

COVID-19 infection in multiple myeloma patients - retrospective analysis of 371 Czech patients -

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IV. INTERNÍ HEMATOLOGICKÁ KLINIKA
FAKULTNÍ NEMOCNICE HRADEC KRÁLOVÉ



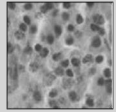
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Disclosures

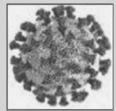
Company	Relationship
BMS	Medical Advisory Board Member, Travel expenses
Janssen	Medical Advisory Board Member
GSK	Medical Advisory Board Member
Amgen	Medical Advisory Board Member, Travel expenses
Sanofi	Medical Advisory Board Member, Travel expenses

(none related to this presentation)

Introduction



Myeloma population is vulnerable to infections and patients are at high risk of death of any infection



SARS-CoV-2, a „novel“ RNA virus caused pandemic in early spring 2020
Causes COVID-19 disease with variable clinical course and outcome



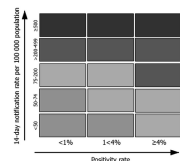
Outcomes of immunocompromised patients infected with COVID-19 are poor
The risk factors associated with death are not well understood



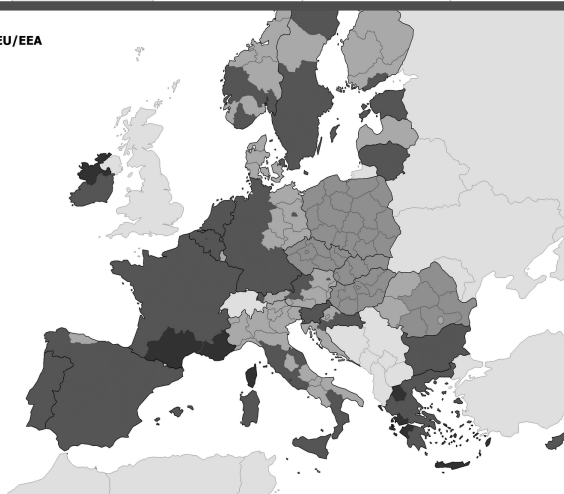
No established therapy for severe disease exists

	All	Europe	North America	Asia	South America	Africa	Oceania							
#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	New Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Tests/ 1M pop	Population
1	<u>Peru</u>	2,156,451		198,568		N/A	N/A	N/A	1,159	64,344	5,925	17,026,824	508,041	33,514,653
2	<u>Hungary</u>	814,064	+246	30,077	+3	778,401	+143	5,586	26	84,523	3,123	6,651,684	690,633	9,631,290
3	<u>Bosnia and Herzegovina</u>	219,010	+930	9,951	+32	192,218		16,841		67,250	3,056	1,162,083	356,836	3,256,632
4	<u>North Macedonia</u>	181,620	+701	6,153	+24	161,515	+1,119	13,952		87,180	2,954	1,203,819	577,850	2,083,273
5	<u>Gibraltar</u>	5,402	+3	97		5,233	+6	72		160,397	2,880	343,517	10,199,739	33,679
6	<u>Montenegro</u>	119,602	+533	1,780	+6	110,016	+696	7,806	11	190,401	2,834	649,041	1,033,242	628,160
7	<u>Czechia</u>	1,681,681	+588	30,408		1,648,424	+13	2,849	14	156,690	2,833	36,581,788	3,408,504	10,732,505

