Focus Covid: vaccinazione, trattamento e appropriatezza, long-Covid

Il Forum Prevenzione vaccinale dell'anziano e del fragile
Programmi e obiettivi governativi, modelli organizzativi sul territorio, strategie di comunicazione

21 Novembre 2024
Ministero della Salute

Matteo Tosato,
Responsabile UOS Prevenzione malattie dell'invecchiamento e Promozione Longevità

Dipartimento Scienze dell'Invecchiamento, Ortopediche e Reumatologiche,
Fondazione Policlinico Universitario A. Gemelli IRCCS

Ministero della Salute
REGIONE MARCHE
ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

- Covid
- Long Covid
- Invecchiamento accelerato
- Strategie
  - ✓ Vaccinazione
  - ✓ Terapia antivirale
- Dati real world

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

- *Covid*
- Long Covid
- Invecchiamento accelerato
- Strategie
  - ✓ Vaccinazione
  - ✓ Terapia antivirale
- Dati real world

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

I dati del COVID in Italia

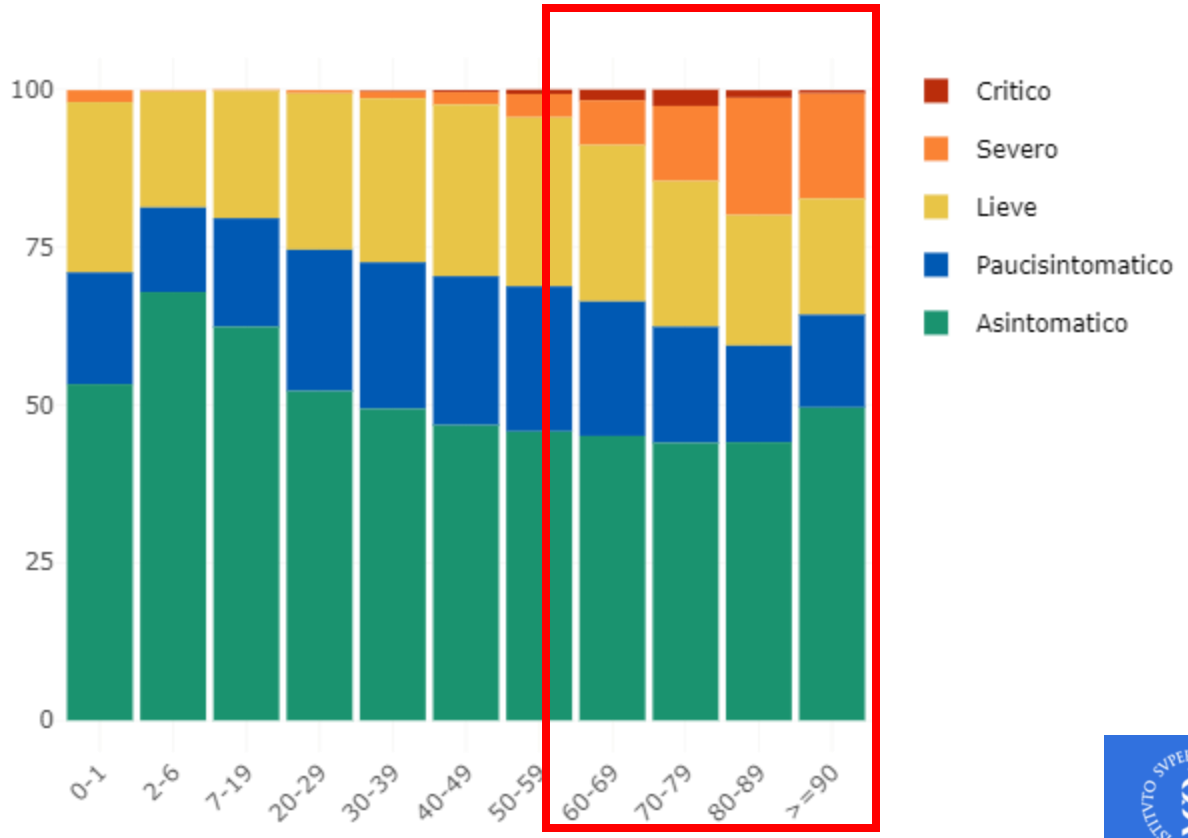
27.167.646	513.461	45 anni	46,4% | 53,6%	196.909 (0,7%)	25.370.545
Casi***	Casi tra gli operatori sanitari*	Età mediana dei casi	Maschi (%) | Femmine (%)	Deceduti (CFR)	Guariti

Istituto Superiore di Sanità
EpiCentro - L'epidemiologia per la sanità pubblica

Coronavirus

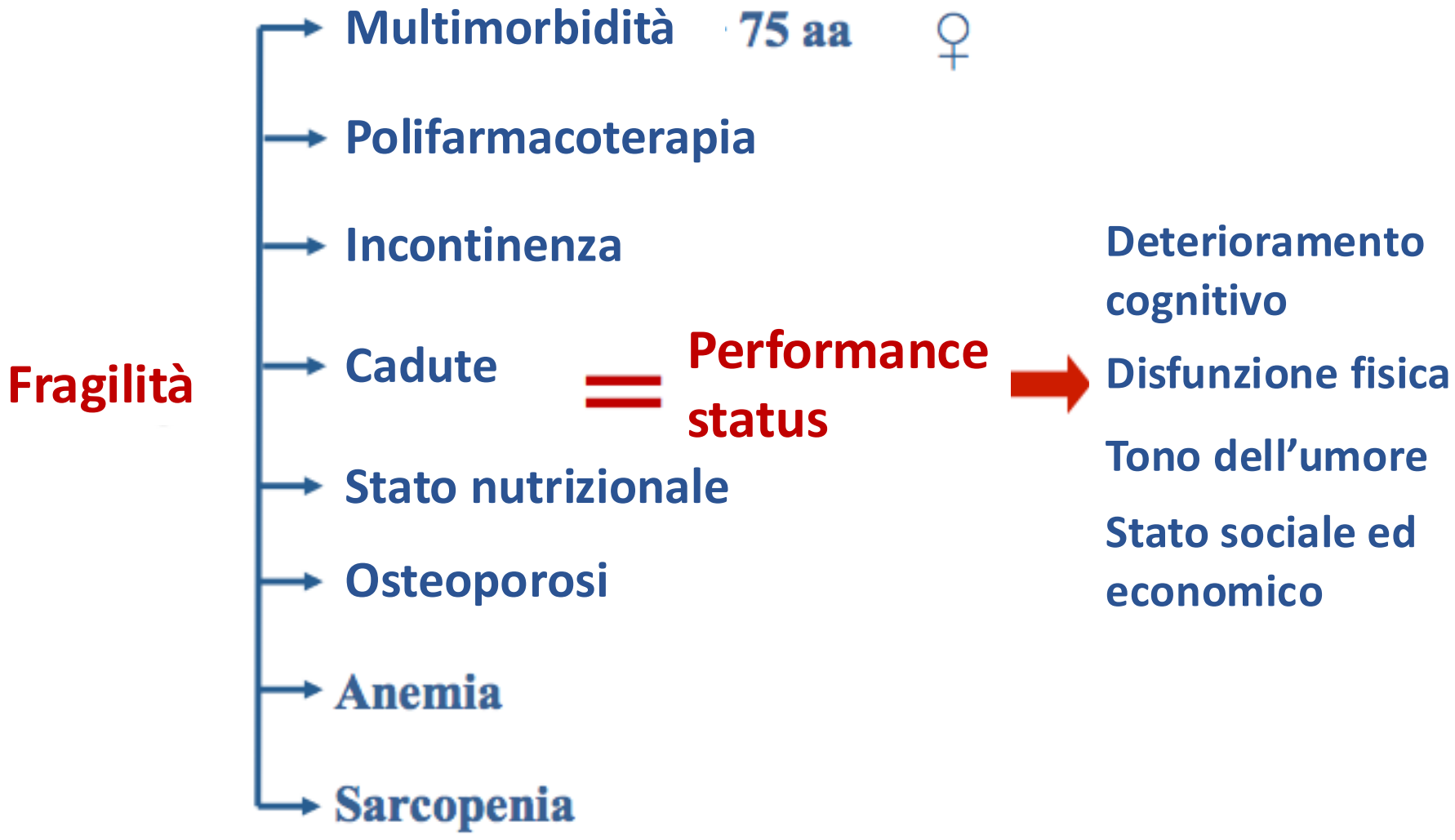
ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

I dati del COVID in Italia



ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Il paziente "MODERNO" geriatrico



ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Italian experience

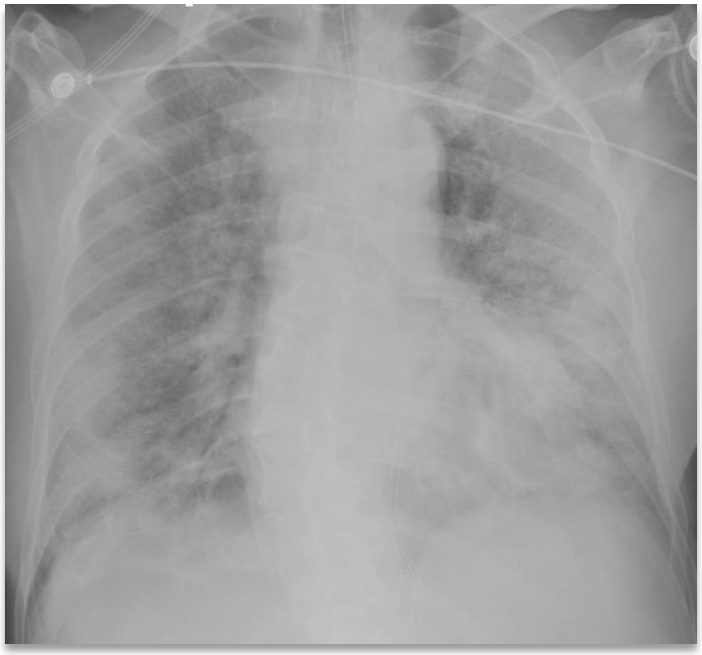
J Nutr Health Aging. 2020;

THE NEW CHALLENGE OF GERIATRICS: SAVING FRAIL OLDER PEOPLE FROM THE SARS-COV-2 PANDEMIC INFECTION

GEMELLI AGAINST COVID-19 GERIATRIC TEAM*

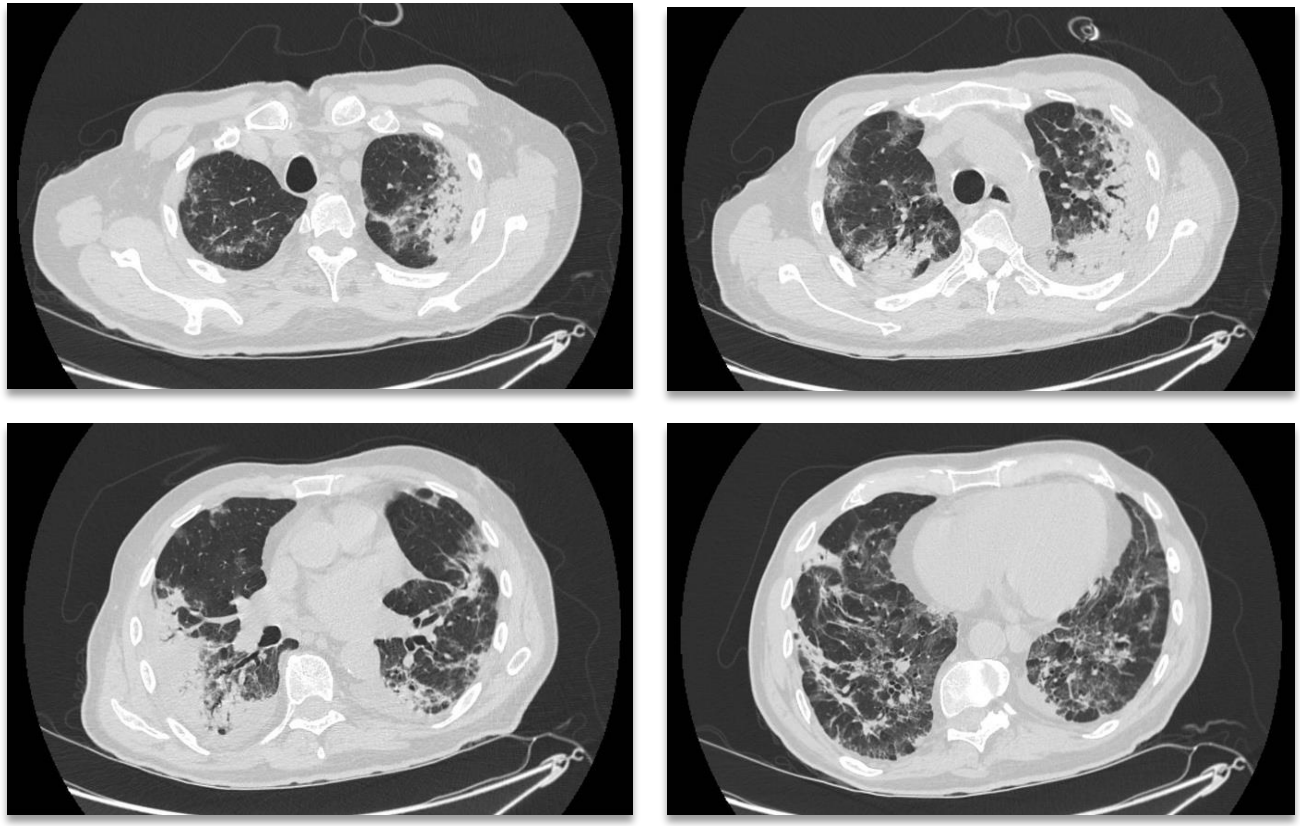
* Gemelli Against COVID-19 Geriatric Team: F. Landi, C. Barillaro, A. Bellieni, V. Brandi, A. Carfì, M. D'Angelo, D. Fusco, G. Landi, R. Lo Monaco, A.M. Martone, E. Marzetti, F. Pagano, C. Pais, A. Russo, S. Salini, M. Tosato, A. Tummolo, F. Benvenuto, G. Bramato, L. Catalano, F. Ciciarello, I. Martis, S. Rocchi, E. Rota, A. Salerno, M. Tritto, A. Sgadari, G. Zuccalà, R Bernabei. Corresponding author: Francesco Landi, MD, PhD, Fondazione Policlinico Universitario "Agostino Gemelli" IRCCS, Catholic University of the Sacred Heart, L.go F. Vito 8, Rome 00168, Italy, Phone: +39 (06) 5190028,
e-mail: francesco.landi@unicatt.it

Landi F, et al. *J Nutr Health Aging*. 2020;24(5):466-470.



