

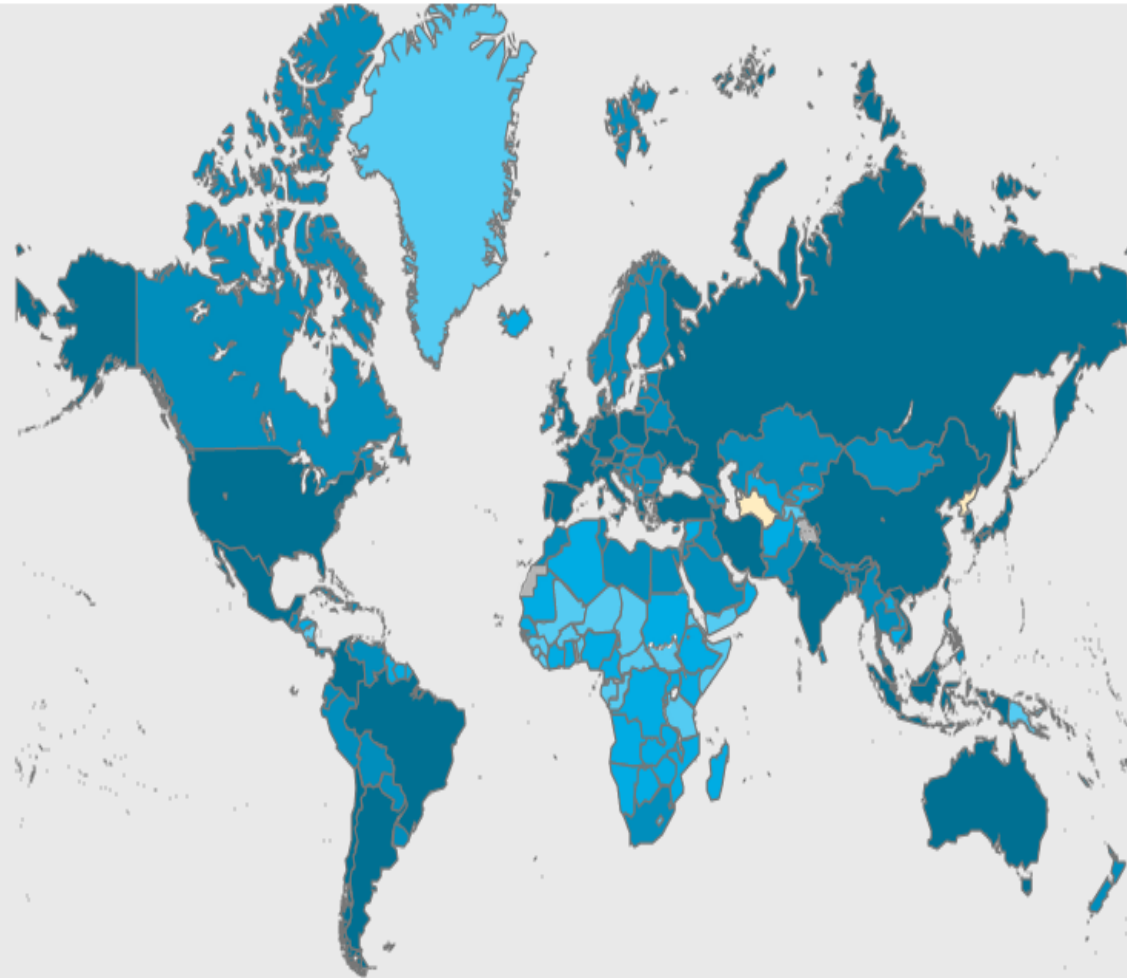
Covid-19: andamento dell'epidemiologia in Italia, in Lombardia e a Milano

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President of Icona Foundation
ITALY