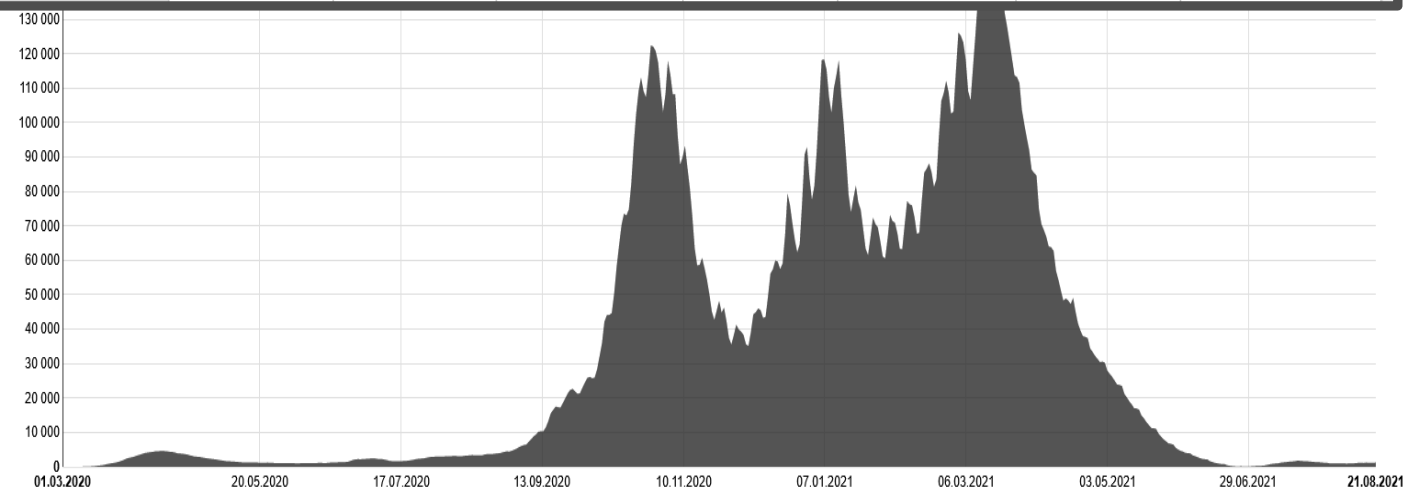
14-day COVID-19 case notification rate per 100 000 population and test positivity, EU/EEA weeks 33 - 34



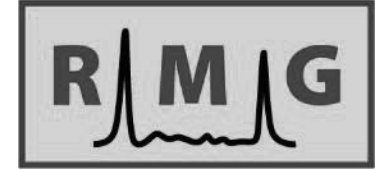
- Testing rate < 300 per 100 000 population
- No data available
- Not included
- Regions not visible in the main map extent
 - Azores
 - Guadeloupe and Saint Martin
 - La Reunion
 - Martinique
 - Canary Islands
 - Guyane
 - Madeira
 - Mayotte
- Countries not visible in the main map extent
 - Malta
 - Liechtenstein



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat © Karvekes © Instituto Nacional de Estatística - Statista Portugal. The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union. ECDC. Map produced on: 2 Sep 2021



Patients and methods



- Retrospective analysis of patients with multiple myeloma and COVID-19 infection
- Patients who were diagnosed with COVID-19 between March 2020 and May 2021 were included in analysis
- Data were extracted and analyzed via Czech RMG registry (Registry of Monoclonal Gammopathies (<https://rmg.healthregistry.org/>)), all patients provide informed consent prior to registry entry

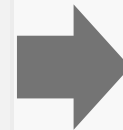
Patients characteristics

	Total (N=371)
Sex	n=371
Man	198 (53.4%)
Woman	173 (46.6%)
ECOG at diagnosis MM	n=369
PS 0	100 (27.1%)
PS 1	173 (46.9%)
PS 2	65 (17.6%)
PS 3–4	31 (8.4%)
ISS at diagnosis MM	n=359
Stage 1	130 (36.2%)
Stage 2	103 (28.7%)
Stage 3	126 (35.1%)
M-protein type at diagnosis MM	n=368
IgG	233 (63.3%)
IgA	65 (17.7%)
LC only	61 (16.6%)
Biclonal	4 (1.1%)
IgD	2 (0.5%)
IgM	3 (0.8%)
Light chain type at diagnosis MM	n=368
Kappa	242 (65.8%)
Lambda	122 (33.2%)
Biclonal	4 (1.1%)
Immunoparesis at diagnosis MM	n=284
immunoparesis of 1 Ig	64 (22.5%)
immunoparesis of 2 Ig	170 (59.9%)