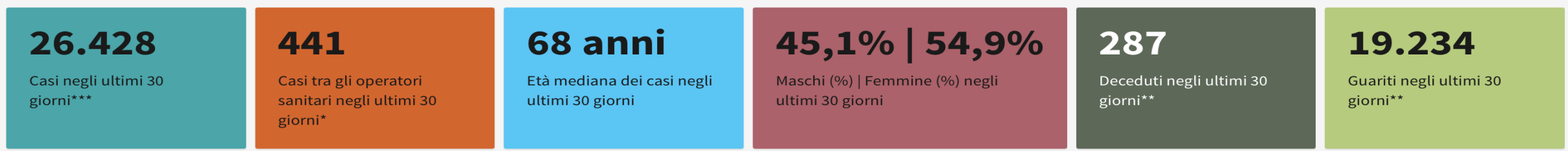
La radiografia del torace in proiezione antero-posteriore mostra opacità a vetro smerigliato distribuite in modo irregolare (uomo di 78 anni)

La TAC del torace mostra opacità a vetro smerigliato diffuse, un'area di consolidamento e la presenza contemporanea di opacità a vetro smerigliato con consolidamento.



ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

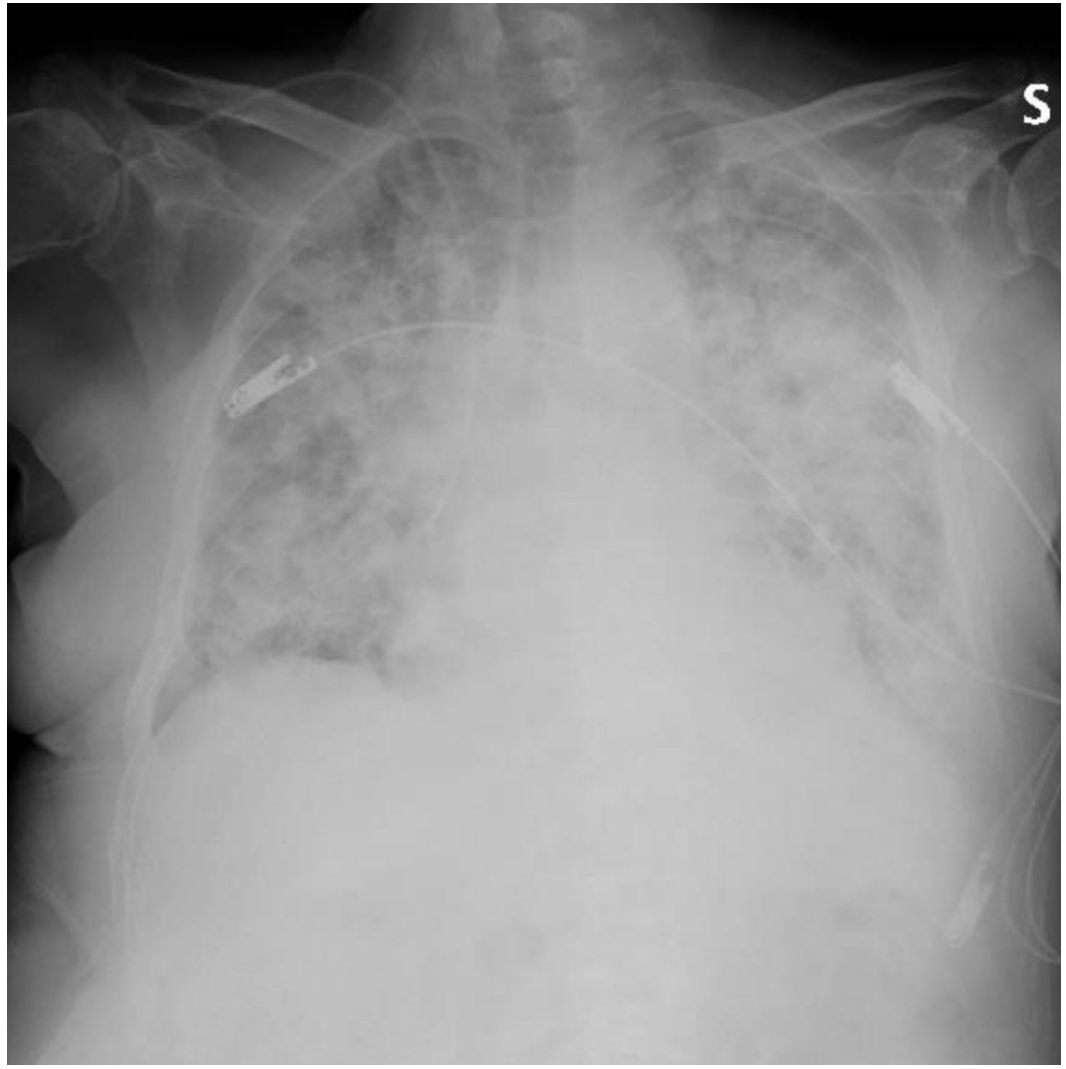
I dati del COVID in Italia

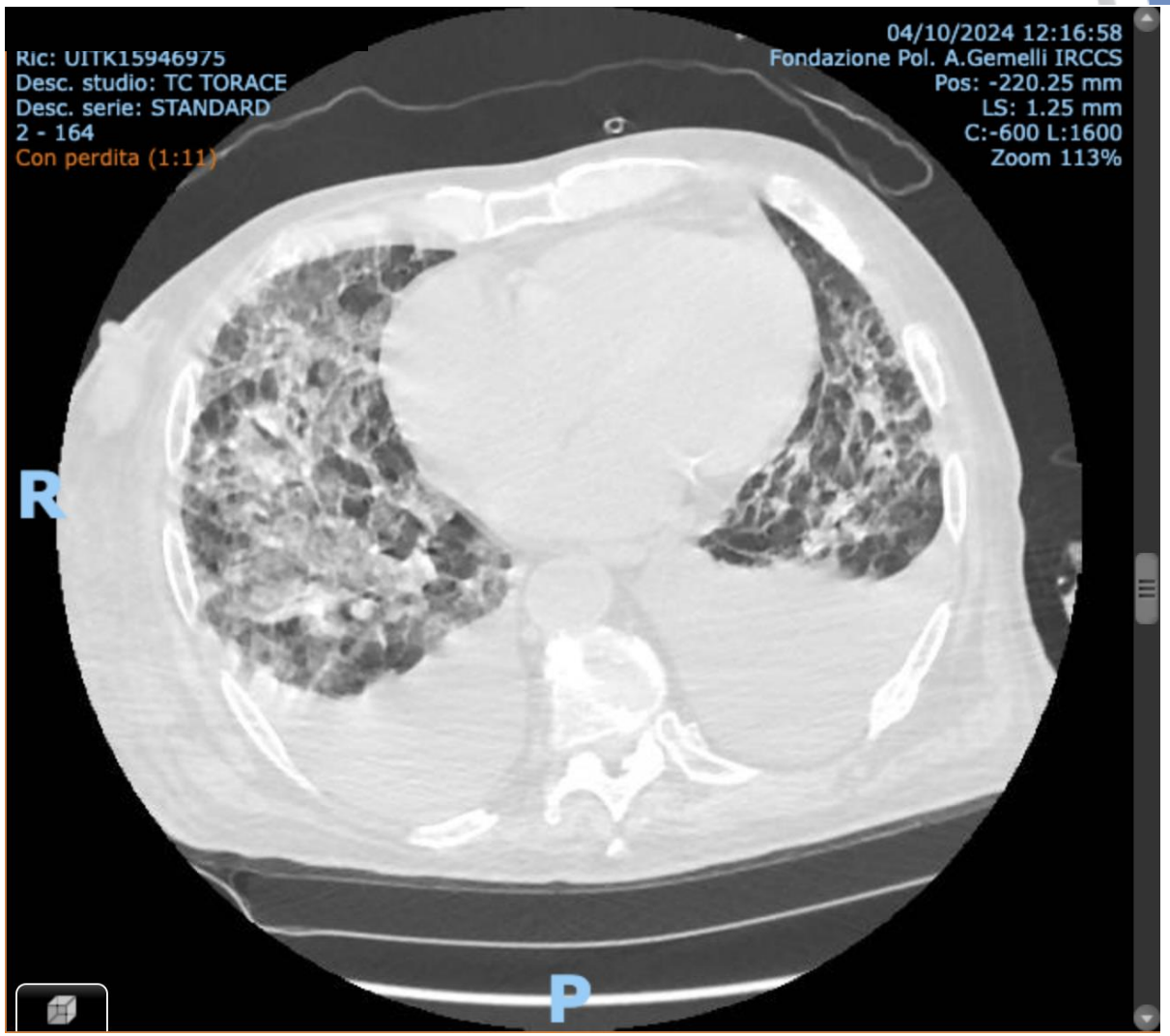


Istituto Superiore di Sanità
EpiCentro - L'epidemiologia per la sanità pubblica

Coronavirus

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA





ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

- Covid
- *Long Covid*
- Invecchiamento accelerato
- Strategie
  - ✓ Vaccinazione
  - ✓ Terapia antivirale
- Dati real world

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

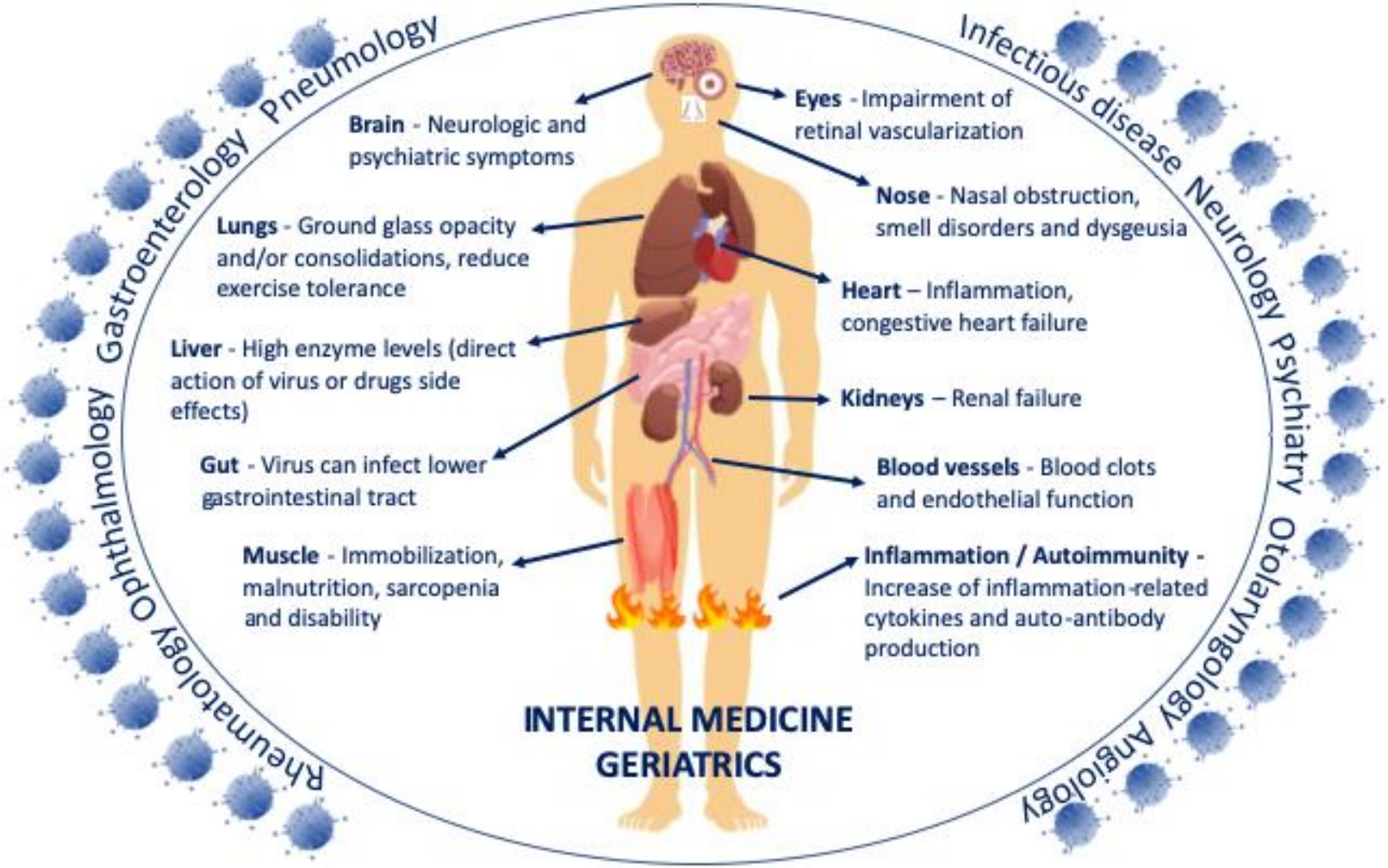
Aging Clinical and Experimental Research (2020) 32:1613–1620
https://doi.org/10.1007/s40520-020-01616-x

POINT OF VIEW

Post-COVID-19 global health strategies: the need for an interdisciplinary approach

