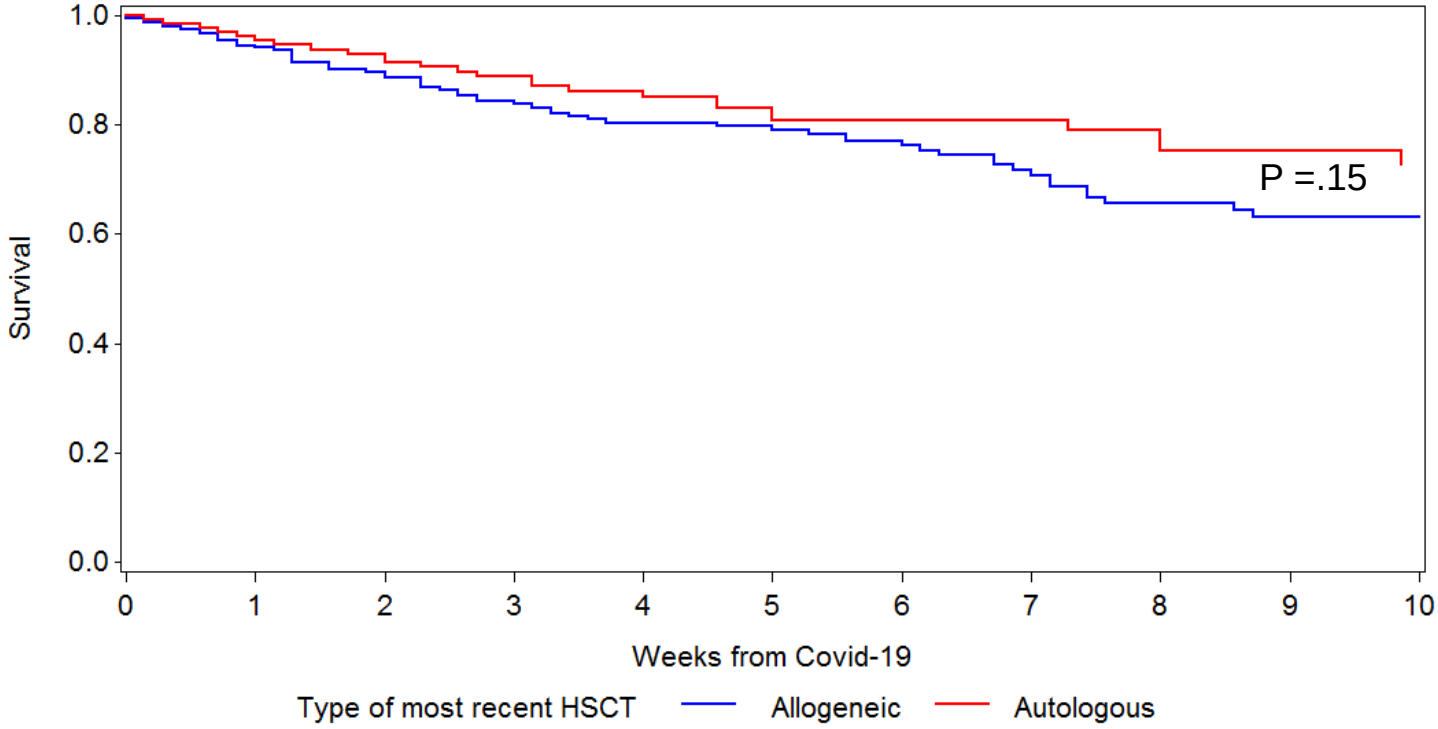
No effect in multivariate analysis of time from transplant, ongoing immunosuppression, immuno-suppression index, diagnosis, type of HCT, lymphocyte count, neutrophil count, existing lung pathology, or country.