Treatment patterns	Total (N=371)
Number of tr. lines before COVID-19	
mean (sd)	1.3 (1.3)
median (min.–max.)	1 (0–7)
Without MM treatment before COVID-19	22 (6.3%)
Transplantation before COVID-19	136 (38.7%)
IMiD before COVID-19	195 (55.6%)
PI before COVID-19	238 (67.8%)
MoAB before COVID-19	30 (8.5%)



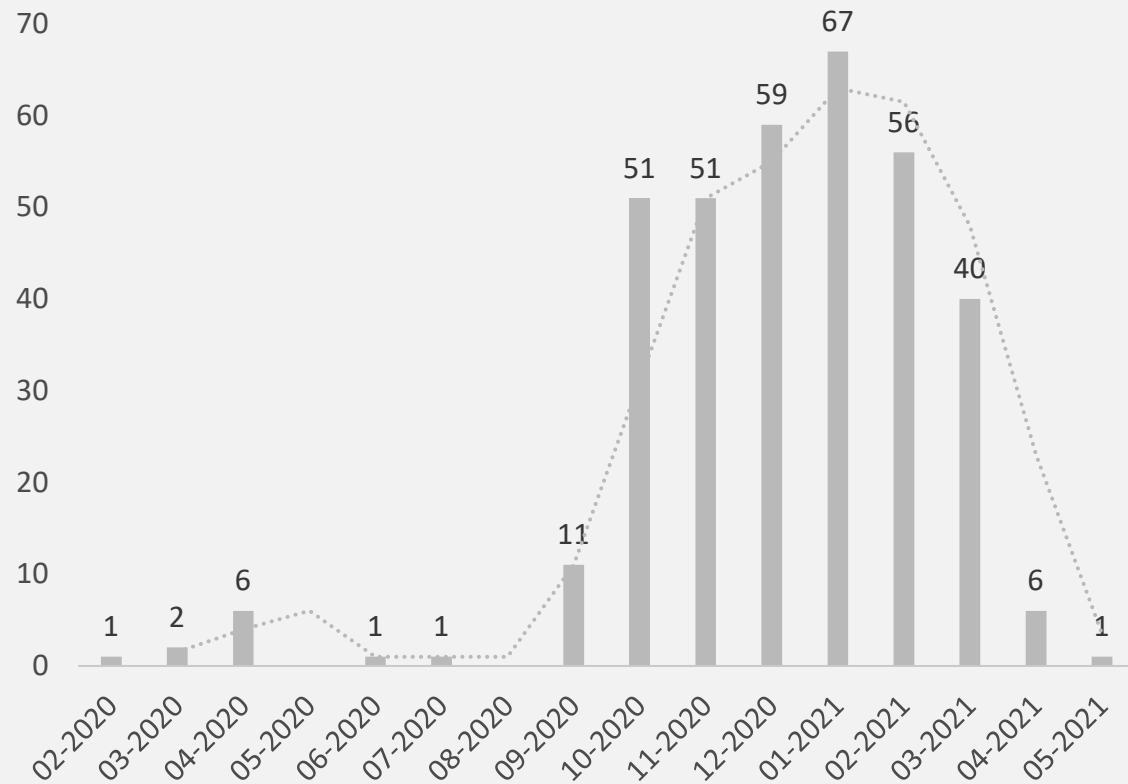
COVID-19 during MM treatment	197	53.1%
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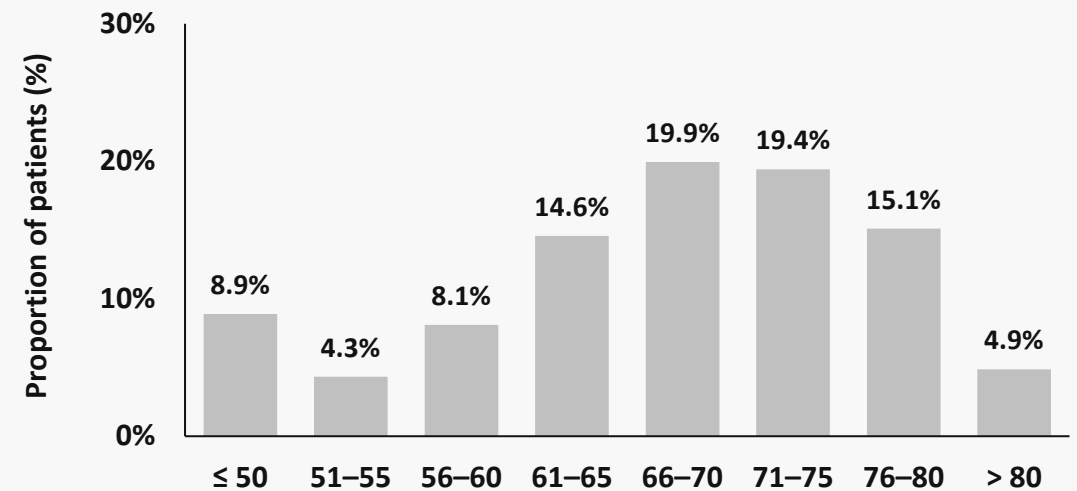
COVID-19 patients currently without MM treatment	13	3.5%
COVID-19 before 1st MM treatment line	9	2.4%
COVID-19 between MM treatment lines	9	2.4%
COVID-19 after currently last MM treatment line	123	33.2%