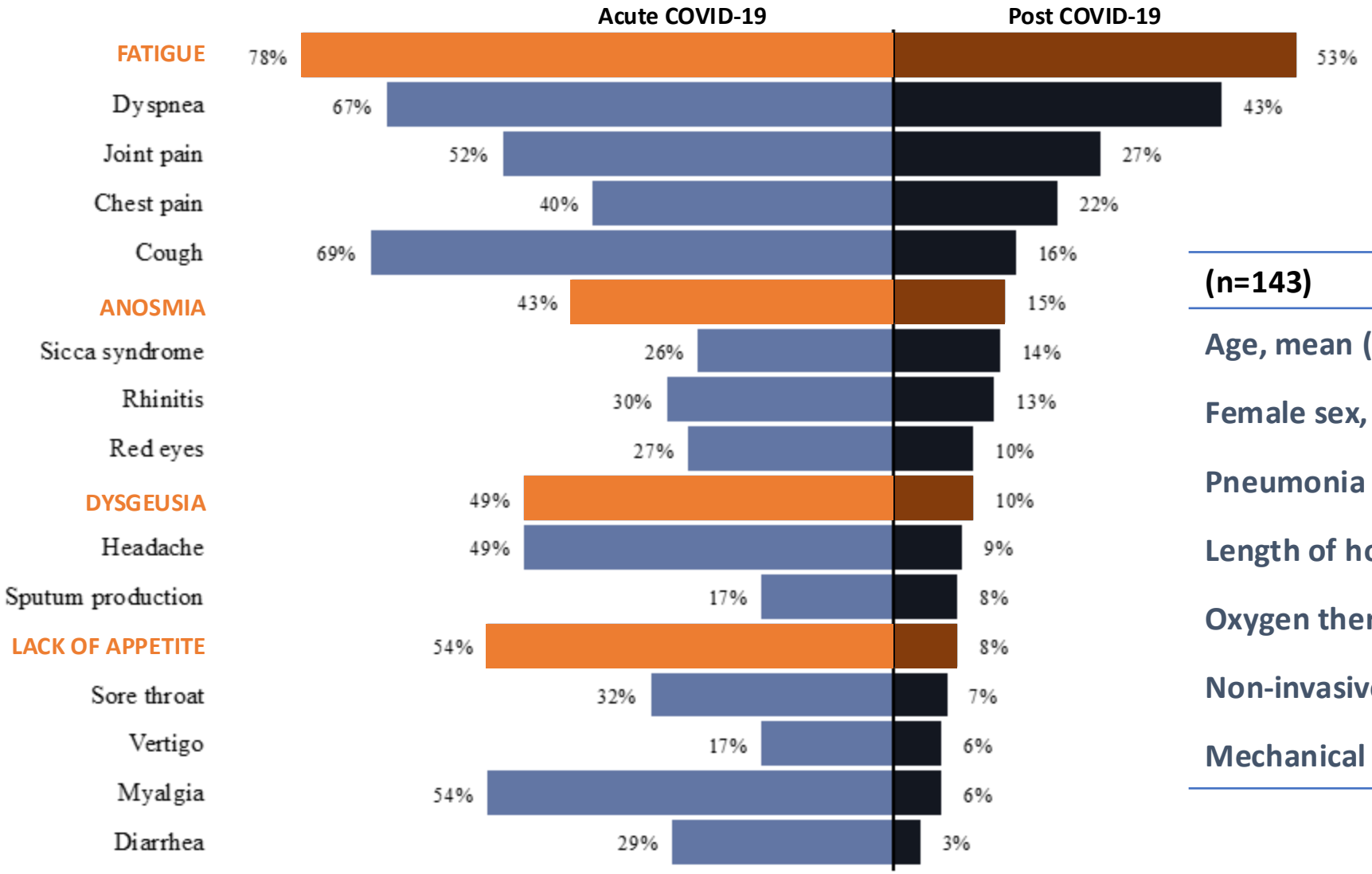
Gemelli Against COVID-19 Post-Acute Care Study Group[1]

Received: 15 May 2020 / Accepted: 30 May 2020 / Published online: 11 June 2020



Gemelli Against COVID-19 Post-Acute Care Study Group. *Aging Clin Exp Res*. 2020;32(8):1613-1620.

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

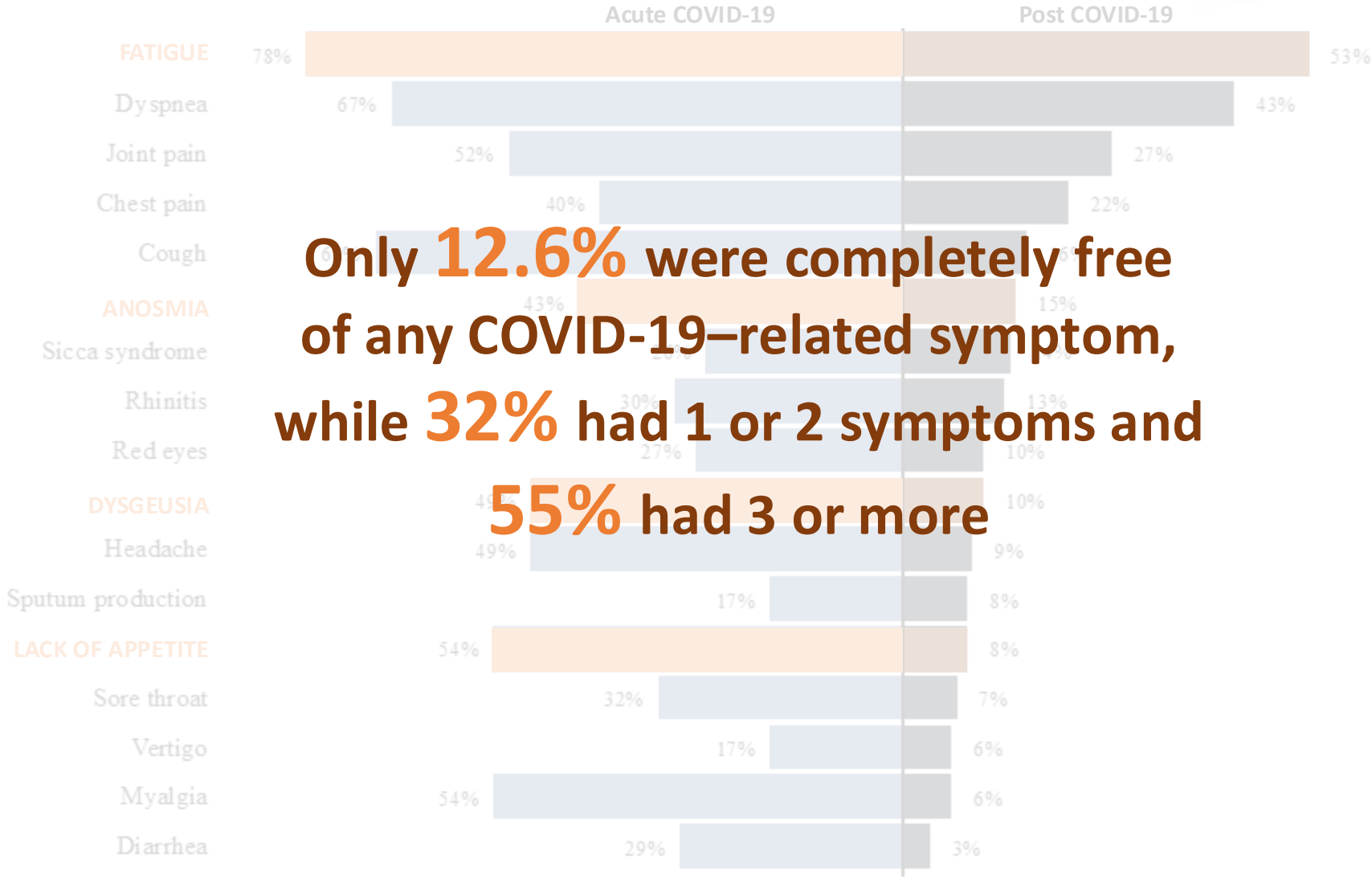


JAMA

(n=143)	
Age, mean (SD), y	56.5 (14.6)
Female sex, No. (%)	53 (37.1)
Pneumonia diagnosed	104 (72.7)
Length of hospital stay, mean (SD)	13.5 (9.7)
Oxygen therapy	77 (53.8)
Non-invasive Ventilation	21 (14.7)
Mechanical Ventilation	7 (4.9)

Carfì A, et al. *JAMA*. 2020;324(6):603-605.

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA



Only 12.6% were completely free of any COVID-19–related symptom, while 32% had 1 or 2 symptoms and 55% had 3 or more

Carfì A, et al. *JAMA*. 2020;324(6):603-605.

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

The data is clear: long Covid is devastating people's lives and livelihoods

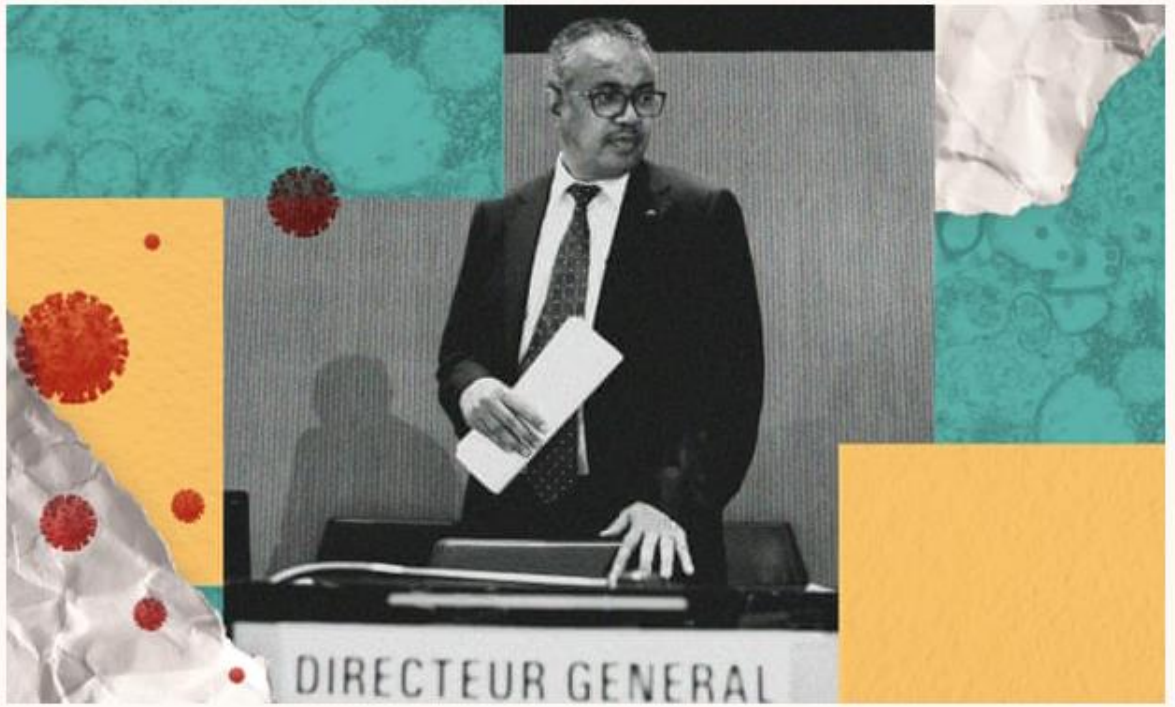
Tedros Adhanom Ghebreyesus

The impact of long Covid needs urgent action – and there are five key elements to drive the effort forward, writes the WHO director general

The Guardian

WHO chief urges immediate action to tackle 'devastating' long Covid

Wed 12 Oct 2022 09.00 BST



'Delayed clinical care in patients with long Covid not only impacts their quality of life but the length of time they have symptoms.' Composite: Guardian Design/Reuters

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

JAMA Internal Medicine | **Original Investigation**

Risk Factors Associated With Post–COVID-19 Condition

A Systematic Review and Meta-analysis

RESULTS The initial search yielded 5334 records of which 255 articles underwent full-text evaluation, which identified 41 articles and a total of 860 783 patients that were included. The findings of the meta-analysis showed that female sex (OR, 1.56; 95% CI, 1.41-1.73), age (OR, 1.21; 95% CI, 1.11-1.33), high BMI (OR, 1.15; 95% CI, 1.08-1.23), and smoking (OR, 1.10; 95% CI, 1.07-1.13) were associated with an increased risk of developing PCC. In addition, the presence of comorbidities and previous hospitalization or ICU admission were found to be associated with high risk of PCC (OR, 2.48; 95% CI, 1.97-3.13 and OR, 2.37; 95% CI, 2.18-2.56, respectively).

Tsampasian et al. 2023

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

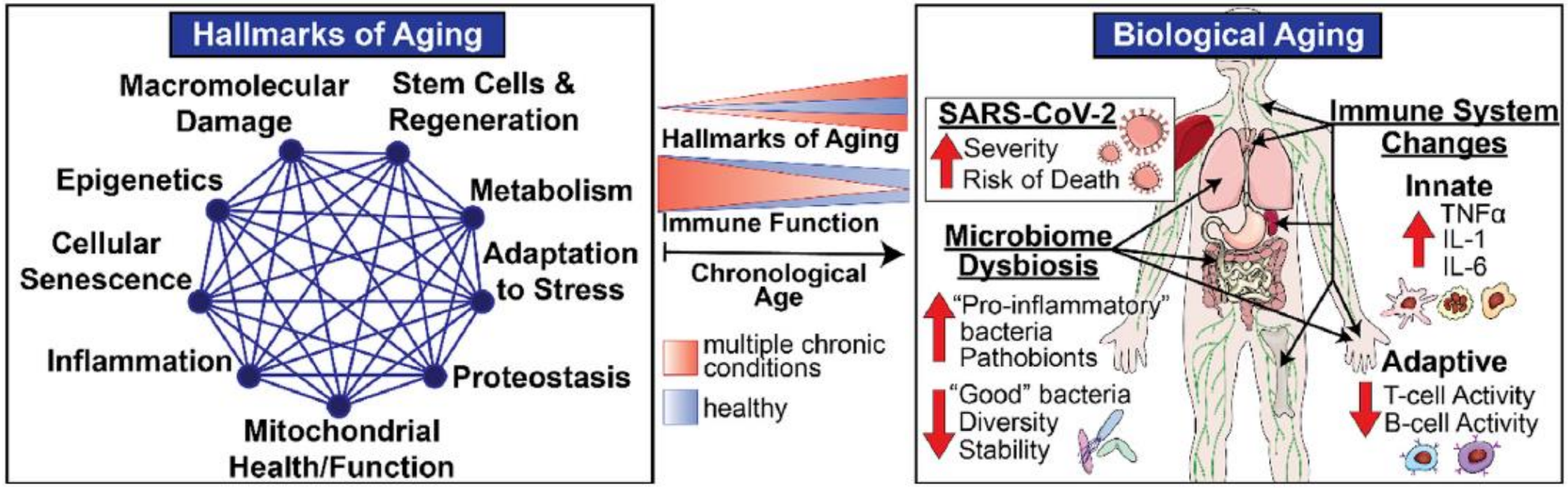
- Covid
- Long Covid
- *Invecchiamento accelerato*
- Strategie
  - ✓ Vaccinazione
  - ✓ Terapia antivirale
- Dati real world

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Invecchiamento accelerato

Network Topology of Biological Aging and Geroscience-Guided Approaches to COVID-19

frontiers in Aging
SYSTEMATIC REVIEW
published: 23 July 2021
doi: 10.3389/fragi.2021.695218



ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Età fenotipica

RESEARCH ARTICLE

A new aging measure captures morbidity and mortality risk across diverse subpopulations from NHANES IV: A cohort study

Zuyun Liu[1], Pei-Lun Kuo[2,3,4], Steve Horvath[5,6], Eileen Crimmins[7], Luigi Ferrucci[2], Morgan Levine[1,8]*

Table 1. Phenotypic aging measures and Gompertz coefficients.