13-01-2023



Numero cumulativo e nuove infezioni da SARS CoV-2 nel mondo



Cases



Total



747.460

new cases in last 24hrs

661.545.258

cumulative cases

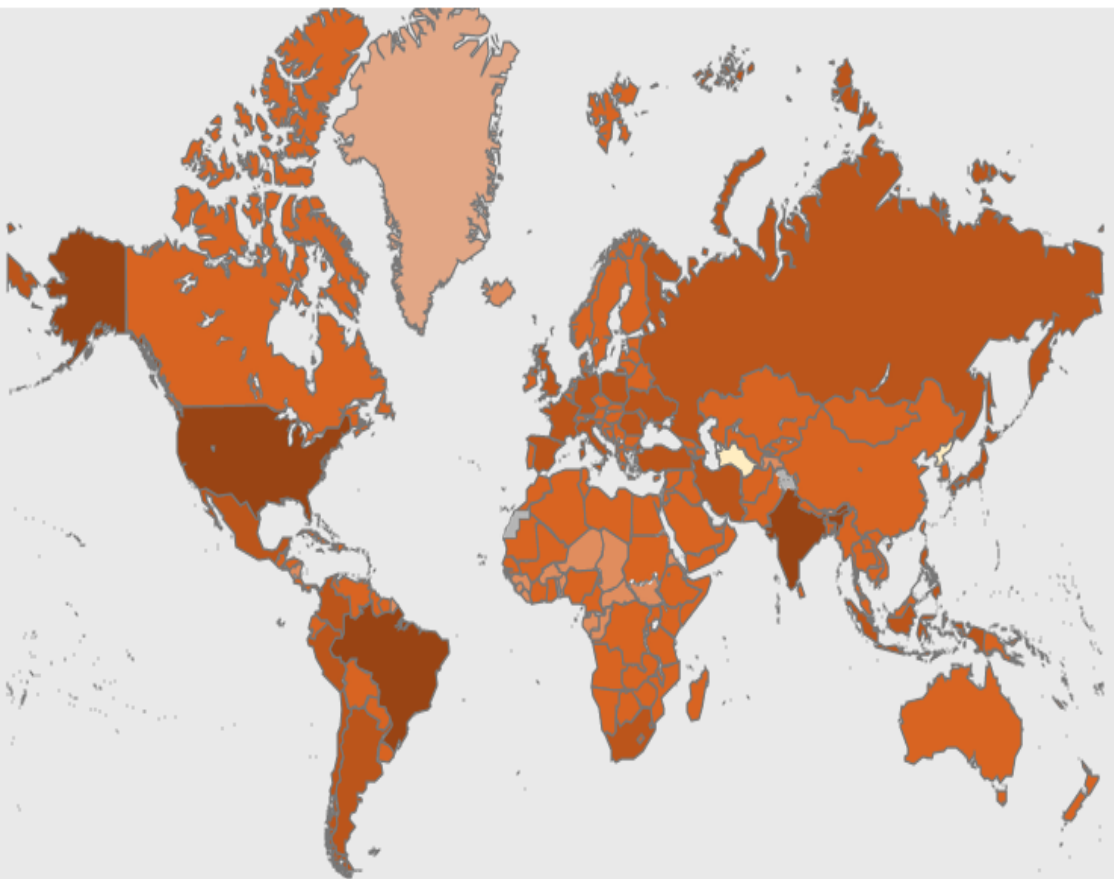
6.700.519

cumulative deaths

13-01.2023



Numero cumulativo e nuovi decessi in infezioni da SARS CoV-2 nel mondo



Deaths

▼

Total

▼

5.075

new deaths

6.700.519

cumulative deaths

661.545.258

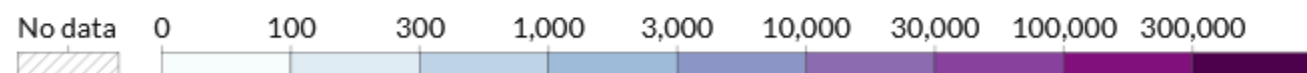
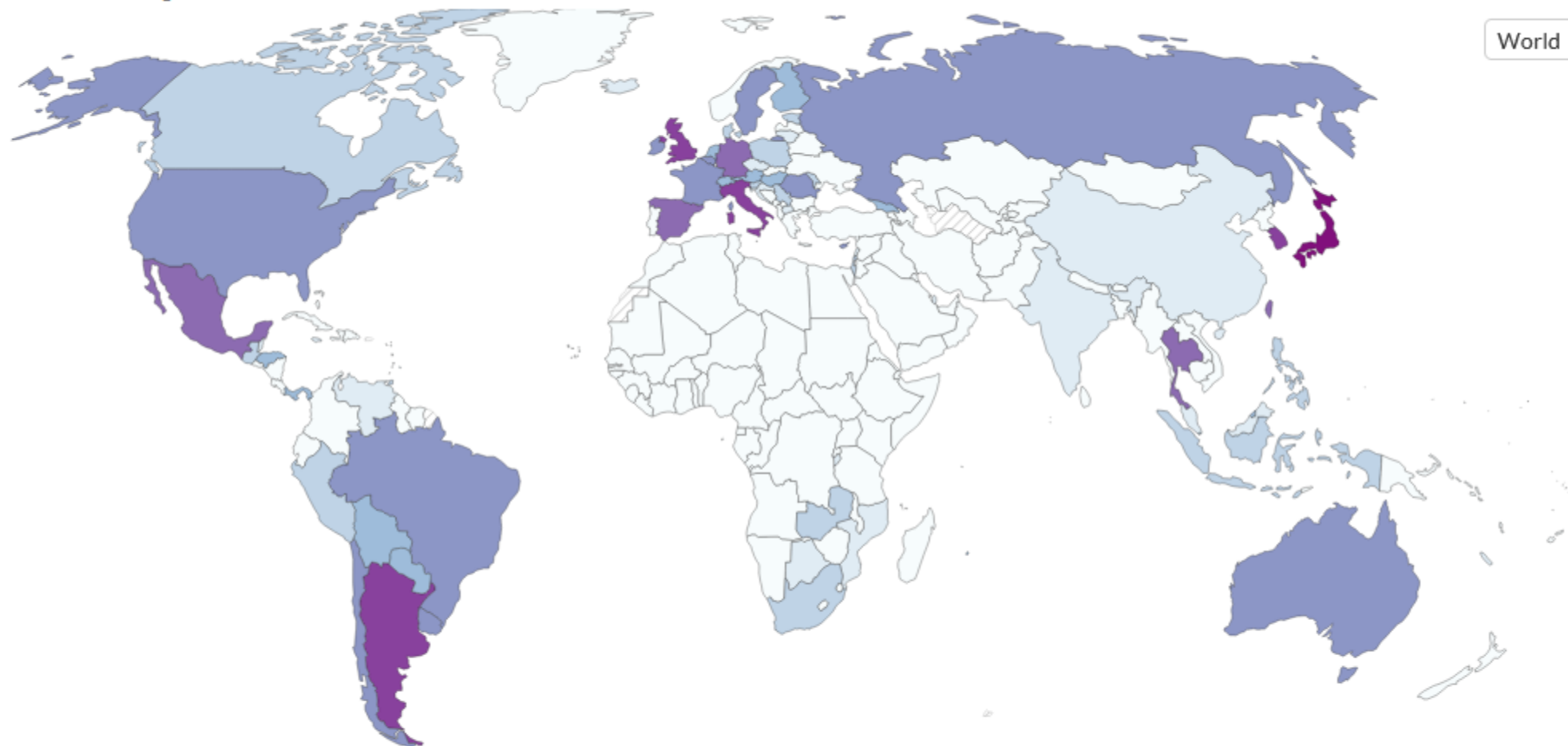
cumulative cases

Daily new confirmed COVID-19 cases, Jan 14, 2023

Due to limited testing, the number of confirmed cases is lower than the true number of infections.

Our World
in Data

World



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

▶ Jan 23, 2020

○ Jan 14, 2023

Numero cumulativo di casi e decessi in SARS CoV-2 nel mondo

Italia all'ottavo posto per n di casi

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
	World	670,902,338	+320,417	6,728,764	+1,615	641,924,634	+281,189	27,248,940	45,887	86,071	863.2			
1	USA	103,566,510	+19,397	1,125,498	+193	100,265,118	+75,883	2,175,894	4,849	309,334	3,362	1,157,648,471	3,457,677	334,805,269
2	India	44,681,884		530,726	+4	44,147,983	+661	3,175	698	31,765	377	912,362,106	648,615	1,406,631,776
3	France	39,442,176	+6,238	163,347	+101	38,996,511	+40,691	282,318	869	601,395	2,491	271,490,188	4,139,547	65,584,518
4	Germany	37,605,135	+10,609	163,775	+150	37,009,400		431,960	1,281	448,301	1,952	122,332,384	1,458,359	83,883,596
5	Brazil	36,623,217	+20,548	695,334	+79	35,474,747	+21,762	453,136	8,318	170,061	3,229	63,776,166	296,146	215,353,593
6	Japan	31,176,281	+144,077	61,761	+480	21,296,635	+10,303	9,817,885	695	248,249	492	88,389,228	703,821	125,584,838
7	S. Korea	29,737,769	+39,726	32,867	+46	28,651,779	+25,469	1,053,123	511	579,346	640	15,804,065	307,892	51,329,899
8	Italy	25,363,742		185,993		24,824,106		353,643	310	420,886	3,086	264,182,282	4,383,839	60,262,770
9	UK	24,243,393		202,157		23,912,151	+10,712	129,085	146	353,929	2,951	522,526,476	7,628,357	68,497,907
10	Russia	21,846,722	+5,078	394,309	+47	21,267,545	+4,271	184,868	2,300	149,834	2,704	273,400,000	1,875,095	145,805,947