Course of pandemic in Czech MM population

Number of patients according to date of COVID-19 diagnosis



Age at COVID-19 diagnosis (years)

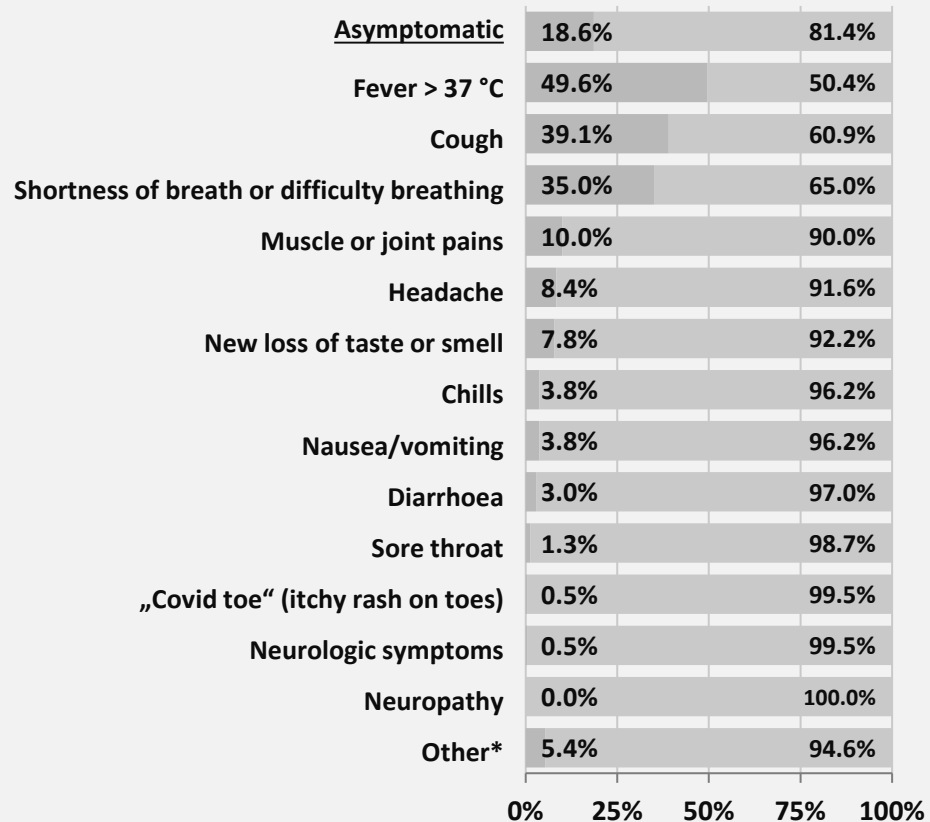


	mean (SD)	median (min–max)
Age at COVID-19 diagnosis (years)*	67.1 (10.4)	69 (37–91)