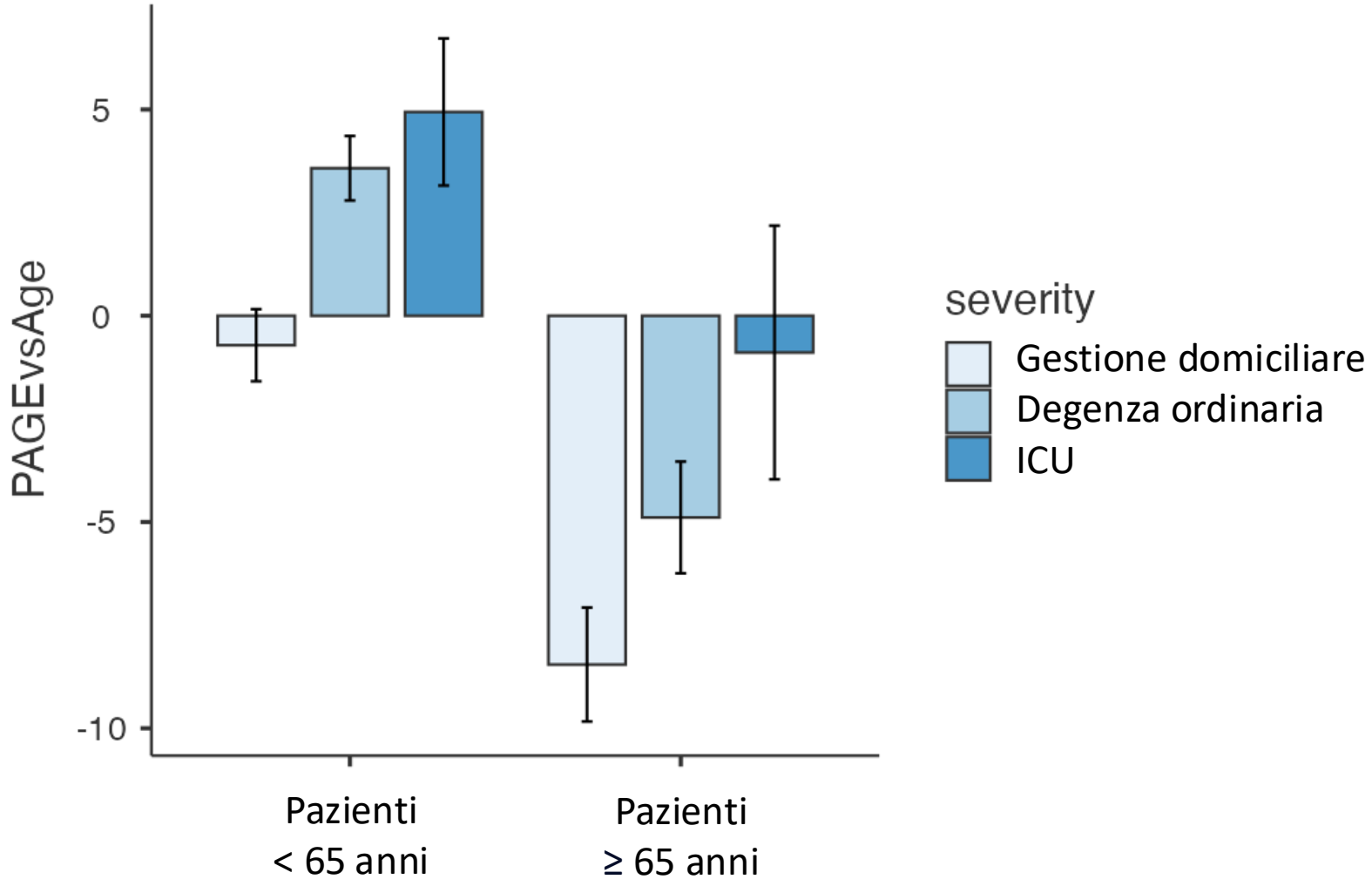
Variable		Units	Weight
Albumin	Liver	g/L	-0.0336
Creatinine	Kidney	umol/L	0.0095
Glucose, serum	Metabolic	mmol/L	0.1953
C-reactive protein (log)	Inflammation	mg/dL	0.0954
Lymphocyte percent	Immune	%	-0.0120
Mean (red) cell volume	Immune	fL	0.0268
Red cell distribution width	Immune	%	0.3306
Alkaline phosphatase	Liver	U/L	0.0019
White blood cell count	Immune	1000 cells/uL	0.0554
Age		Years	0.0804

PLOS Medicine | https://doi.org/10.1371/journal.pmed.1002718

PLOS | MEDICINE

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Età fenotipica Vs età anagrafica



ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

- Covid
- Long Covid
- Invecchiamento accelerato
- *Strategie*
  - ✓ *Vaccinazione*
  - ✓ Terapia antivirale
- Dati real world

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Estimated number of lives directly saved by COVID-19 vaccination programmes in the WHO European Region from December, 2020, to March, 2023: a retrospective surveillance study

Methods In this retrospective surveillance study, we estimated the number of lives directly saved by age group, vaccine dose, and circulating variant-of-concern (VOC) period, regionally and nationally, using weekly data on COVID-19 mortality and infection, COVID-19 vaccination uptake, and SARS-CoV-2 virus characterisations by lineage downloaded from The European Surveillance System on June 11, 2023, as well as vaccine effectiveness data from the literature. We included data for six age groups (25–49 years, 50–59 years, ≥60 years, 60–69 years, 70–79 years, and ≥80 years). To be included in the analysis, CAT needed to have reported both COVID-19 vaccination and mortality data for at least one of the four older age groups. Only CAT that reported weekly data for both COVID-19 vaccination and mortality by age group for 90% of study weeks or more in the full study period were included. We calculated the percentage reduction in the number of expected and reported deaths.

Findings Between December, 2020, and March, 2023, in 34 of 54 CAT included in the analysis, COVID-19 vaccines reduced deaths by 59% overall (CAT range 17–82%), representing approximately 1·6 million lives saved (range 1·5–1·7 million) in those aged 25 years or older

Meslè M. et al The Lancet Respiratory medicine 2024

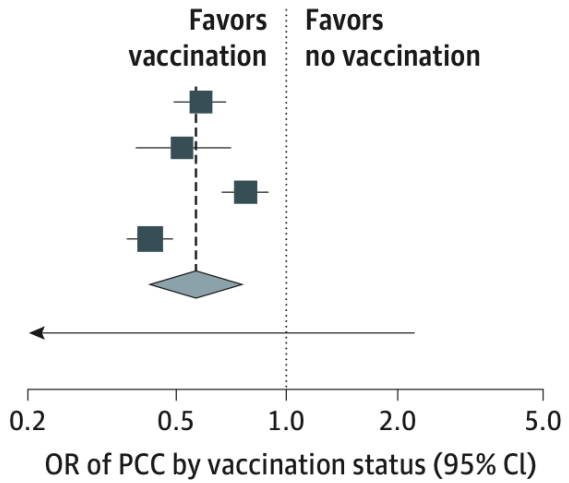
ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

JAMA Internal Medicine | Original Investigation

Risk Factors Associated With Post–COVID-19 Condition
A Systematic Review and Meta-analysis

Figure 4. Association of Vaccination Status With Post–COVID-19 Condition (PCC), 2021 to 2022

Source	OR (95% CI)
Ayoubkhani et al[18]	0.59 (0.50-0.69)
Emecen et al[26]	0.53 (0.40-0.71)
Ioannou et al[34]	0.78 (0.68-0.90)
Zisis et al[12]	0.43 (0.37-0.49)
Total (random effects)	0.57 (0.43-0.76)
Prediction interval	(0.15-2.22)
Heterogeneity: $\chi^2_3 = 35.00$ ($P < .001$); $I^2 = 91\%$	



Individuals who were vaccinated against COVID-19 with 2 doses had a significantly lower risk of developing PCC than individuals who had not been vaccinated. The dotted line represents the point of no difference between the 2 groups, and the dashed line represents the average effect of all studies when pooled together. OR indicates odds ratio.

Tsampasian et al. 2023

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

bmjmedicine

Check for updates

Efficacy of first dose of covid-19 vaccine versus no vaccination on symptoms of patients with long covid: target trial emulation based on ComPaRe e-cohort

aldanha,[3] Isabelle Pane,[2] Philippe Ravaud[2,3,4]

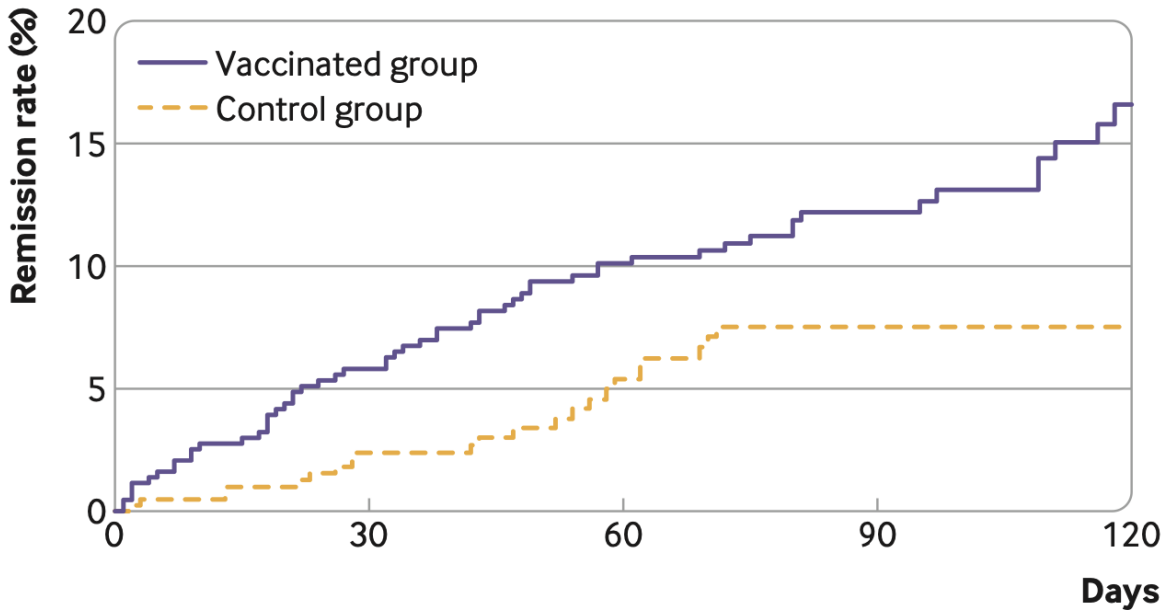


Figure 1 | Cumulative event curve for complete remission of long covid symptoms in the vaccinated and control groups. For 275 patients in the control group, data were censored at the date they received their vaccine before 120 days.

Discussion

Principal findings

In patients with long covid, we found that the first covid-19 vaccine injection was associated with a reduction in the severity of the disease and on the effect on patients' social, professional, and family lives at 120 days after baseline. In particular, our results showed that the remission rate of long covid symptoms was 16.6% in the vaccinated group (n=57) compared with 7.5% (n=27) in the control group (hazard ratio 1.93, 95% confidence interval 1.18 to 3.14). Receiving a vaccine was also associated with

Tran V-T, *et al. BMJMED* 2023

Ministero della Salute
DIPARTIMENTO DELLA PREVENZIONE, DELLA RICERCA E DELLE EMERGENZE SANITARIE
Ex-DIREZIONE GENERALE DELLA PREVENZIONE SANITARIA
Ufficio 5 - Prevenzione malattie trasmissibili e profilassi internazionale

OGGETTO: indicazioni e raccomandazioni per la campagna di vaccinazione autunnale/invernale 2024/2025 anti COVID-19.

ALLEGATO 2

Elenco gruppi di Persone a cui viene raccomandata la vaccinazione di richiamo con il nuovo vaccino aggiornato.

Ferma restante la possibilità per chiunque di accedervi gratuitamente, la vaccinazione anti COVID-19 è raccomandata ai seguenti gruppi di Persone:

- Persone di età pari o superiore a 60 anni;
- Ospiti delle strutture per lungodegenti;
- Donne che si trovano in qualsiasi trimestre della gravidanza o nel periodo "postpartum" comprese le donne in allattamento;
- Operatori sanitari e sociosanitari addetti all'assistenza negli ospedali, nel territorio e nelle strutture di lungodegenza; studenti di medicina, delle professioni sanitarie che effettuano tirocini in strutture assistenziali e tutto il personale sanitario e sociosanitario in formazione;
- Persone dai 6 mesi ai 59 anni di età compresi, con elevata fragilità, in quanto affette da patologie o con condizioni che aumentano il rischio di COVID-19 grave, quali:

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

- Covid
- Long Covid
- Invecchiamento accelerato
- *Strategie*
  - ✓ Vaccinazione
  - ✓ *Terapia antivirale*
- Dati real world

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Effectiveness of nirmatrelvir–ritonavir in preventing hospital admissions and deaths in people with COVID-19: a cohort study in a large US health-care system

Findings 7274 nirmatrelvir–ritonavir recipients and 126 152 non-recipients with positive SARS-CoV-2 tests were included in our study. 5472 (75·2%) treatment recipients and 84 657 (67·1%) non-recipients were tested within 5 days of symptom onset. Nirmatrelvir–ritonavir had an overall estimated effectiveness of 53·6% (95% CI 6·6–77·0) in preventing hospital admission or death within 30 days of a positive test for SARS-CoV-2, which increased to 79·6% (33·9–93·8) when nirmatrelvir–ritonavir was dispensed within 5 days of symptom onset. Within the subgroup of patients tested within 5 days of symptom onset and whose treatment was dispensed on the day of their test, the estimated effectiveness of nirmatrelvir–ritonavir was 89·6% (50·2–97·8).