13.01.2023

Numero cumulativo di casi e decessi in SARS CoV-2 in Europa

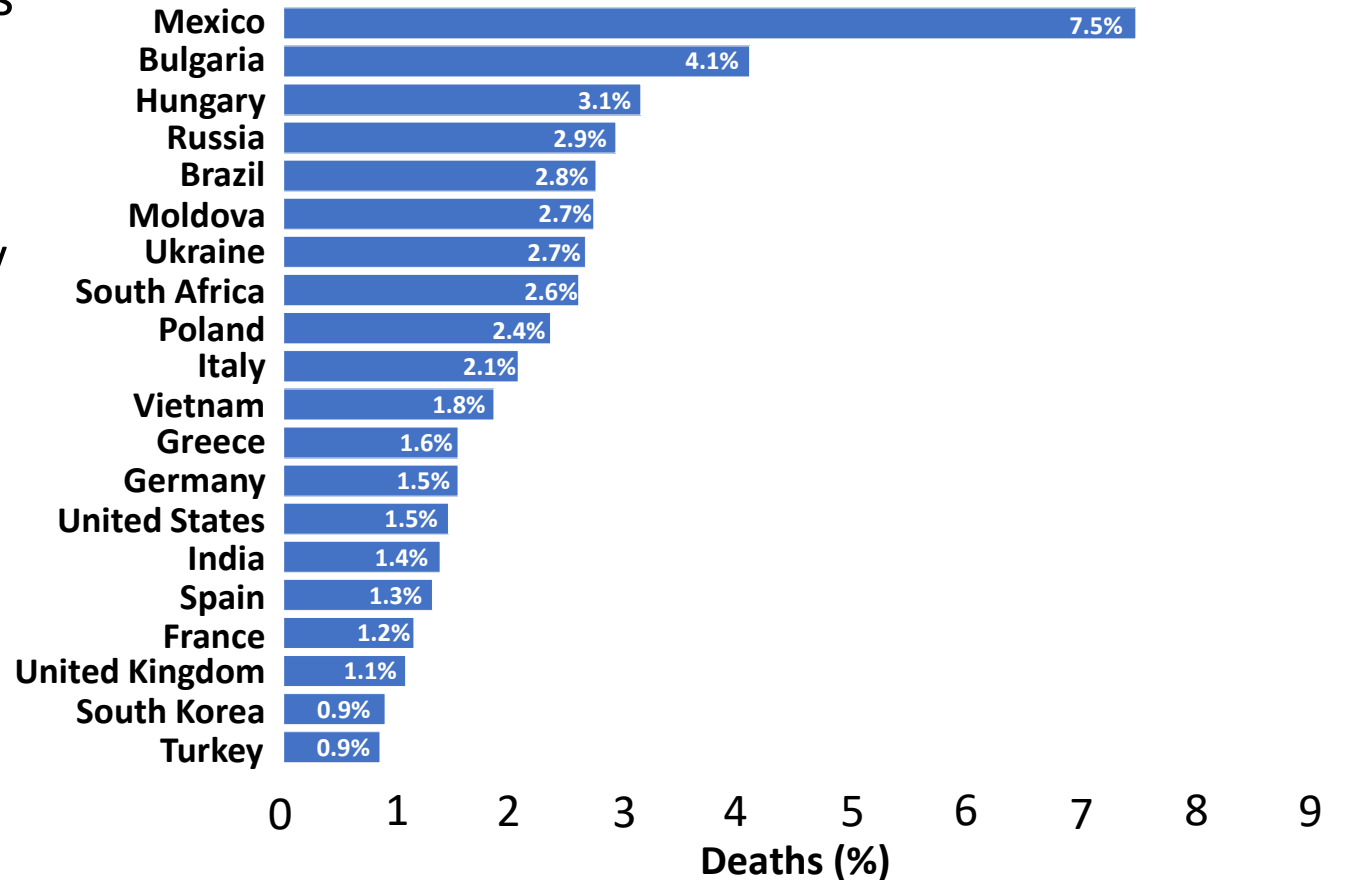
Italia al terzo posto per n di casi

	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
	Europe	243,974,778	+37,329	1,994,577	+435	238,985,323	+73,063	2,994,878	7,235					
1	France	39,442,176	+6,238	163,347	+101	38,996,511	+40,691	282,318	869	601,395	2,491	271,490,188	4,139,547	65,584,518
2	Germany	37,605,135	+10,609	163,775	+150	37,009,400		431,960	1,281	448,301	1,952	122,332,384	1,458,359	83,883,596
3	Italy	25,363,742		185,993		24,824,106		353,643	310	420,886	3,086	264,182,282	4,383,839	60,262,770
4	UK	24,243,393		202,157		23,912,151	+10,712	129,085	146	353,929	2,951	522,526,476	7,628,357	68,497,907
5	Russia	21,846,722	+5,078	394,309	+47	21,267,545	+4,271	184,868	2,300	149,834	2,704	273,400,000	1,875,095	145,805,947
6	Spain	13,711,251	+9,871	117,759	+76	13,522,850	+2,582	70,642	231	293,483	2,521	471,036,328	10,082,298	46,719,142
7	Netherlands	8,577,481	+345	22,989		8,530,230	+1,162	24,262	55	498,359	1,336	25,984,435	1,509,718	17,211,447
8	Poland	6,372,898	+321	118,640	+7	5,335,940		918,318	1,101	168,864	3,144	38,046,705	1,008,133	37,739,785
9	Austria	5,738,866	+2,206	21,564	+6	5,688,863	+1,654	28,439	63	632,960	2,378	205,012,497	22,611,564	9,066,710
10	Portugal	5,557,941		25,805		5,526,342	+694	5,794	61	548,090	2,545	45,855,210	4,521,956	10,140,570

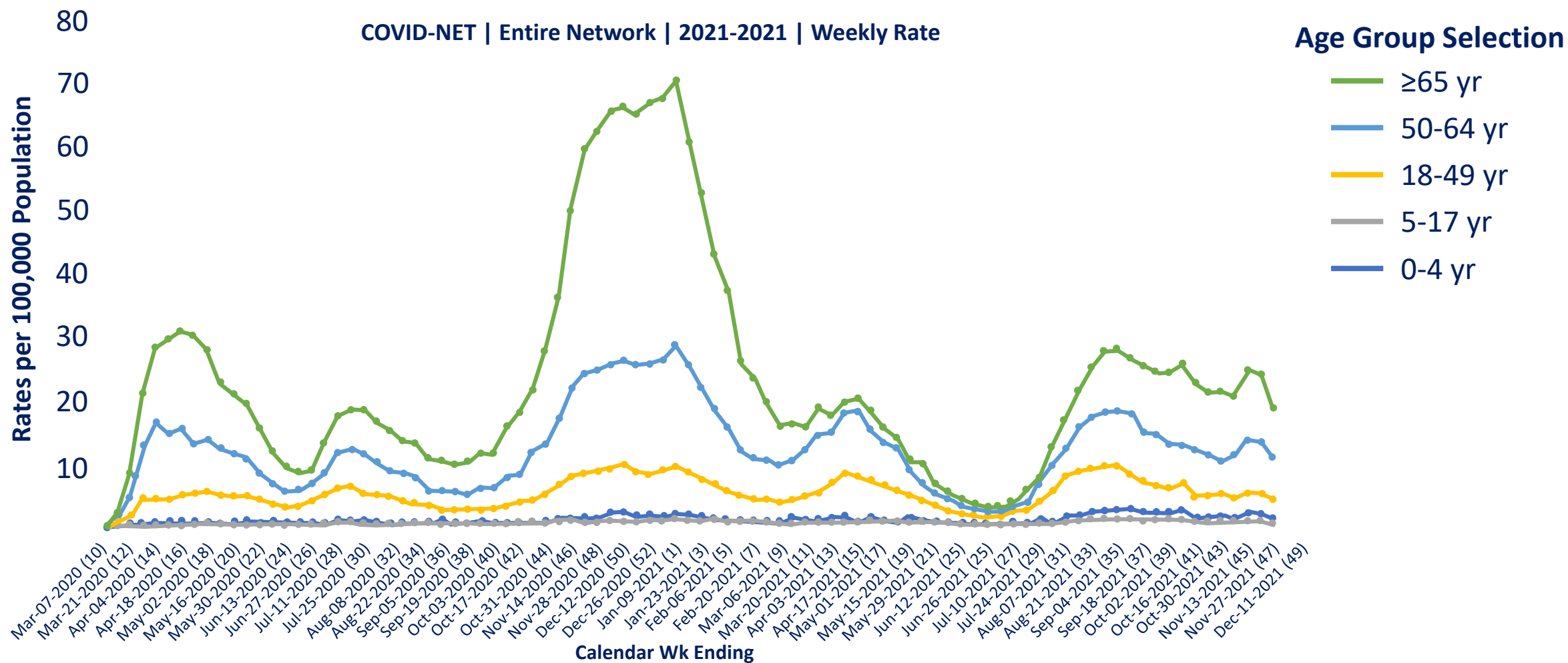
Case-Fatality Rates by Country

- Mortality differences between countries and time periods could be caused by differences in:
 - Testing → countries only test people with severe symptoms; the case fatality rate will be higher than one with widespread testing for asymptomatic cases
 - Demographics → mortality high for older persons or persons with high-risk comorbidities
 - Healthcare system characteristics → hospital overwhelm, etc
 - Unknown factors

Observed Case-Fatality Rates (January 5, 2022)



COVID-NET: Lab-Confirmed COVID-19–Associated Hospitalization Rates Stratified by Age



Covers ~10% of US population: 99 counties in 14 states (CA, CO, CT, GA, IA, MD, MI, MN, NM, NY, OH, OR, TN, UT)

Selected Variants of Concern Characteristics

WHO Label*	PANGO Lineage	Spike Protein Substitutions?	Date of Designation
Alpha	B.1.1.7	✓	December 2020
Beta	B.1.351, B.1.351.2, B.1.351.3	✓	December 2020
Delta	B.1.617.2, AY.1, AY.2, AY.3, AY.4, AY.5, AY.6, AY.7, AY.8, AY.9, AY.10, AY.11, AY.12	✓	May 2021
Gamma	P.1, P.1.1, P.1.2	✓	December 2020
Epsilon	B.1.427, B.1.429	✓	March 2021
Omicron	B.1.1.529	✓	November 2021