Symptoms and course of infection

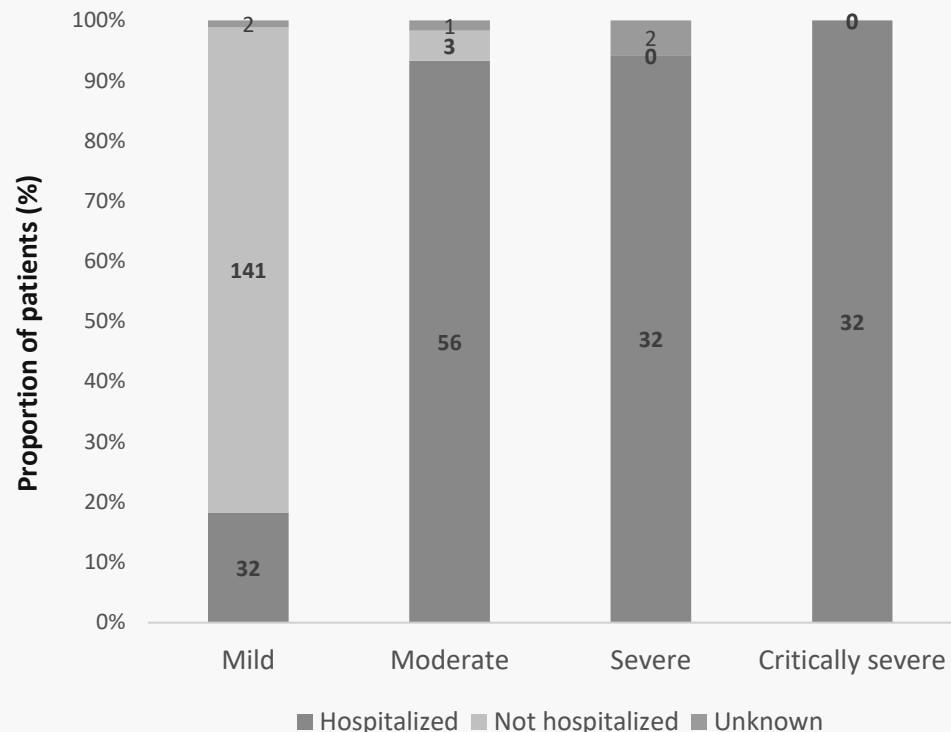
Symptoms

Proportion of patients (%)



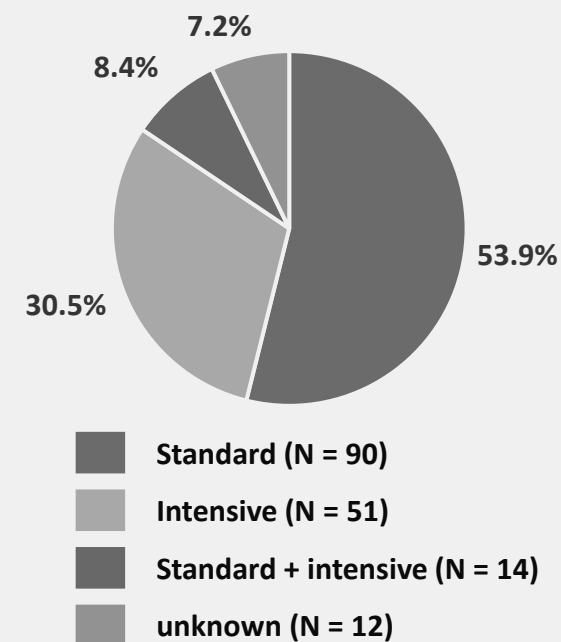
*Other: fatigue, anorexia, weakness, stroke, cramps, hallucination, cardiac failure, hematemesis, pain of skin, rhinitis, tremor

Severity and hospitalization (n=167, 45.0%)