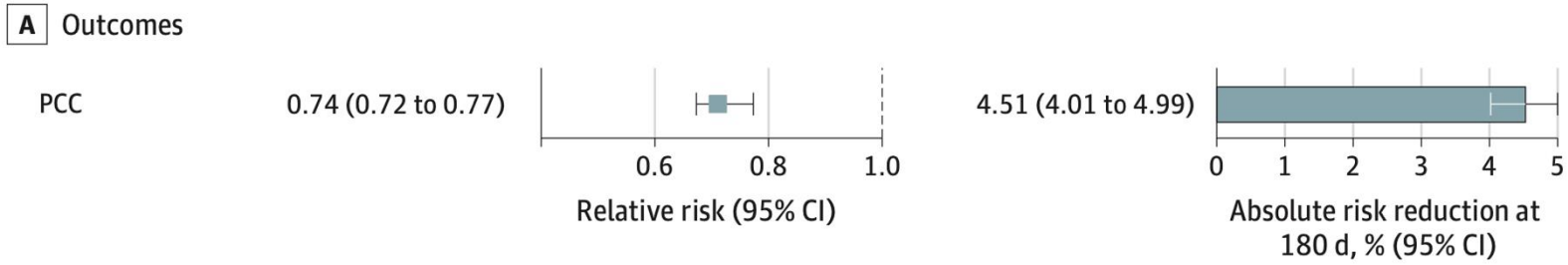
Lewnard et al. Lancet Infec Dis 2023

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

JAMA Internal Medicine | Original Investigation

Association of Treatment With Nirmatrelvir and the Risk of Post–COVID-19 Condition

Yan Xie, PhD; Taeyoung Choi, MPH; Ziyad Al-Aly, MD



RESULTS A total of 281 793 patients (mean [SD] age, 61.99 [14.96]; 242 383 [86.01%] male) who had a positive SARS-CoV-2 test result and had at least 1 risk factor for progression to severe COVID-19 illness were studied. Among them, 246 076 received no COVID-19 antiviral or antibody treatment during the acute phase of SARS-CoV-2 infection, and 35 717 received oral nirmatrelvir within 5 days after the positive SARS-CoV-2 test result. Compared with the control group, nirmatrelvir was associated with reduced risk of PCC (RR, 0.74; 95% CI, 0.72-0.77; ARR, 4.51%; 95% CI, 4.01-4.99), including reduced risk of 10 of 13 post-acute

2023

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Outline

- Covid
- Long Covid
- Invecchiamento accelerato
- Strategie
  - ✓ Vaccinazione
  - ✓ Terapia antivirale
- *Dati real world*

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Ministero della Salute

Report Vaccini Anti COVID-19

vai all'area **Covid-19** >

Ciclo Vaccinale Primario fino al 24/09/2023

Con almeno una dose
49.524.332
91,72 % della popolazione over 12
(persone con almeno una somministrazione)

Ciclo vaccinale
48.730.287
90,25 % della popolazione over 12
(persone che hanno completato il ciclo vaccinale)

Dosi successive fino al 24/09/2023

Dose addizionale/richiamo (booster)
40.494.455
84,89 % della popolazione potenzialmente oggetto di dose addizionale o booster che ha ultimato il ciclo vaccinale da almeno 4 mesi

Booster immuno / 2ª dose booster
6.731.575
16,89 % della popolazione potenzialmente oggetto di dose booster/2ª booster cha ha ultimato il ciclo vaccinale da almeno 4 mesi

3ª dose booster
527.680
8,61 % della popolazione potenzialmente oggetto di 3ª dose booster cha ha ultimato il ciclo vaccinale da almeno 4 mesi

Cesti

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Ministero della Salute

Dati Campagna vaccinale anti Covid-19 2023/2024 fino al 17/09/2024

Dati e statistiche sulla vaccinazione anti Covid-19 a partire da 24 Settembre 2023 al 17 Settembre 2024

2.215.202

Totale somministrazioni fino al 17/09/2024

Poco più del 4% della popolazione

13,3% negli over 60

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Report Vaccini Anti COVID-19

vai all'area **Covid-19** >

Campagna vaccinale Autunno-Inverno 2024/2025

I dati sono aggiornati su base settimanale e sono disponibili in formato aperto con il dettaglio giornaliero.

GLI OVER 60

1,28%

Tasso di copertura nella campagna vaccinale 2024/2025

281.964

Totale somministrazioni dal 17/09/2024

Il dato può subire variazioni negative a seguito di rettifiche da parte delle regioni.

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Co-administration of SARS-CoV-2 and influenza vaccines in healthcare workers: Results of two vaccination campaigns in a large teaching hospital in Rome

Domenico Pascucci[a,b*], Alberto Lontano[b*], Luca Regazzi[b], Eleonora Marziali[b], Mario Cesare Nurchis[b,c], Matteo Raponi[d], Giuseppe Vetrugno[a,e], Umberto Moscato[b,d], Chiara Cadeddu[b], and Patrizia Laurenti[b,d]

Categoria	2021/2022		2022/2023		2023/2024	
	n	%	n	%	n	%
Medici	1227	85,7	470	32,8	320	20,5
Specializzandi	877	59	234	15,8	188	8,8
Infermieri	1741	81,1	206	9,6	76	3,4
Altre figure sanitarie	1025	82,5	104	8,4	53	4,1
Amministrativi	837	76,7	161	14,	81	6,4
Totale	5707	77,1	1175	15,9	718	8,5

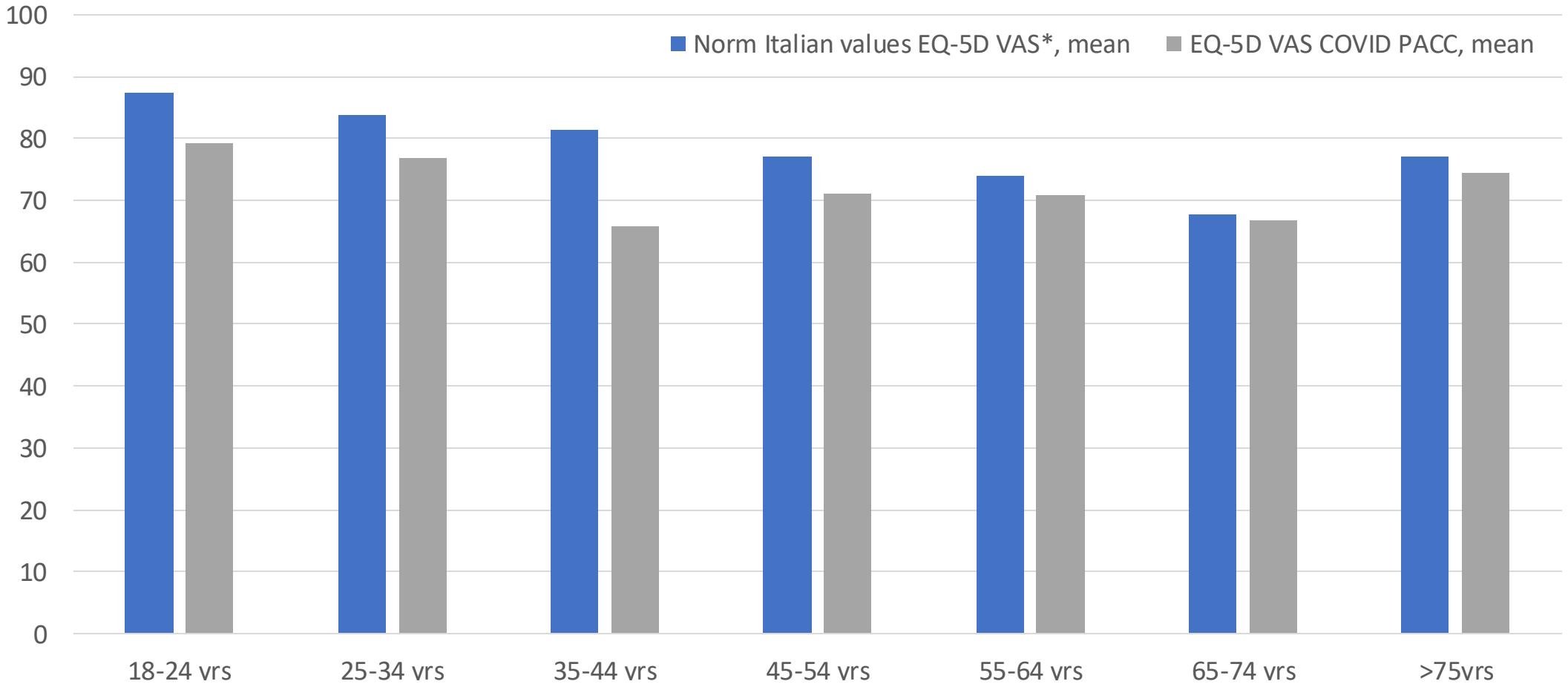
Human Vaccines & Immunotherapeutics 2023

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Patients	3213
Age, mean (SD), y	50 (±17)
Female sex, No. (%)	1590 (49,5%)
BMI (DS)	25.8 (±4.4)
Flu vaccination	739 (23%)
Cardiovascular disease	257 (8%)
Hypertension	299 (28%)
Diabetes	255 (8%)
COPD	256 (8%)
Number of drugs	2 (±2)
Hospitalized	1767 (55%)
ICU	385 (12%)

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

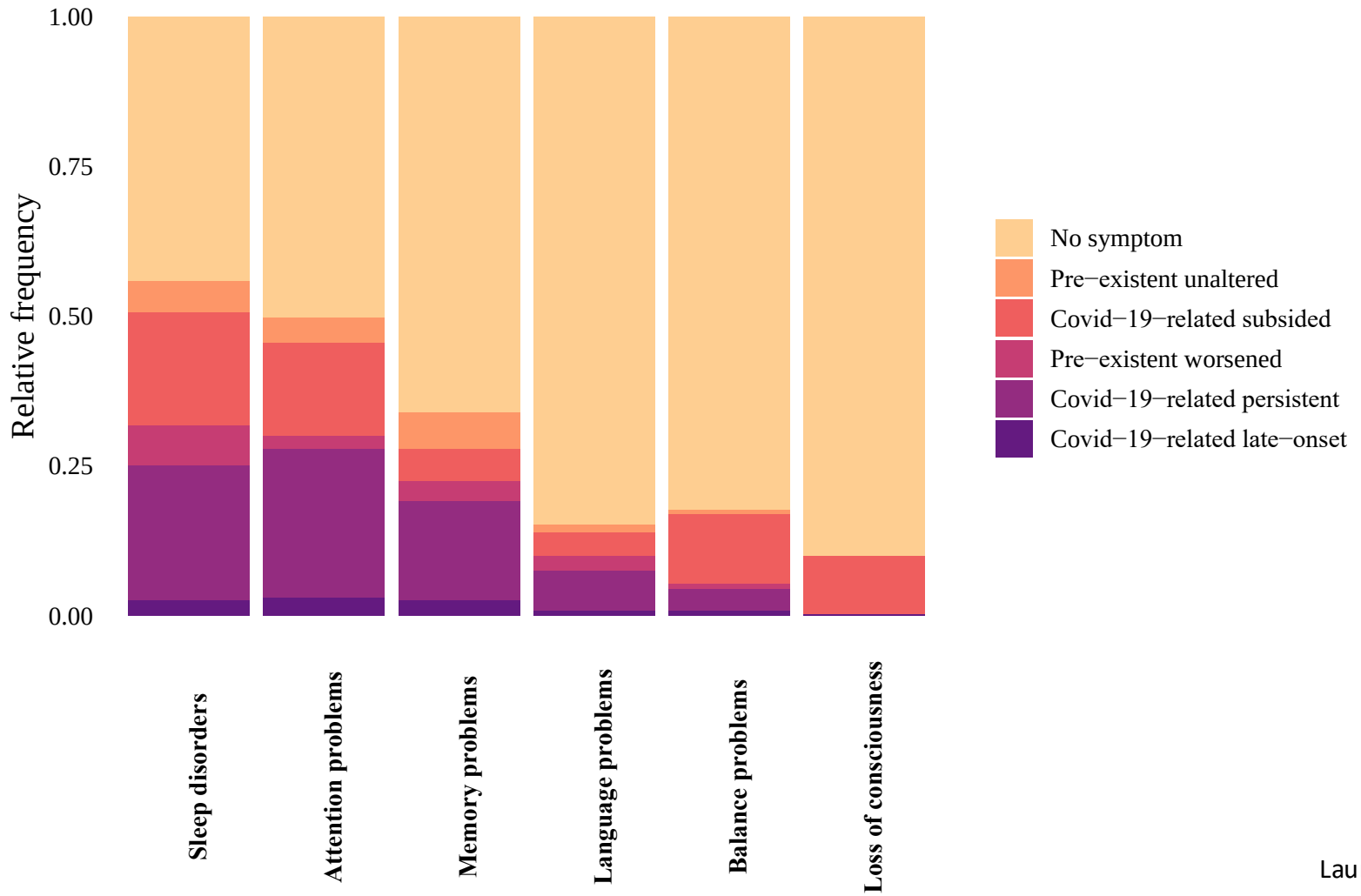
Qualità della vita



Tosato et al in press

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Disturbi neurologici

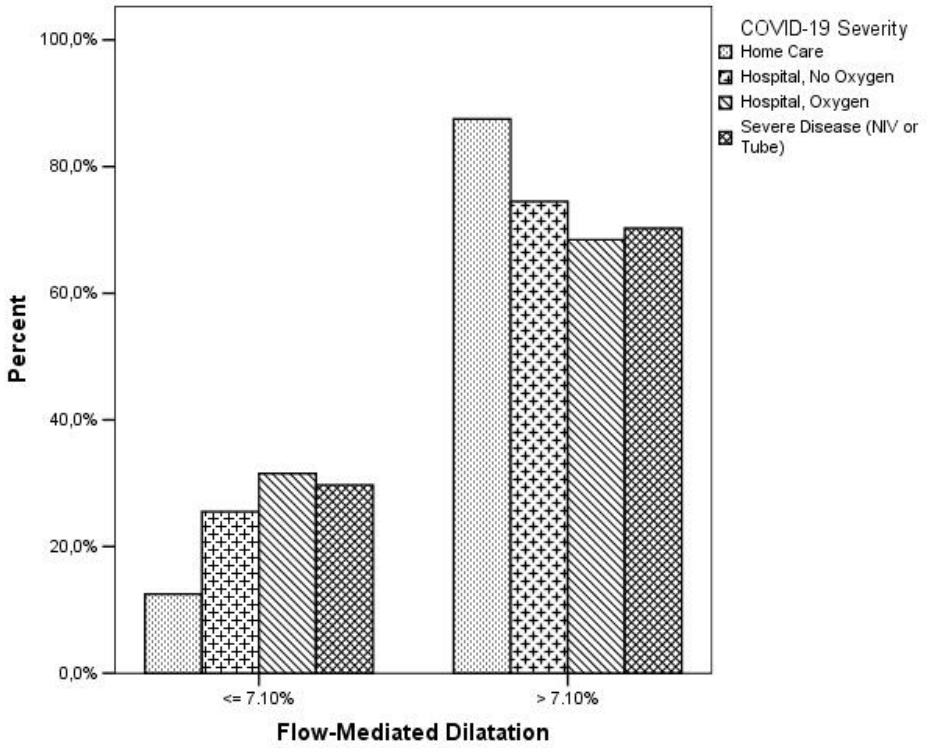


Lauria A et al Clin Ger Med 2022

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Disfunzione endoteliale

Journal of *Clinical Medicine*



Article

Impaired Endothelial Function in Convalescent Phase of COVID-19: A 3 Month Follow Up Observational Prospective Study

Luca Santoro [1,†], Lorenzo Falsetti [2,†], Vincenzo Zaccone [2,*], Antonio Nesci [1], Matteo Tosato [3], Bianca Giupponi [4], Maria Cristina Savastano [5], Gianluca Moroncini [6], Antonio Gasbarrini [7,8], Francesco Landi [3,8], Angelo Santoliquido [1,8] and on behalf of Gemelli against COVID-19 Post-Acute Care Study Group [‡]

Table 5. Multinomial regression analysis (reference category: not hospitalized).