13-01-2023



Numero cumulativo e nuove dosi di vaccino per SARS CoV-2 nel mondo

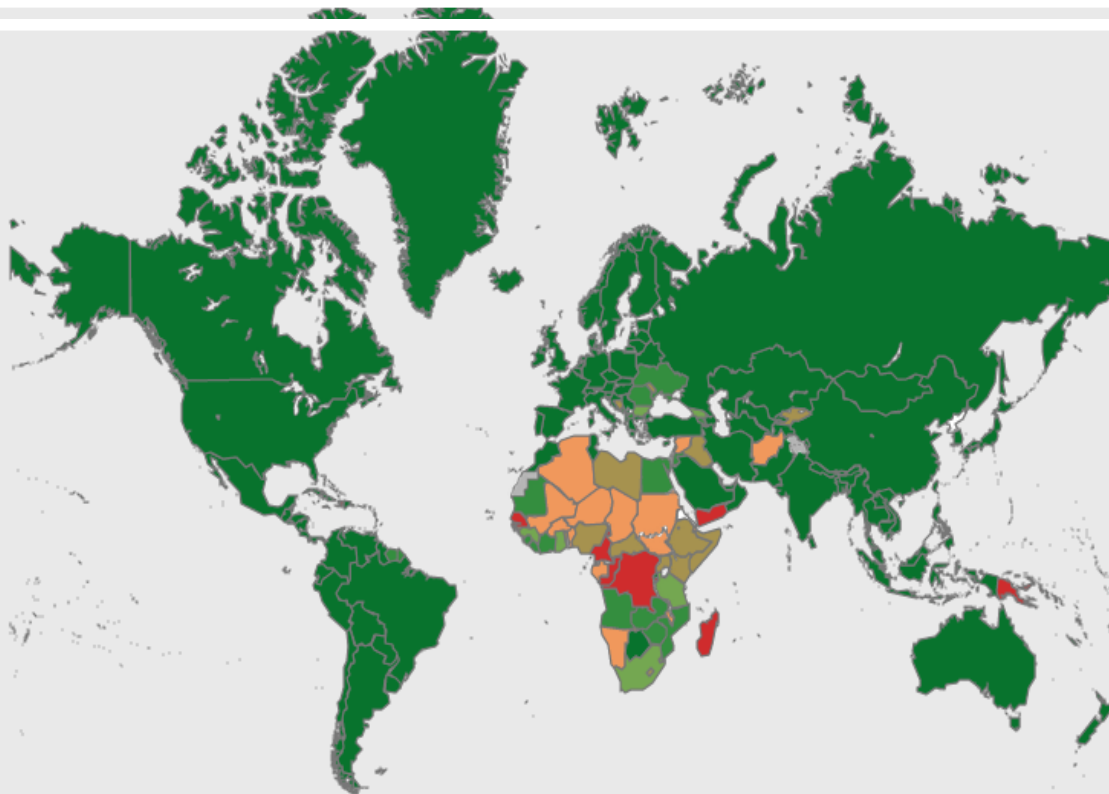
Vaccination ▼

Total doses administered ▼

13.107.022.929
vaccine doses administered

5.473.747.464
persons vaccinated with at least one dose

5.027.900.972
persons fully vaccinated



Globally, as of **5:07pm CET, 13 January 2023**, there have been **661.545.258 confirmed cases** of COVID-19, including **6.700.519 deaths**, reported to WHO. As of **6 January 2023**, a total of **13.107.022.929 vaccine doses** have been administered.

13-01-2023

Numero cumulativo di vaccini anti-SARS CoV-2 nel mondo, in Italia

Statistics

Cases

Vaccines

Location	Total doses given	New doses given (1d*)	New doses given (60d)	People fully vaccinated	% of pop. fully vaccinated
  Worldwide	13,209,153,951	86,039		5,064,469,181	65.1%
  Italy	143,542,826	8,803		47,973,275	79.6%

13-01-2023

Numero cumulativo di casi e decessi in SARS CoV-2 nel mondo, in Italia e in Lombardia

Statistics

Cases

Vaccines

Location	Total cases	New cases (1d*)	New cases (last 60d)	Cases per 1M people	Deaths
  Worldwide	666,684,224	220,748		85,738	6,722,483
  Italy	25,363,742	0		421,021	185,993
 Lombardy	4,085,002	0		406,041	45,040

*The number of new cases reported for the most recent day of complete data, within the last 3 days

[About this data](#) • Sources: [Our World in Data](#), [Johns Hopkins University](#), [Wikipedia](#)

Dati al 12 gennaio 2023

25.317.472

Totale Somministrazioni

90,02%

Ciclo vaccinale completo Lombardia
(popolazione over 12)

90,22%

Ciclo vaccinale completo Italia
(popolazione over 12)

+3.907

Incremento giornaliero

91,08%

Somministrazioni su dosi consegnate

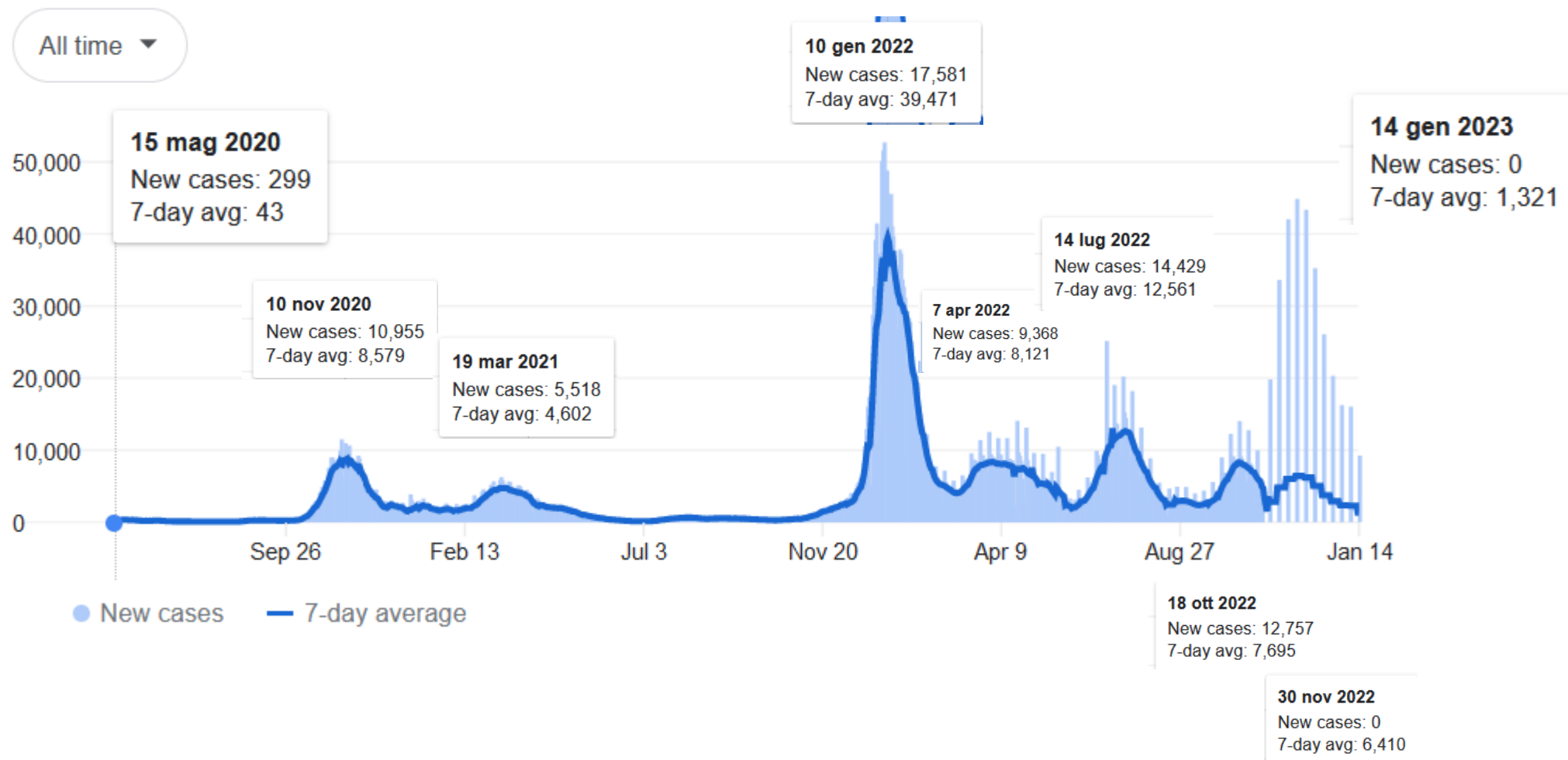
12.952.927

Donne

12.364.545

Uomini

Lombardy





Contents lists available at [ScienceDirect](#)

International Journal of Infectious Diseases

journal homepage: www.elsevier.com/locate/ijid



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DISEASES

The importance of patients' case-mix for the correct interpretation of the hospital fatality rate in COVID-19 disease