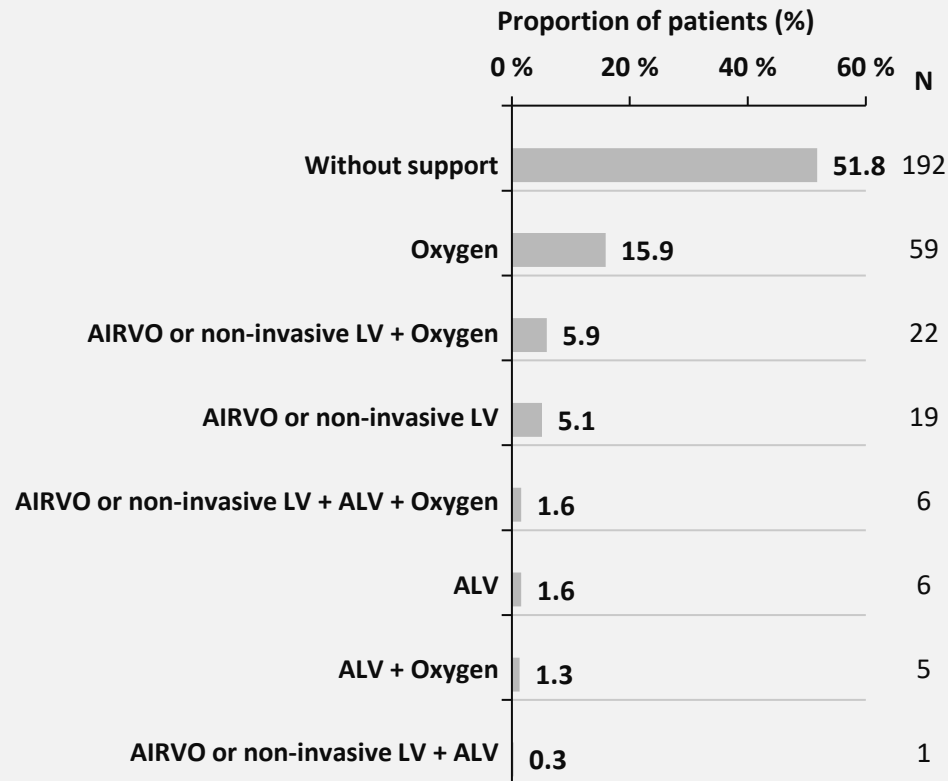
	N	mean (SD)	median (min-max)
Length of hospitalization (d)	123	14 (10)	11 (1-53)