Severity		*p*	OR	95% CI	
				Lower	Upper
Hospital, no oxygen	FMD $\leq$ 7.10%	0.005	2.39	1.29	4.42
Hospital, oxygen	FMD $\leq$ 7.10%	0.0001	3.22	1.88	5.51
Hospital, NIV, or ICU	FMD $\leq$ 7.10%	0.0009	2.96	1.55	5.65

Legend: CI = confidence interval; FMD = flow-mediated dilation; NIV = non-invasive ventilation; OR= odds ratio.

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Long-term cardiovascular outcomes of COVID-19

Yan Xie[1,2,3], Evan Xu[1,4], Benjamin Bowe[1,2] and Ziyad Al-Aly[1,2,5,6,7] ✉

nature medicine

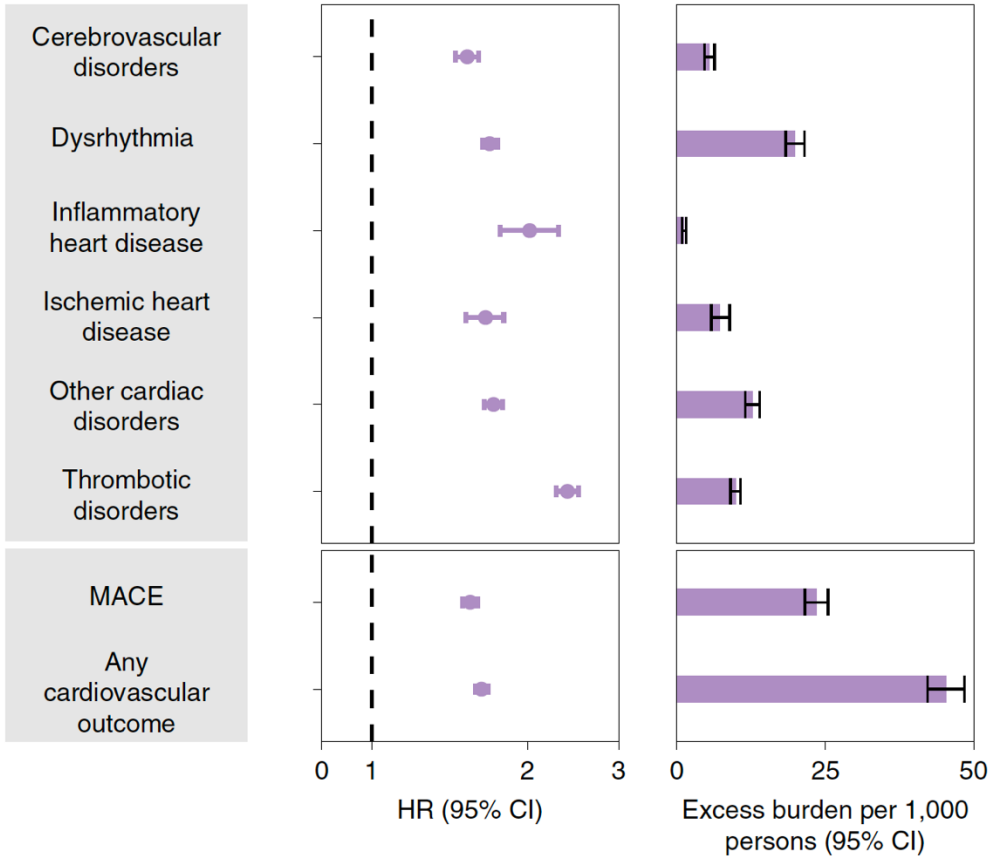


Fig. 3 | Risks and 12-month burdens of incident post-acute COVID-19 composite cardiovascular outcomes compared with the contemporary control cohort. Composite outcomes consisted of cerebrovascular

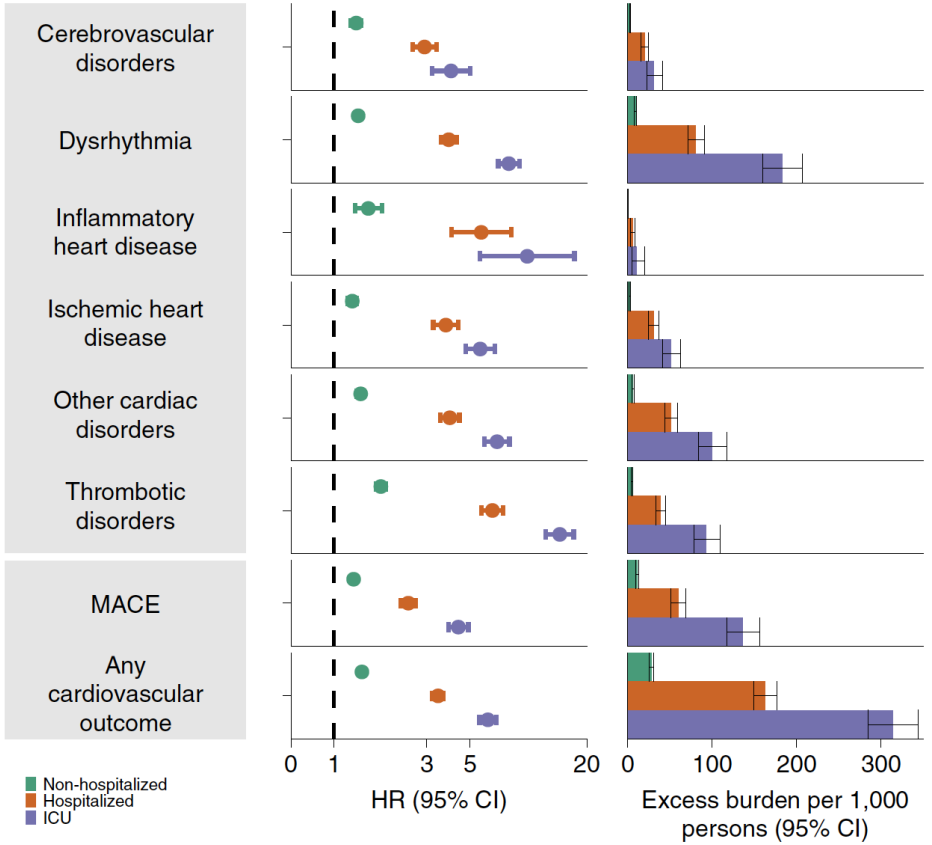


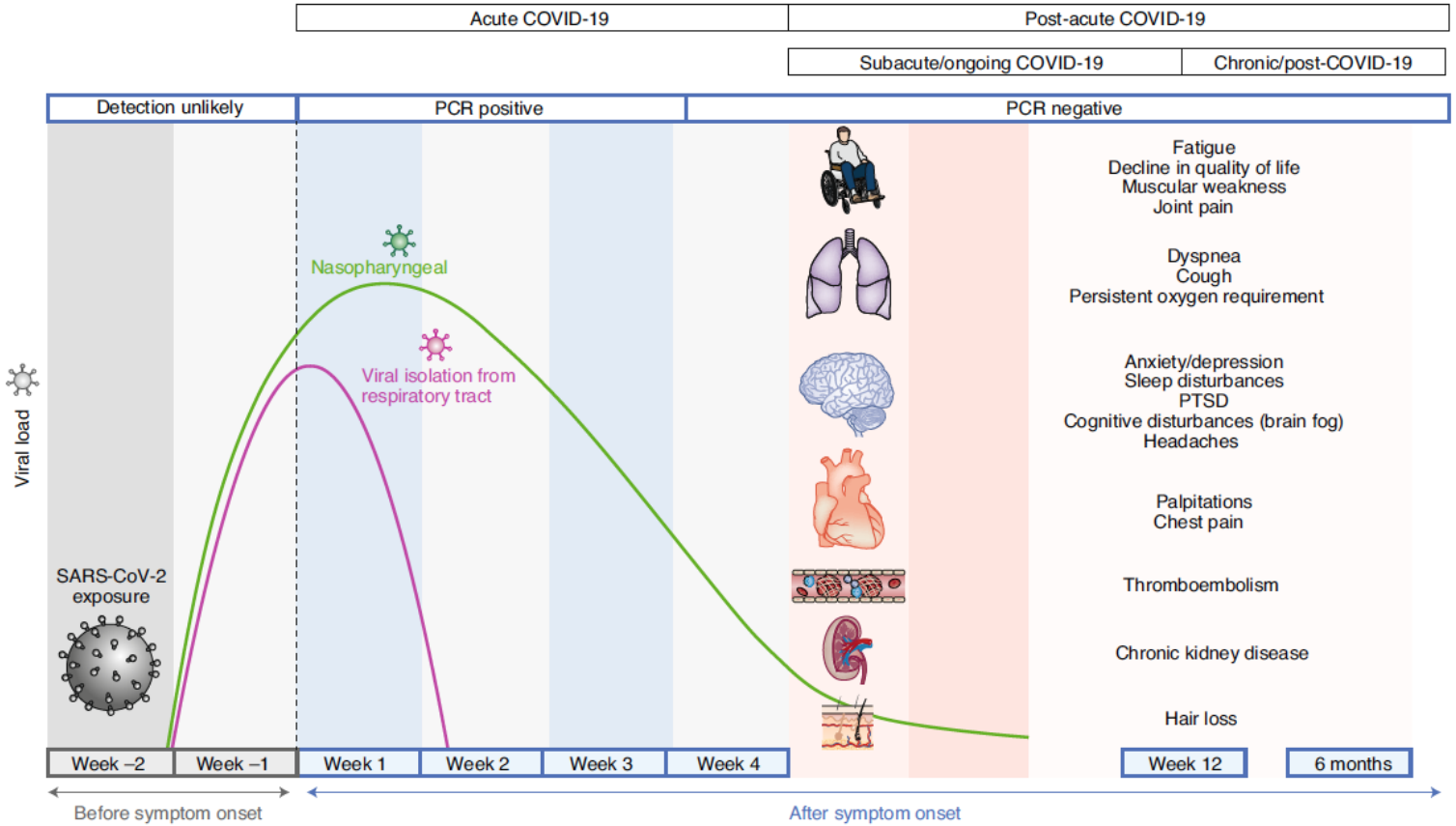
Fig. 6 | Risks and 12-month burdens of incident post-acute COVID-19 composite cardiovascular outcomes compared with the contemporary control cohort by care setting of the acute infection. Risks and burdens

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Post-acute COVID-19 syndrome

Ani Nalbandian[1,24], Kartik Sehgal[2,3,4,24] ✉, Aakriti Gupta[1,5,6], Mahesh V. Madhavan[1,5], Claire McGroder[7], Jacob S. Stevens[8], Joshua R. Cook[9], Anna S. Nordvig[10], Daniel Shalev[11],

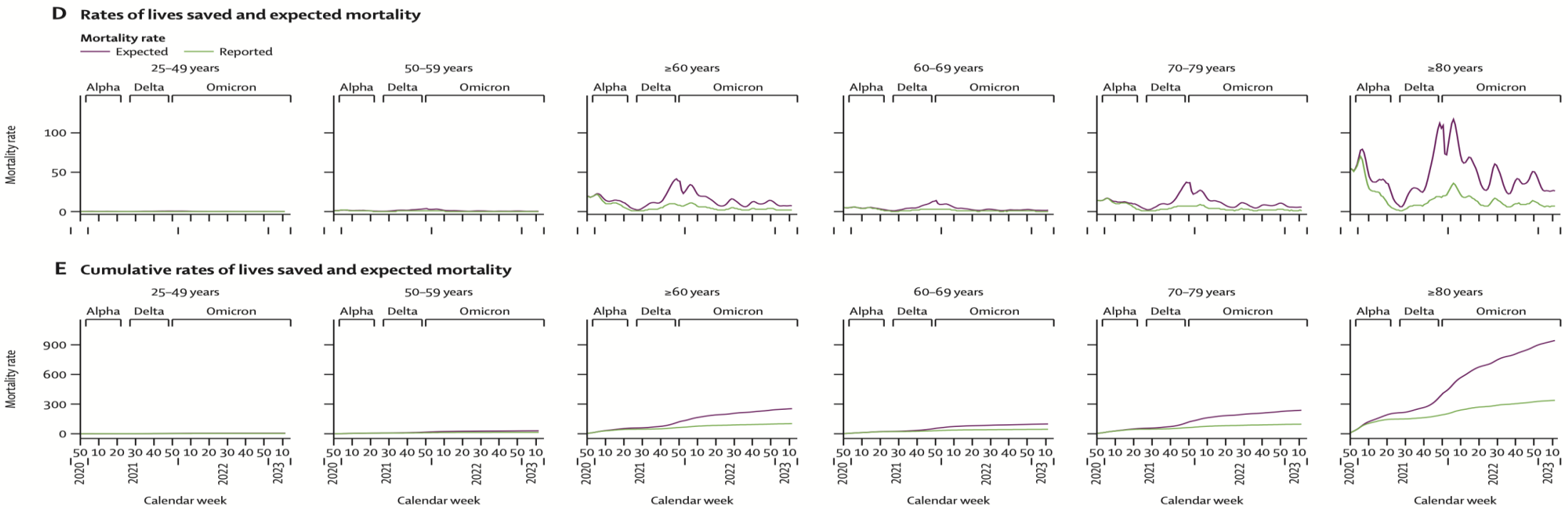
nature medicine



- Danno d'organo diretto o mediato
- Stato infiammatorio
- Alterazioni immunologiche
- Alterazioni del microcircolo
- Disfunzione endoteliale
- Trombosi