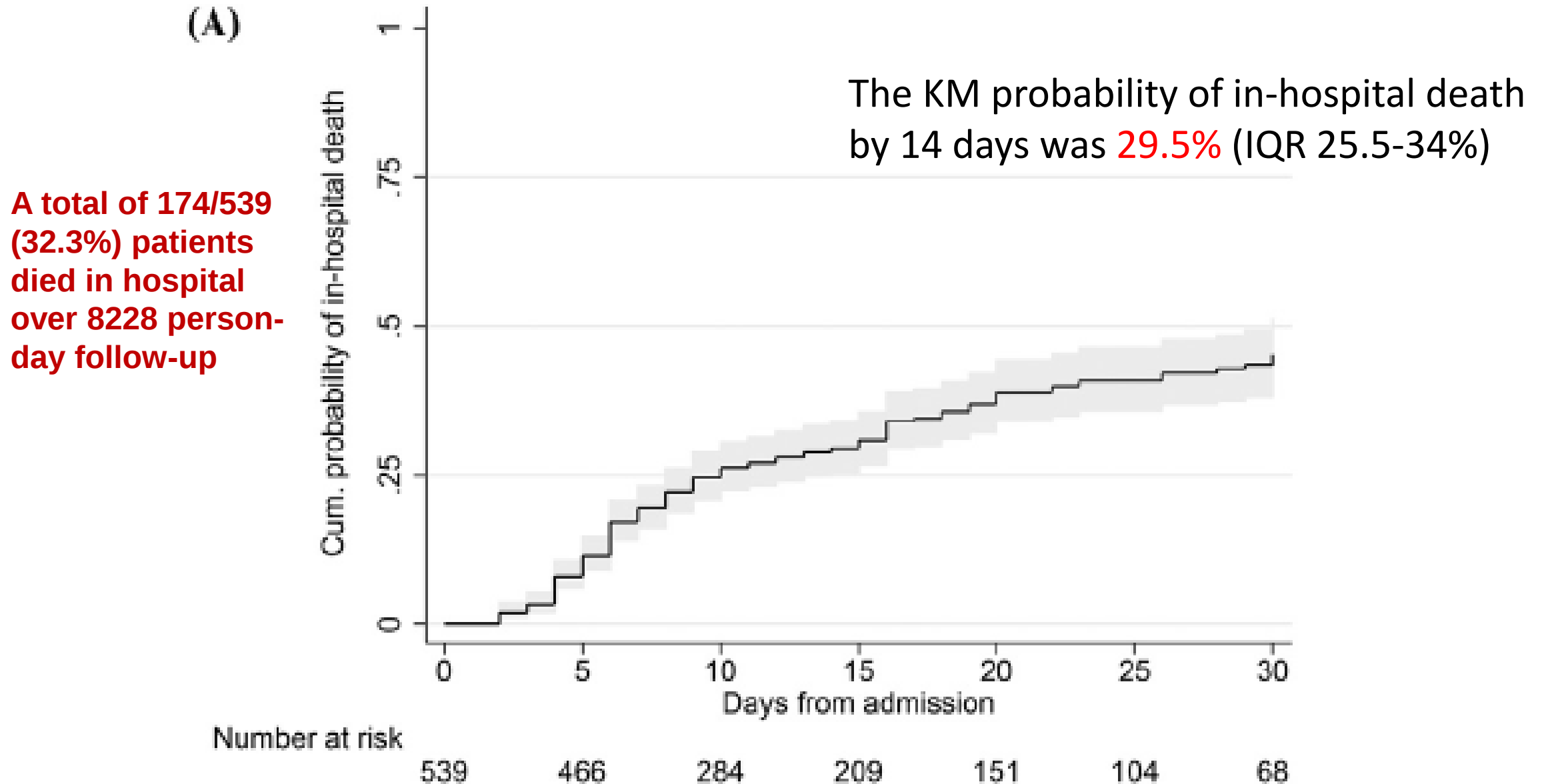
Antonella d'Arminio Monforte^{a,*}, Alessandro Tavelli^a, Francesca Bai^a, Daniele Tomasoni^a, Camilla Falcinella^a, Roberto Castoldi^a, Diletta Barbanotti^a, Giovanni Mulè^a, Marina Allegrini^a, Daniele Tesoro^a, Gianmarco Tagliaferri^a, Debora Mondatore^a, Matteo Augello^a, Andrea Cona^a, Giuseppe Ancona^a, Lidia Gazzola^a, Nathalie Iannotti^a, Camilla Tincati^a, Ottavia Viganò^a, Anna De Bona^a, Teresa Bini^a, Alessandro Cozzi-Lepri^b, Giulia Marchetti^a

^a Clinic of Infectious Diseases, Department of Health Science, ASST Santi Paolo e Carlo, University of Milan, Milan, Italy

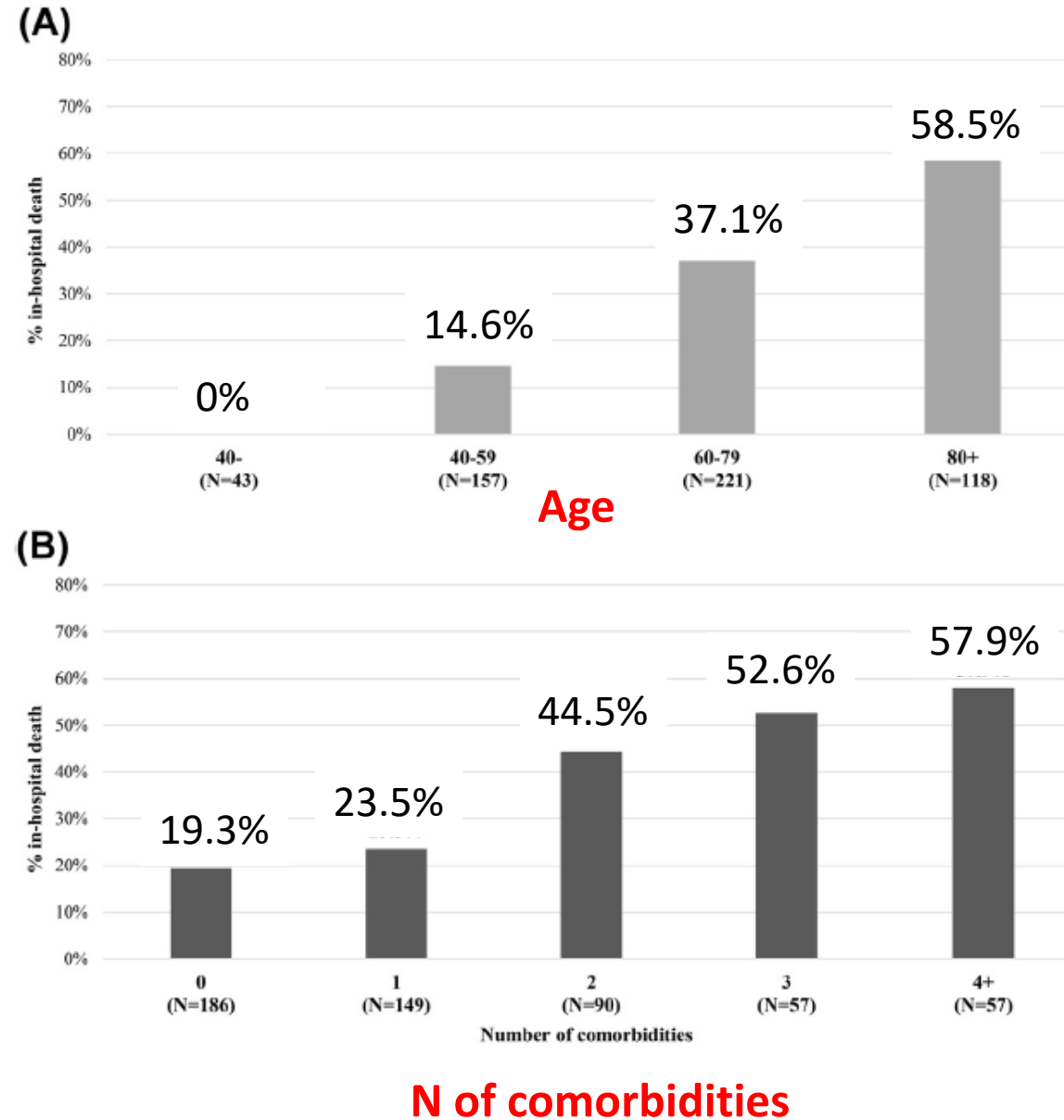
^b Centre for Clinical Research, Epidemiology, Modelling and Evaluation, Institute for Global Health, University College London, London, UK

International Journal of Infectious Diseases Vol. 100p67–74 Published online: September 17, 2020