Care type

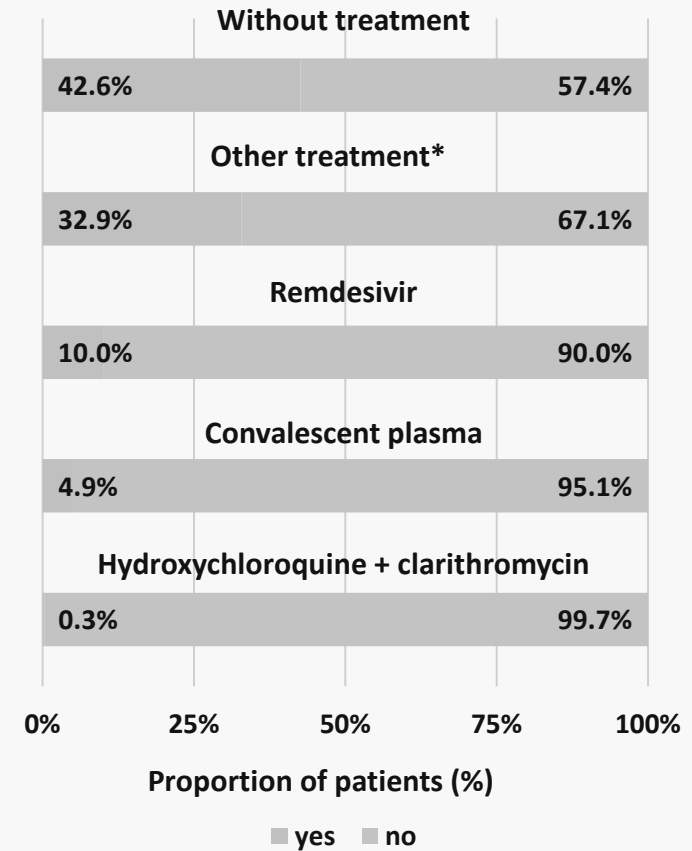


Respiratory support and treatment

Respiratory support combination



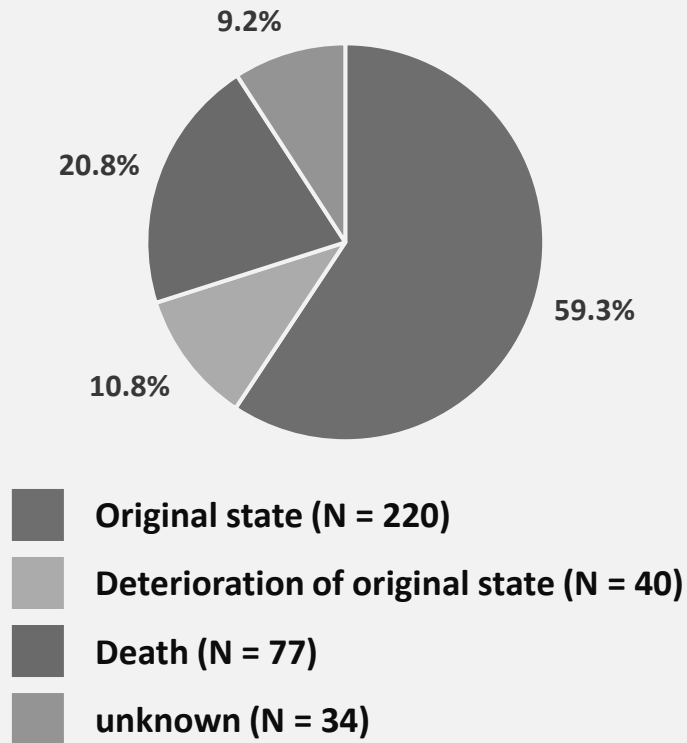
Treatment



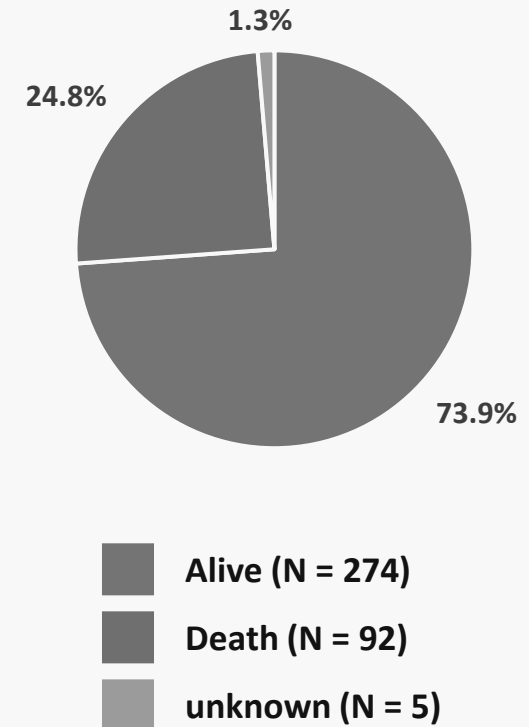
* Other: most frequently antibiotics and corticosteroids, Bamlanivimab, Isoprinosine, paralen, G-CSF...

Outcome

Final state after COVID-19



Patient status to last update in registry



	N	mean (SD)	median (min-max)
Length of positivity (days)	79	23 (16)	20 (1-84)

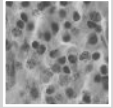
Association of selected variables with outcome