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

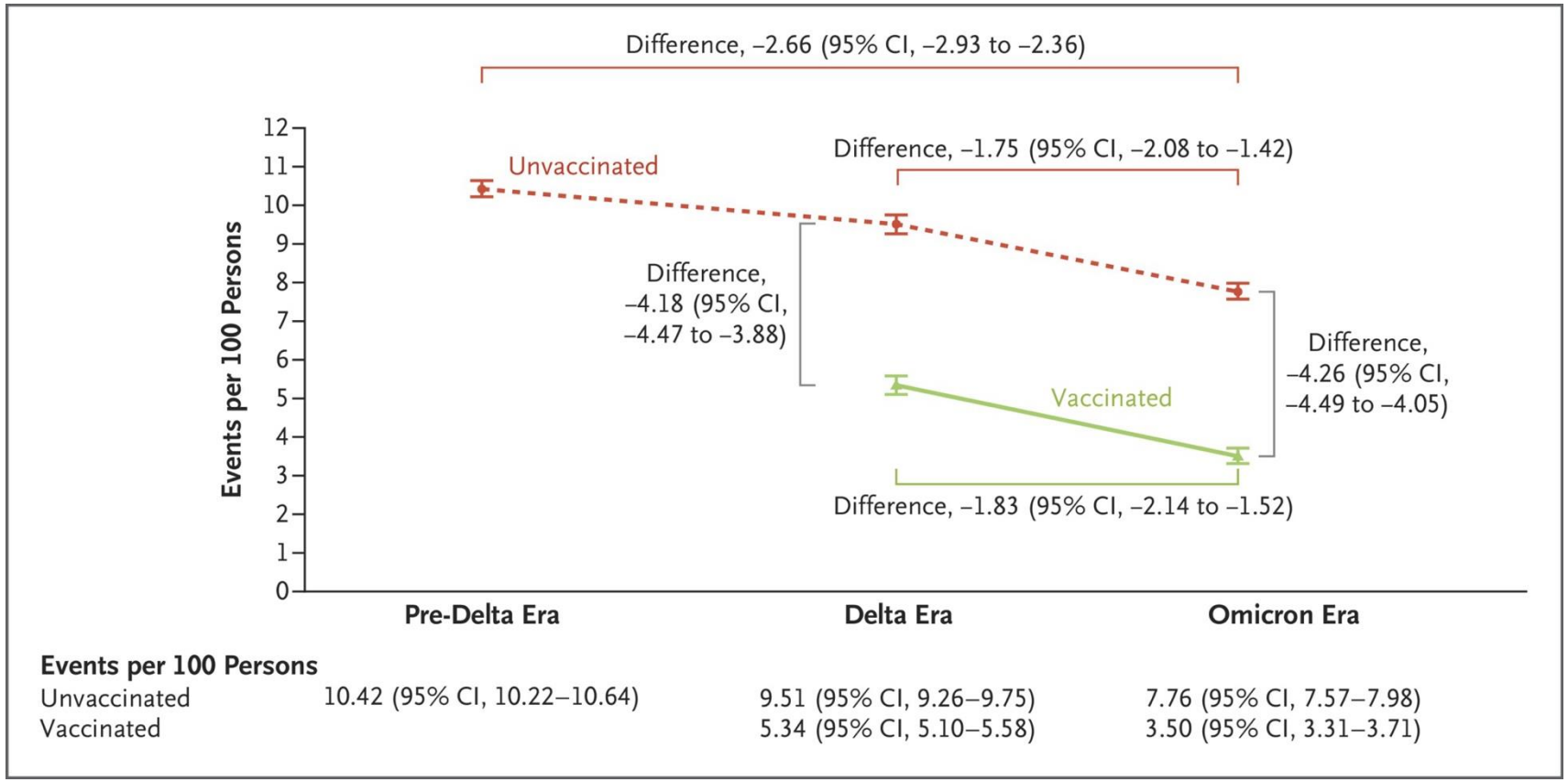
Estimated number of lives directly saved by COVID-19 vaccination programmes in the WHO European Region from December, 2020, to March, 2023: a retrospective surveillance study



Meslè M. et al The Lancet Respiratory medicine 2024

Postacute Sequelae of SARS-CoV-2 Infection in the Pre-Delta, Delta, and Omicron Eras

Cumulative Incidence of Postacute Sequelae of SARS-CoV-2 Infection (PASC) in the Pre-Delta, Delta, and Omicron Eras According to Vaccination Status.



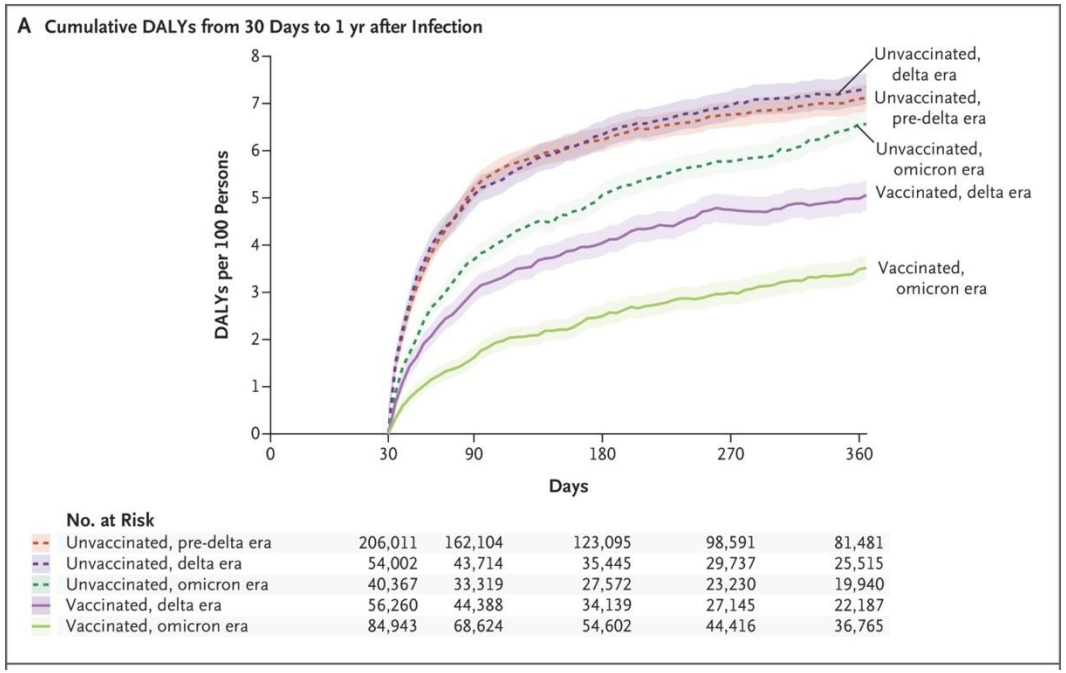
Events per 100 Persons	Pre-Delta Era	Delta Era	Omicron Era
Unvaccinated	10.42 (95% CI, 10.22–10.64)	9.51 (95% CI, 9.26–9.75)	7.76 (95% CI, 7.57–7.98)
Vaccinated		5.34 (95% CI, 5.10–5.58)	3.50 (95% CI, 3.31–3.71)

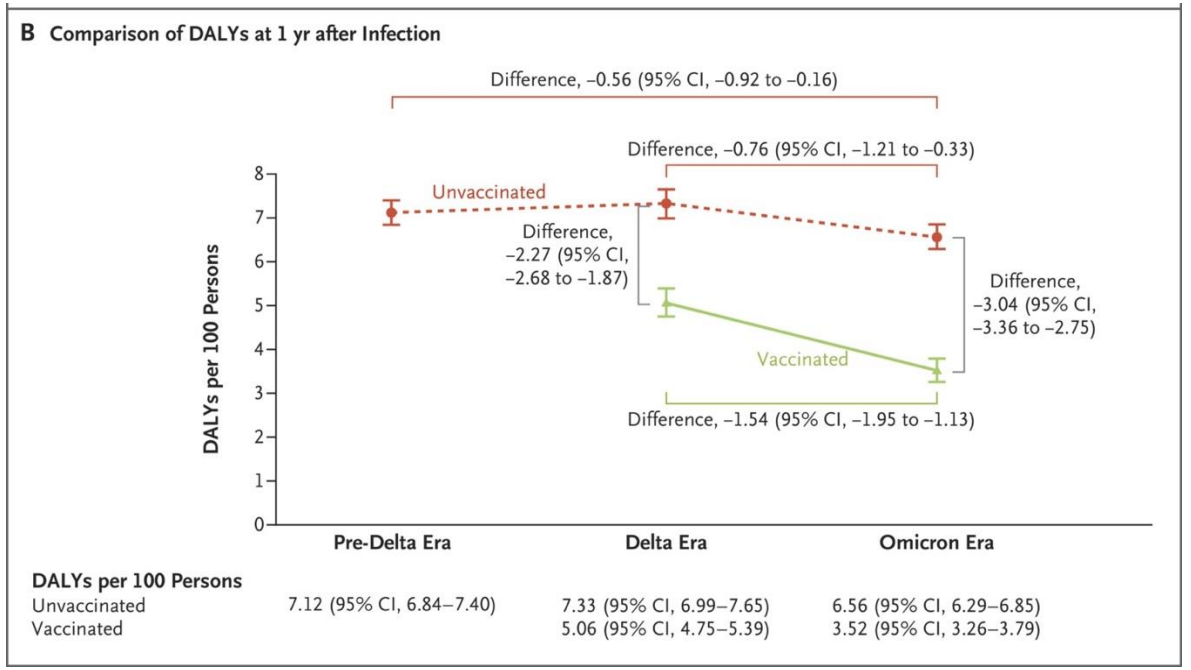
Xie Y et al. N Engl J Med2024;391:515-525

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Postacute Sequelae of SARS-CoV-2 Infection in the Pre-Delta, Delta, and Omicron Eras

Disability-Adjusted Life-Years Due to PASC in the Pre-Delta, Delta, and Omicron Eras According to Vaccination Status.





Xie Y et al. N Engl J Med2024;391:515-525

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

The effectiveness of COVID-19 vaccines to prevent long COVID symptoms: staggered cohort study of data from the UK, Spain, and Estonia

The Lancet Respiratory Medicine
Volume 12, Issue 3, March 2024, Pages 225-236

Martí Català, Núria Mercadé-Besora, Raivo Kolde, Nhung T H Trinh, Elena Roel, Edward Burn, Trishna Rathod-Mistry, Kristin Kostka, Wai Yi Man, Antonella Delmestri, Hedvig M E Nordeng, Anneli Uusküla, Talita Duarte-Salles, Daniel Prieto-Alhambra, Annika M Jödicke**

Discussion

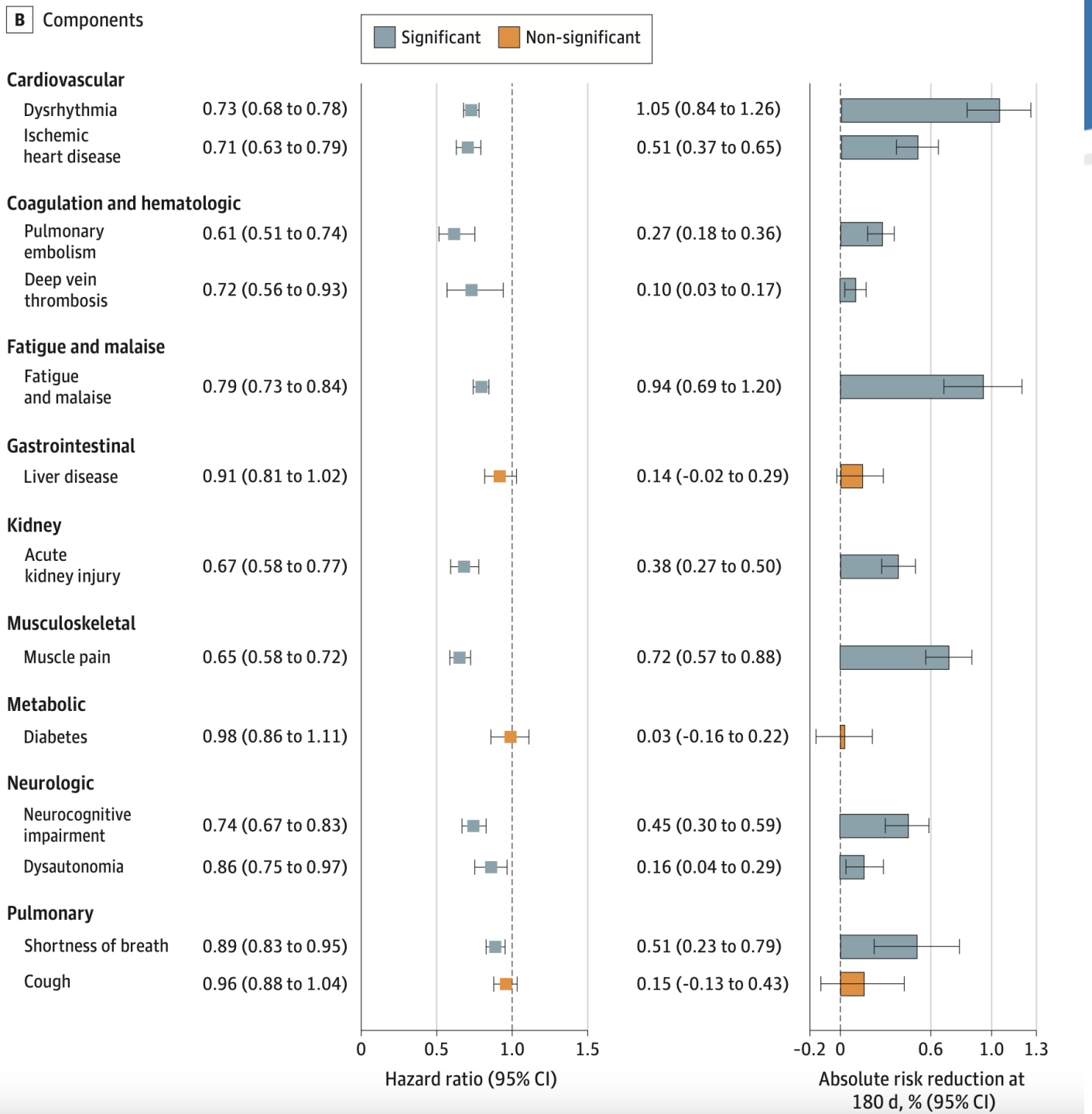
Our analyses of more than 20 million vaccinated and unvaccinated people show the clinical effectiveness of COVID-19 vaccines to prevent the development of long COVID in three European countries (the UK, Estonia, and Spain), with overall vaccine effectiveness ranging from 29% to 52%.