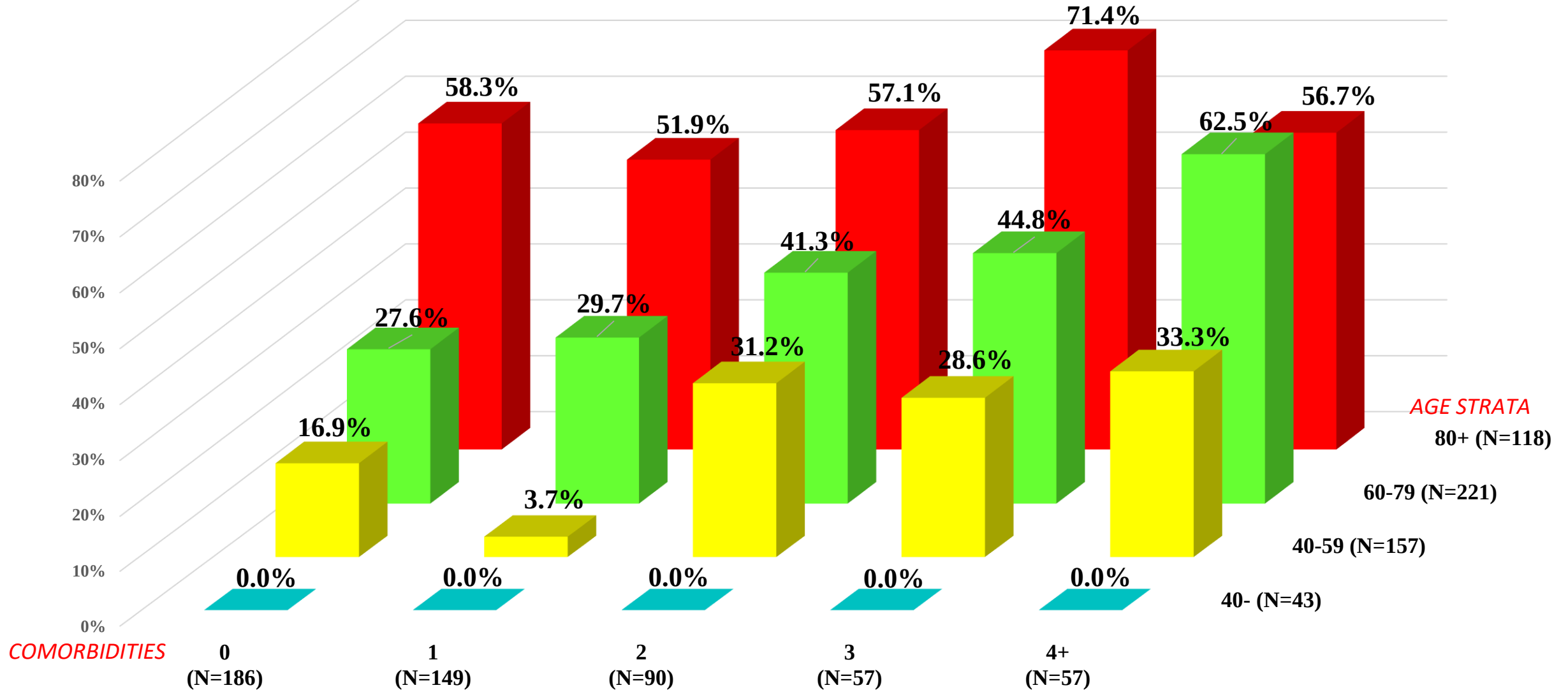
KM estimates of cumulative probability of in-hospital death



In-hospital mortality according to age and comorbidities



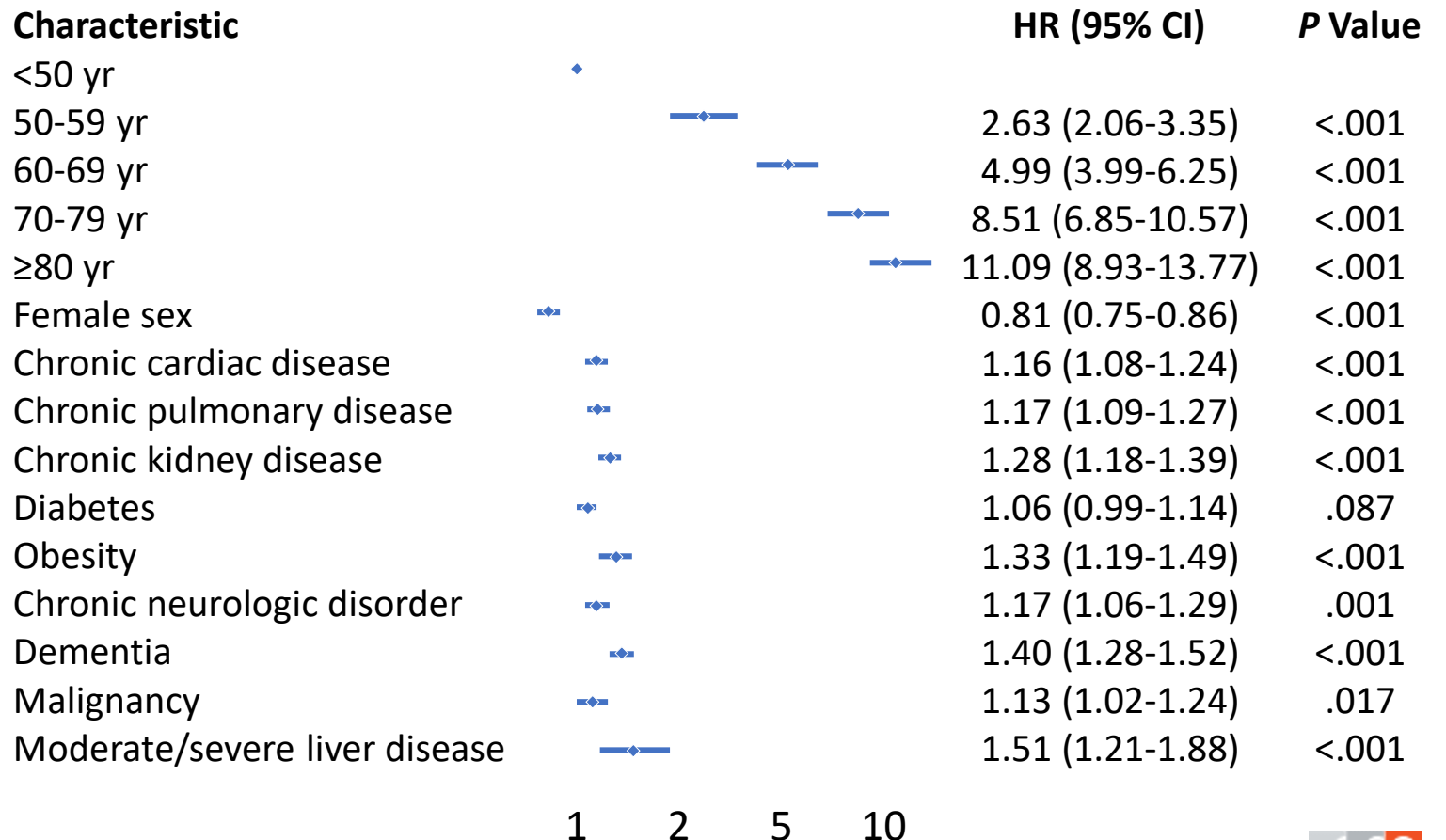
Prevalence of death according to age strata and comorbidities among 539 patients hospitalised for Covid-19 at San Paolo hospital, Milan



Predictors of Mortality Among COVID-19–Positive Hospitalized Patients in the UK

- Prospective observational cohort study of hospital admissions in England, Wales, and Scotland during February 6 - April 19, 2020 (N = 20,133)
 - Significantly increased risk of mortality among **older patients, men, and those with chronic comorbidities**