	Total (N=371)	Survivors (N=279)	Non-survivors (N=92)	p-value
Age at COVID-19 diagnosis (years)	n=353	n=266	n=87	0.0003
mean (sd)	67.1 (10.4)	65.8 (10.5)	70.8 (9.2)	
median (min.–max.)	69.0 (37.0–91.0)	68.0 (37.0–91.0)	72.0 (45.0–91.0)	
Immunoparesis at diagnosis MM	n=284	n=213	n=71	0.4060
immunoparesis of 1 Ig	64 (22.5%)	46 (21.6%)	18 (25.4%)	0.5151
immunoparesis of 2 Ig	170 (59.9%)	132 (62.0%)	38 (53.5%)	0.2122
Number of tr. lines before COVID-19	n=351	n=265	n=86	0.7090
mean (sd)	1.3 (1.3)	1.3 (1.2)	1.5 (1.6)	
median (min.–max.)	1 (0–7)	1 (0–7)	1 (0–7)	
Treatment patterns				
Without MM treatment before COVID-19	22 (6.3%)	19 (7.2%)	3 (3.5%)	0.3080
Transplantation before COVID-19	136 (38.7%)	113 (42.6%)	23 (26.7%)	0.0110
IMiD before COVID-19	195 (55.6%)	154 (58.1%)	41 (47.7%)	0.1050
PI before COVID-19	238 (67.8%)	184 (69.4%)	54 (62.8%)	0.2880
MoAB before COVID-19	30 (8.5%)	18 (6.8%)	12 (14.0%)	0.0470
Comorbidities				
Obesity (BMI > 30)	33 (10.4%)	25 (10.5%)	8 (10.3%)	1.0000

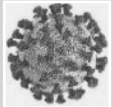
Association of selected variables with outcome

	Total (N=371)	Survivors (N=279)	Non-survivors (N=92)	p-value
Severity	n=301	n=218	n=83	< 0.001
Mild	175 (58.1%)	160 (73.4%)	15 (18.1%)	< 0.001
Moderate	60 (19.9%)	43 (19.7%)	17 (20.5%)	0.8729
Severe	34 (11.3%)	12 (5.5%)	22 (26.5%)	< 0.001
Critically severe	32 (10.6%)	3 (1.4%)	29 (34.9%)	< 0.001
Type of hospitalization	n=331	n=248	n=83	< 0.001
Without hospitalization	176 (53.2%)	169 (68.1%)	7 (8.4%)	< 0.001
Standard department	90 (27.2%)	61 (24.6%)	29 (34.9%)	0.0866
Intensive care unit	65 (19.6%)	18 (7.3%)	47 (56.6%)	< 0.001
Respiratory support	n=310	n=227	n=83	
AIRVO or non-invasive LV	48 (15.5%)	12 (5.3%)	36 (43.4%)	< 0.001
ALV	18 (5.8%)	4 (1.8%)	14 (16.9%)	< 0.001
Oxygen	92 (29.7%)	42 (18.5%)	50 (60.2%)	< 0.001

Conclusion



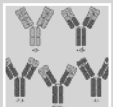
Myeloma patients are at high risk of death during or after COVID-19



¼ of infected patients die directly or as a consequence of COVID-19



½ of patients requiring oxygen die, ¾ of patients requiring NIPV/ALV die



40% of patients pretreated with MoABs die

Special thanks to ...



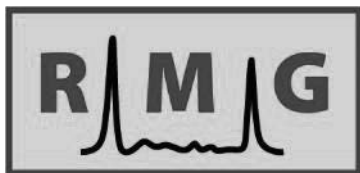
All collaborators, especially:

Ivan Špička, Luděk Pour, Tomáš Jelínek, Alexandra Jungová, Jiří Minařík, Adriana Heindorfer, Lukáš Stejskal, Jana Ullrychová, Jarmila Obernauerová, Petr Kessler, Marek Wróbel, Petr Pavlíček, Michal Sýkora, Peter Mikula, Vladimír Maisnar, Roman Hájek

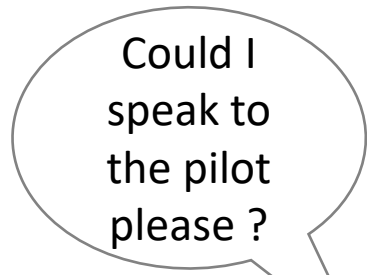


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All data managers entering data into the registry



... and all of you for your kind attention