Time from HCT to COVID	Total no.	Deaths	% dead
<30 days	21	5	23.8%
31-100	30	11	36.6%
101-1 year	59	15	25.4%
1-2 years	38	10	26.3%
2-3 years	27	5	18.5%
>3 years	88	19	21.5%

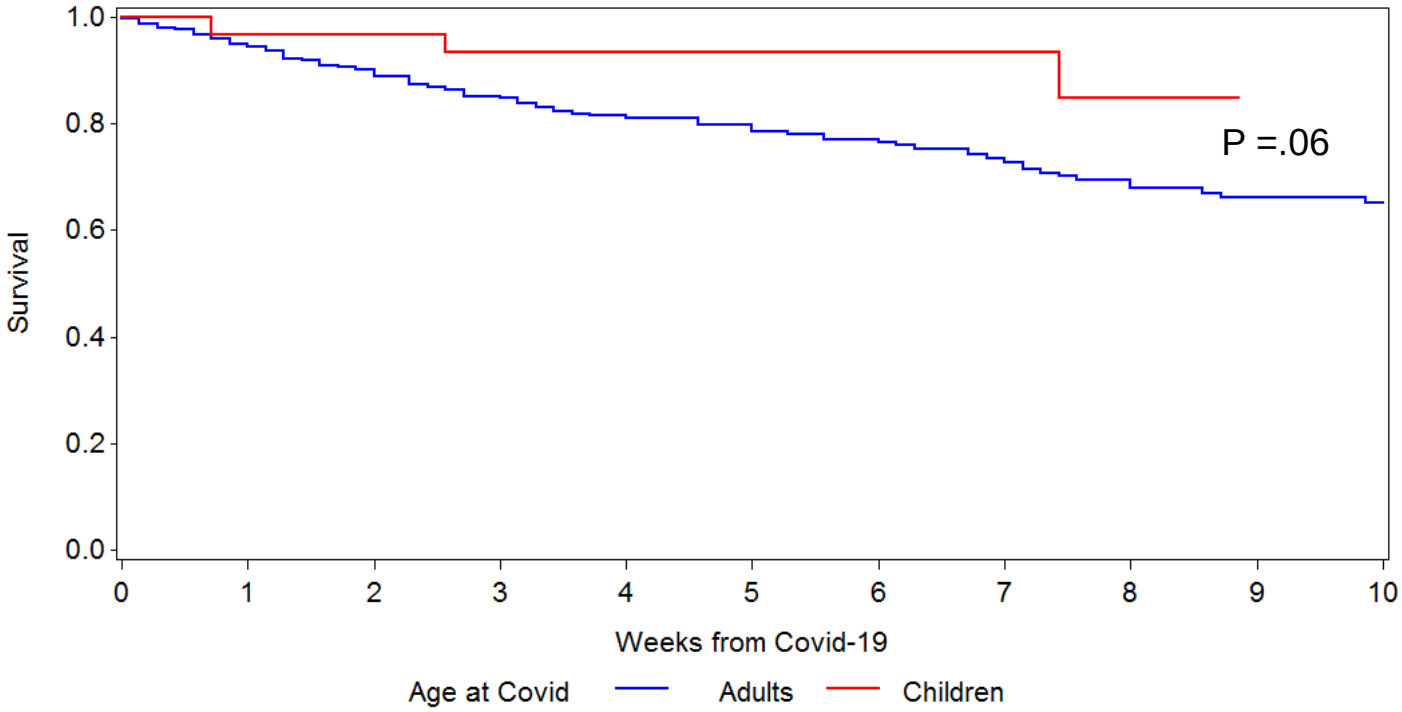
EBMT/GETH COVID-19 registry; total cohort

- 398 patients registered from 20 countries
  - 250 allo
  - 137 auto
  - 11 CAR T
- Spain 150, UK 59, Italy 51, France 28, Sweden 17, Belgium 16, Netherlands 14, Saudi Arabia 12, Turkey 11, Germany 10, Israel 6, Portugal 5, Iran and Switzerland 4, Denmark and Czech republic 3, Ireland 2, Greece, Norway, and Poland 1.