Multivariate Survival Analysis

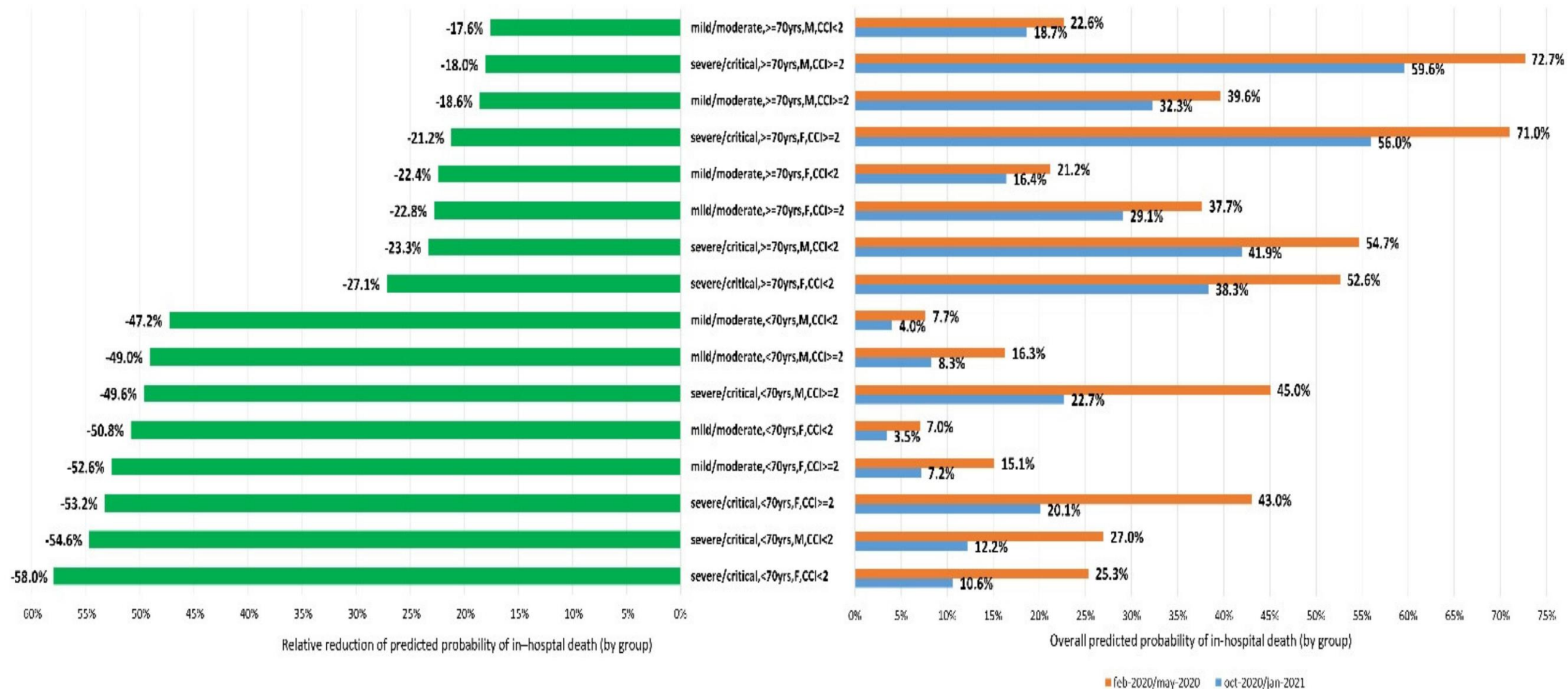


Article

Declining Mortality Rate of Hospitalised Patients in the Second Wave of the COVID-19 Epidemics in Italy: Risk Factors and the Age-Specific Patterns

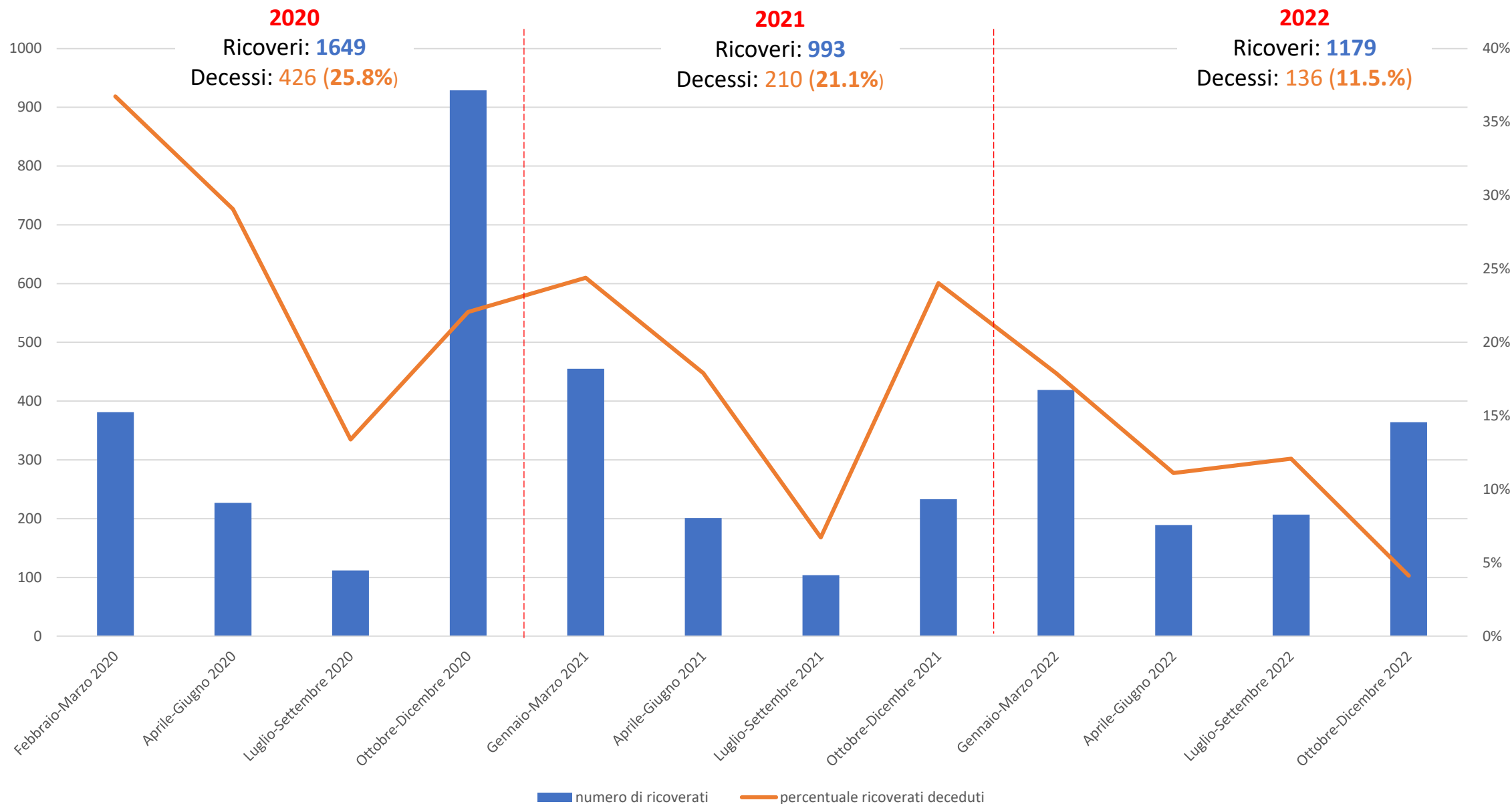
Antonella D'Arminio Monforte *, Alessandro Tavelli, Francesca Bai, Daniele Tomasoni, Camilla Falcinella, Roberto Castoldi, Diletta Barbanotti, Giovanni Mulè, Marina Allegrini, Elisa Suardi, Daniele Tesoro, Gianmarco Tagliaferri , Debora Mondatore, Matteo Augello , Andrea Cona, Tomaso Beringheli, Nicole Gemignani, Matteo Sala, Benedetta Varisco, Francesco Molà, Sofia Pettenuzzo, Lorenzo Biasioli, Alessandro Copes, Lidia Gazzola, Ottavia Viganò, Camilla Tincati , Anna De Bona, Teresa Bini and Giulia Marchetti

In conclusion, we observed a sharp reduction of in-hospital deaths according to the first two waves of SARS CoV-2 epidemics, but males aged above 70 showed less benefit of improved survival overtime and thus should be the focus of preventive campaigns and of vaccination programs.



Marginal predictions of in-hospital death by sub-groups in first and second wave of epidemic (right panel) and relative reduction during the second wave (left panel). yrs = years; F = females; M = males; CCI = age unadjusted Charlson Comorbidity Index.

**NUMERO DI RICOVERI E PERCENTUALE DEI DECESSI INTRAOSPEDALIERI PER TRIMESTRE
ANNI 2020-2021-2022- ASST SANTI PAOLO E CARLO, PRESIDIO SAN PAOLO**



Trattamenti antivirali / Mab effettuati

SC Malattie Infettive ASST santi Poalo e Carlo

03/21 - 12/22	AMBULATORIO	RICOVERO PER COVID	RICOVERO NON PER COVID	TOT
Bamlanivimab 700 mg	8	0	0	8
Bamlanivimab 700 mg + Etesevimab 1200 mg	107	0	8	115
Casirivimab 1200 mg + Imdevimab 1200 mg	58	19	9	86
Casirivimab 4000 mg + Imdevimab 4000 mg	0	38	0	38
Casirivimab 600 mg + Imdevimab 600 mg	2	0	0	2
Sotrovimab	81	8	13	102
Remdesivir	133	140	97	370
Molnupiravir	101	0	4	105
Paxlovid	230	0	36	266
Evulshed	35	4	24	63
TOT	755	209	191	1155

RETROSPECTIVE STUDY COMPARING OUTCOME, SAFETY AND VIROLOGICAL CLEARANCE AT DAY 7 IN PATIENTS WITH MILD-MODERATE COVID-19 DISEASE TREATED WITH MOLNUPIRAVIR, NIRMATRELVIR/RITONAVIR AND SHORT-COURSE OF REMDESIVIR

T. Beringheli, F. Bai, V. Vitaletti, F. Molà, A. Copes, N. Gemignani, S. Pettenuzzo, D. Barbanotti, G. Mulè, R. Castoldi, B. Varisco, R. Nardo, L. Lundgren, L. Albertini, M. Augello, L. Biasioli, C. Falcinella, D. Tomasoni, T. Bini, G. Marchetti, A. d'Arminio Monforte

- Antiviral therapies against SARS-CoV-2 (Molnupiravir-MNP, Nirmatrelvir/Ritonavir-PAX and Remdesivir-RDV) are indicated in mild-moderate outpatients within 5-7 days from symptoms onset, ≥ 1 risk factor for progression.
- These treatments demonstrated efficacy in randomized trials, but real-life data are lacking, especially in vaccinated patients ^{1,2}.
- We compared the efficacy, safety and virological clearance (VC) at day 7 (T7) post-treatment with MNP, PAX and RDV in SARS-CoV-2-infected patients at high risk (HR).

1. Najjar-Debbiny R, Gronich N, Weber G et al, Effectiveness of Paxlovid in reducing severe COVID-19 and mortality in high-risk patients, CID 2022; ciaci443.

2. Lee TC, Morris AM, Grover SA et al, Outpatient therapies for COVID-19: how do we choose?, OFID 2022; 9(3):ofac008.

Study population

Characteristics	Study population N 376	PAX N 150 (39.9%)	MNP N 92 (24.5%)	RDV N 134 (35.6%)	p value
Age [years], median (IQR)	75 (63-84)	70 (56-80)	79 (67-84)	78 (68-86)	<0.001
Female sex, n (%)	167 (44.4%)	78 (52%)	33 (35.9%)	56 (41.8%)	0.037
COVID-19 vaccination, n (%):					0.227
Yes, only 1 dose	4 (1.1%)	0	3 (3.6%)	1 (0.8%)	
Yes, complete first schedule	35 (9.3%)	14 (11.7%)	10 (11.9%)	11 (9%)	
Yes, first booster	247 (65.7%)	92 (76.7%)	64 (76.2%)	91 (74.6%)	
Yes, second booster	40 (10.6%)	14 (11.7%)	7 (8.3%)	19 (15.6%)	
Unknown	1 (0.3%)	1 (0.7%)	0	0	
COVID-19 vaccination, n (%):	N 293	N 100	N 80	N 113	0.661
Yes, last vaccination >120 days	168 (57.3%)	71 (71%)	31 (38.8%)	66 (58.4%)	
Yes, last vaccination ≤120 days	125 (42.7%)	29 (29%)	49 (61.3%)	47 (41.6%)	
Risk factor, n (%):					
Age > 65 years	234 (62.2%)	68 (45.3%)	66 (71.7%)	100 (74.6%)	<0.001
BMI >30	28 (7.4%)	11 (7.3%)	7 (7.6%)	10 (7.5%)	0.997
Cardio-vascular disease	139 (37%)	34 (22.7%)	47 (51.1%)	58 (43.3%)	<0.001
COPD or other respiratory disease	76 (20.2%)	33 (22%)	17 (18.5%)	26 (19.4%)	0.770
Neurological disease	35 (9.3%)	13 (8.7%)	4 (4.3%)	18 (13.4%)	0.065
Diabetes mellitus	63 (16.8%)	16 (10.7%)	16 (17.4%)	31 (23.1%)	0.019
Chronic kidney failure	21 (5.6%)	3 (2%)	7 (7.6%)	11 (8.2%)	0.047
Cancer	30 (8%)	9 (6%)	7 (7.6%)	14 (10.4%)	0.381
Immunodeficiency	49 (13%)	30 (20%)	8 (8.7%)	11 (8.2%)	0.005
Treatments for COVID-19, n (%):					
Heparin	59 (15.7%)	13 (8.7%)	3 (3.3%)	43 (32.1%)	<0.001
Corticosteroid therapy	15 (4%)	3 (2%)	1 (1.1%)	11 (8.2%)	0.007

Study population

Characteristics	Study population N 376	PAX N 150 (39.9%)	MNP N 92 (24.5%)	RDV N 134 (35.6%)	p value
Setting, n (%): Outpatient service Hospitalization because diseases other than COVID-19	284 (75.5%) 92 (24.5%)	130 (86.7%) 20 (13.3%)	89 (96.7%) 3 (3.3%)	65 (48.5%) 69 (51.5%)	<0.001
Days from symptom onset to antiviral treatment, median (IQR)	3 (1-4)	2 (1-3)	3 (2-4)	2 (1-4)	0.161
Days from symptom onset to virological clearance, median (IQR)	13 (10-17)	10 (8-15)	14 (11-18)	13 (10-19)	0.002
Outcome, n (%): Recovery Hospitalization Death	N 322 309 (96%) 2 (0.6%) 11 (3.4%)	N 117 115 (98.3%) 0 2 (1.7%)	N 79 77 (97.5%) 0 2 (2.5%)	N 126 117 (92.9%) 2 (1.6%) 7 (5.6%)	0.185
Adverse events, n (%): No Yes Unknown	311 (82.7%) 11 (2.9%) 54 (14.4%)	108 (72%) 9 (6%) 33 (22%)	78 (84.8%) 1 (1.1%) 13 (14.1%)	125 (93.3%) 1 (0.7%) 8 (6%)	<0.001
Virological clearance at day 7 from treatment, n (%): No Yes	N 250 139 (37%) 111 (29.5%)	N 85 32 (37.6%) 53 (62.4%)	N 59 44 (74.6%) 15 (25.4%)	N 109 66 (60.6%) 43 (39.4%)	<0.001

Factors associated with virological clearance at T7 by fitting multivariable logistic regression

Parameters	OR	95% CI	p values	AOR	95% CI	p values
Age, Each year more	0.978	0.963-0.994	0.007	0.984	0.967-1.001	0.069
Gender: Female Male	1 0.812	0.493-1.336	0.412			
Vaccination: >120 days ≤120 days	1 0.735	0.424-1.275	0.273			
Immunodeficiency: Yes No	1 0.752	0.365-1.550	0.440	1.295	0.574-2.924	0.534
Days from symptoms onset to treatment, Each day more	0.992	0.968-1.018	0.543			
Antiviral treatment: Remdesivir Paxlovid Molnupiravir	1 2.542 0.523	1.419-4.555 0.260-1.054	<0.001 0.002 0.070	1 2.248 0.500	1.211-4.172 0.246-1.013	0.001 0.010 0.054

Epidemia da SARS CoV-2: conclusioni

- ❖ Il numero di casi nel mondo sembra essere diminuito solo recentemente**
- ❖ Probabile sottodiagnosi nei casi non necessitanti ricovero ospedaliero**
- ❖ Il numero di casi ospedalizzati è in diminuzione**
- ❖ La vaccinazione di massa ha avuto ruolo fondamentale**
- ❖ La letalità è ancora elevata, negli anziani e in pazienti con comorbidità**
- ❖ Decesso per COVID-19 o per aggravarsi di patologie pre-esistenti?**
- ❖ Verso una 'normalizzazione' di tale patologia**

Ringraziamenti

- A tutto il personale della di ASST Santi Paolo e Carlo
- Al personale medico e para-medico della SC di Malattie Infettive e Tropicali
- Ai giovani specializzandi di tutta la ASST
- Al gruppo statistico di ICONA
- Alla Direzione Strategica