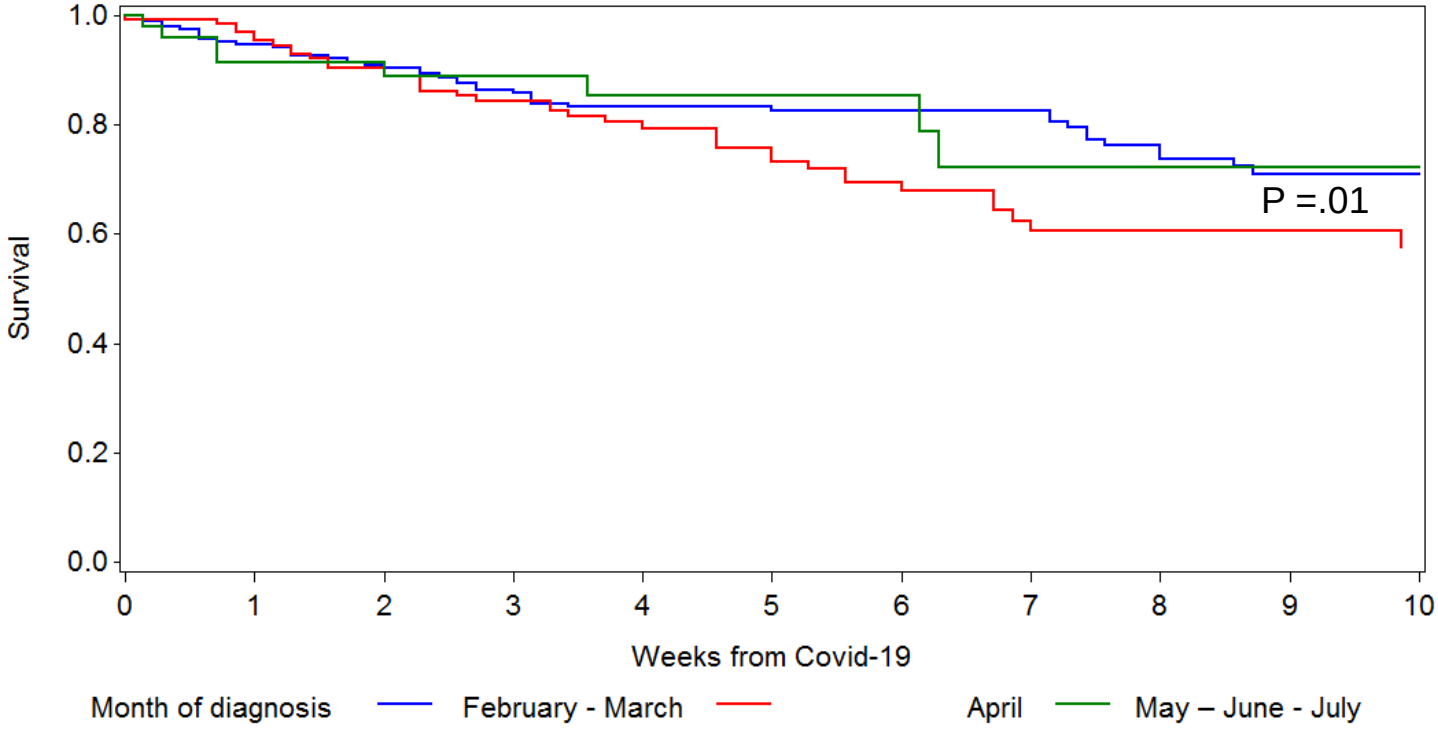
EBMT/GETH COVID-19 registry; total cohort



EBMT/GETH COVID-19 registry; total cohort



EBMT/GETH COVID-19 registry; total cohort



EBMT COVID-19 registry; total cohort Outcome (preliminary data)

Died of COVID	83 (20.8%)
Died of other causes	16 (4.0%)
Alive and virus free	124 (31.1%)
Alive and clinically resolved	41 (10.3%)
Alive and virus positive	43 (10.8%)
No follow-up yet	91 (22.9%)

EBMT COVID-19 registry; conclusions

- COVID-19 like other respiratory viruses cause severe disease in HCT recipients.
- Increased age and poor performance status are the most important risk factors for poor outcome.
- No obvious effect can be seen of time from HCT but there might be selection mechanisms influencing this result.
- Additional analyses are needed regarding possible interventions to mitigate the negative effect.
- So far, measures for preventing infection are indicated.

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