ITALIA
PER L'INVECCHIAME

JAMA Internal Medicine | Origir

Association of Treat
and the Risk of Post-

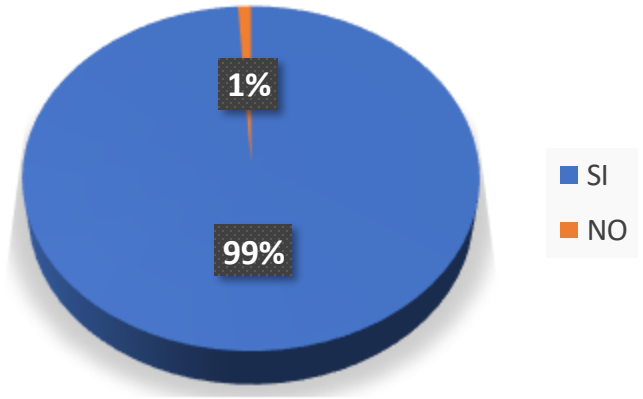
Yan Xie, PhD; Taeyoung Choi, MPH; Ziyac



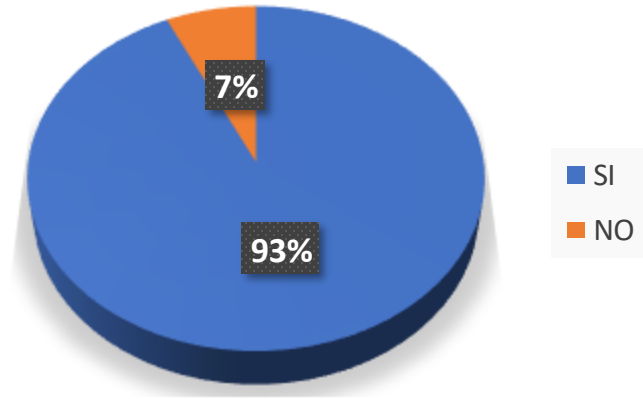
2023

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

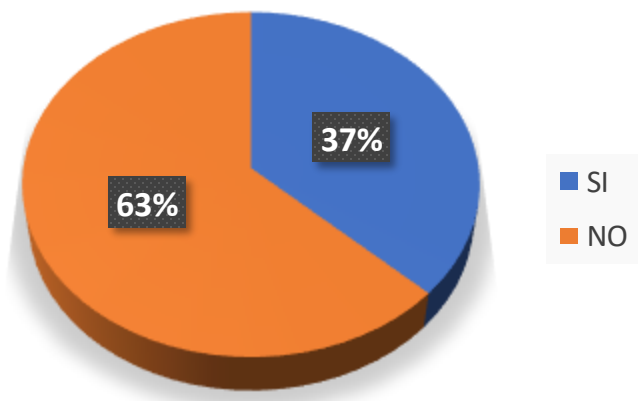
Conosci il vaccino



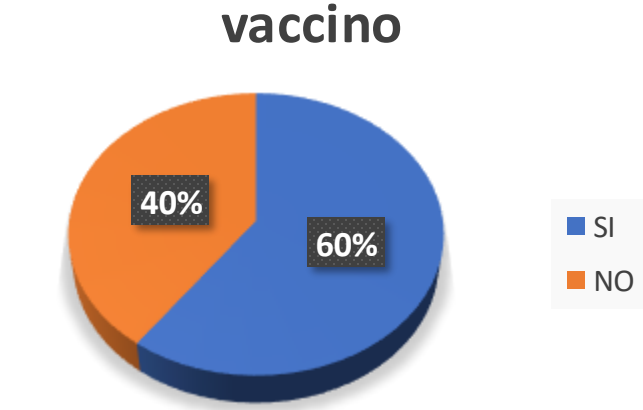
Hai fatto i il vaccino



Faresti il vaccino



Consiglieresti il vaccino



Uso degli antivirali per COVID-19

In Italia sono stati finora autorizzati due **antivirali** per il trattamento della malattia da coronavirus 2019 (COVID-19) negli adulti che non necessitano di ossigenoterapia supplementare e che presentano un elevato rischio di sviluppare una forma severa di COVID-19:

- **Veklury** (**remdesivir**) dell'Azienda Gilead Sciences, a somministrazione endovenosa;
- **Paxlovid** (**nirmatrelvir/ritonavir**) dell'Azienda Pfizer Europe MA EEIG, a somministrazione orale

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

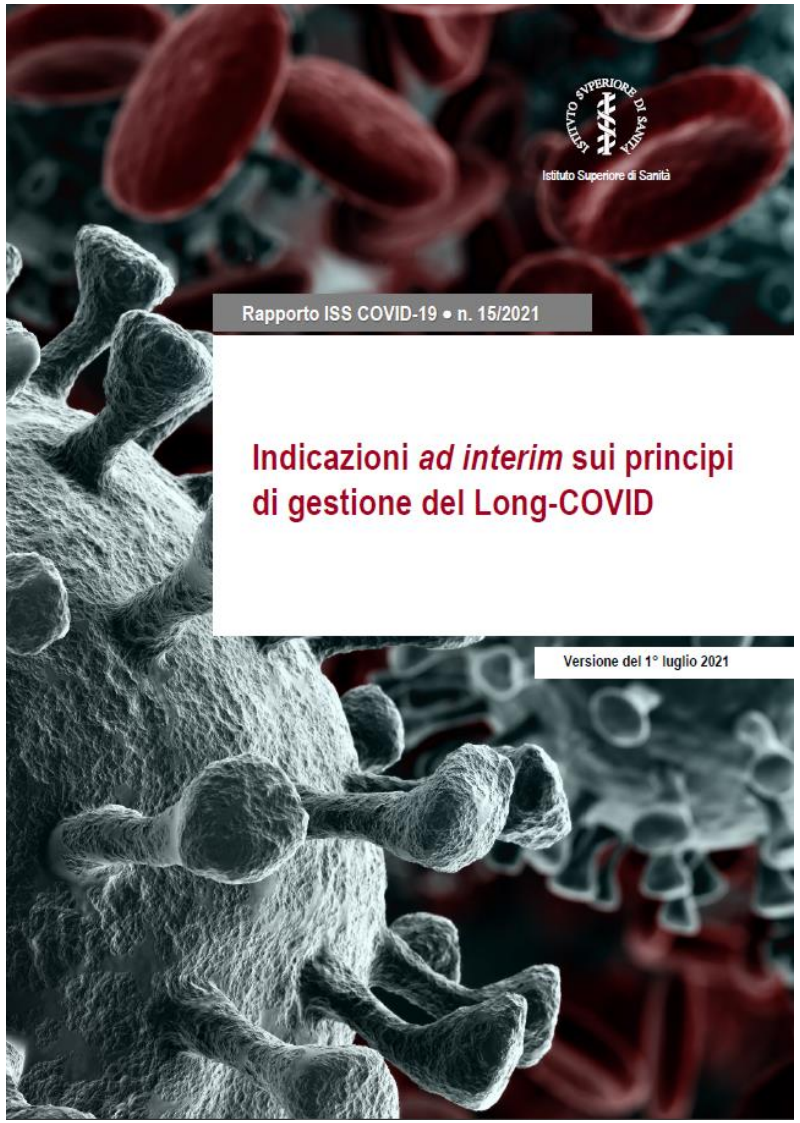
Comunicato n. 692 20 aprile 2022

AIFA
AGENZIA ITALIANA DEL FARMACO

Prescrizione di Paxlovid al Medico di medicina generale

A partire dal 21 aprile, anche i Medici di medicina generale possono prescrivere il farmaco antivirale Paxlovid (a base di nirmatrelvir/ritonavir) per il trattamento precoce della malattia da coronavirus 2019 (COVID-19). Paxlovid è indicato per il trattamento di pazienti adulti che non necessitano di ossigenoterapia supplementare e che sono ad elevato rischio di progressione a COVID-19 severa, come ad esempio i pazienti affetti da patologie oncologiche, malattie cardiovascolari, diabete mellito non compensato, broncopneumopatia cronica e obesità grave. La decisione diventa esecutiva con la pubblicazione della Determinazione AIFA nella Gazzetta ufficiale del 20 aprile.

Il trattamento deve essere iniziato il più precocemente possibile, e comunque entro 5 giorni dall'insorgenza dei sintomi. La prescrizione del farmaco richiede un'anamnesi farmacologica preventiva, per escludere la presenza di eventuali interazioni con farmaci assunti contemporaneamente dal paziente. Sul sito dell'AIFA (https://www.aifa.gov.it/uso-degli-antivirali-orali-per-covid-19) sono disponibili il Riassunto delle Caratteristiche del Prodotto e il link ai principali siti web per la verifica delle interazioni farmacologiche.



- **Malattia COVID-19 sintomatica persistente**
  segni e sintomi attribuibili al COVID-19 di durata compresa tra 4 e 12 settimane dopo l'evento acuto;
- **Sindrome post-COVID-19**
  segni e sintomi che si sono sviluppati durante o dopo un'infezione compatibile con il COVID-19, presenti per più di 12 settimane dopo l'evento acuto e non spiegabili con diagnosi alternative.

Il Long-COVID comprende sia la forma sintomatica persistente che la sindrome post-COVID. Questa condizione è quindi caratterizzata da segni e sintomi causati dall'infezione da SARS-CoV-2 che continuano o si sviluppano dopo 4 settimane da una infezione acuta. L'utilizzo di terminologie condivise fornisce le basi per la programmazione dei servizi, facilita l'assistenza e permette di definire un set di dati clinici necessari al monitoraggio e alla ricerca.

1.5. Diagnosi

La diagnosi di Long-COVID è prettamente clinica e si basa su una storia di COVID-19 e un mancato recupero completo con lo sviluppo di alcuni dei sintomi elencati nella Tabella 1. Sebbene la storia di positività del tampone molecolare o antigenico e il test anticorpale per COVID-19 siano utili, questi non sono un prerequisito per la diagnosi. Questo perché la disponibilità di test è stata molto limitata nelle prime fasi della pandemia (marzo e aprile 2020) e poiché il titolo anticorpale tende a diminuire a distanza di mesi dall'insorgenza della malattia (55).

Inoltre il Long-COVID va distinto dalla sindrome post-terapia intensiva (*Post-Intensive Care Syndrome*, PICS), che è caratterizzata da funzionalità polmonare compromessa, debolezza neuromuscolare, disturbi psicologici a lungo termine e ridotta qualità della vita (56). Questa condizione è comune tra le persone con infezioni acute gravi che hanno trascorso molto tempo in terapia intensiva (57) e può coesistere, in alcuni casi, con il Long-COVID.

Alcuni sintomi del Long-COVID sembrano simili a quelli della sindrome da fatica cronica, tuttavia, rispetto a questa ultima condizione, il Long-COVID sembra manifestarsi con uno spettro più ampio di sintomi.

Purtroppo, ad oggi, al di là della definizione riportata al paragrafo 1.1, mancano chiari criteri, condivisi internazionalmente, per definire il Long-COVID. Questo inevitabilmente crea una incertezza nella diagnosi e una ampia variabilità nell'identificazione di questa condizione.

Uso degli antivirali per COVID-19

In Italia sono stati finora autorizzati due **antivirali** per il trattamento della malattia da coronavirus 2019 (COVID-19) negli adulti che non necessitano di ossigenoterapia supplementare e che presentano un elevato rischio di sviluppare una forma severa di COVID-19:

- **Veklury** (**remdesivir**) dell'Azienda Gilead Sciences, a somministrazione endovenosa;
- **Paxlovid** (**nirmatrelvir/ritonavir**) dell'Azienda Pfizer Europe MA EEIG, a somministrazione orale

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

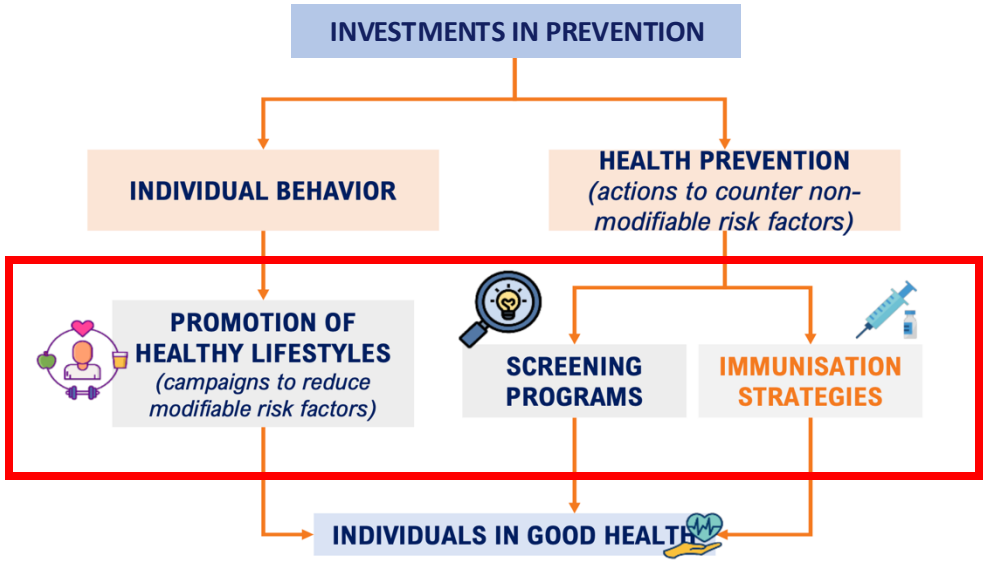
Comunicato n. 692 20 aprile 2022

AIFA
AGENZIA ITALIANA DEL FARMACO

Prescrizione di Paxlovid al Medico di medicina generale

A partire dal 21 aprile, anche i Medici di medicina generale possono prescrivere il farmaco antivirale Paxlovid (a base di nirmatrelvir/ritonavir) per il trattamento precoce della malattia da coronavirus 2019 (COVID-19). Paxlovid è indicato per il trattamento di pazienti adulti che non necessitano di ossigenoterapia supplementare e che sono ad elevato rischio di progressione a COVID-19 severa, come ad esempio i pazienti affetti da patologie oncologiche, malattie cardiovascolari, diabete mellito non compensato, broncopneumopatia cronica e obesità grave. La decisione diventa esecutiva con la pubblicazione della Determinazione AIFA nella Gazzetta ufficiale del 20 aprile.

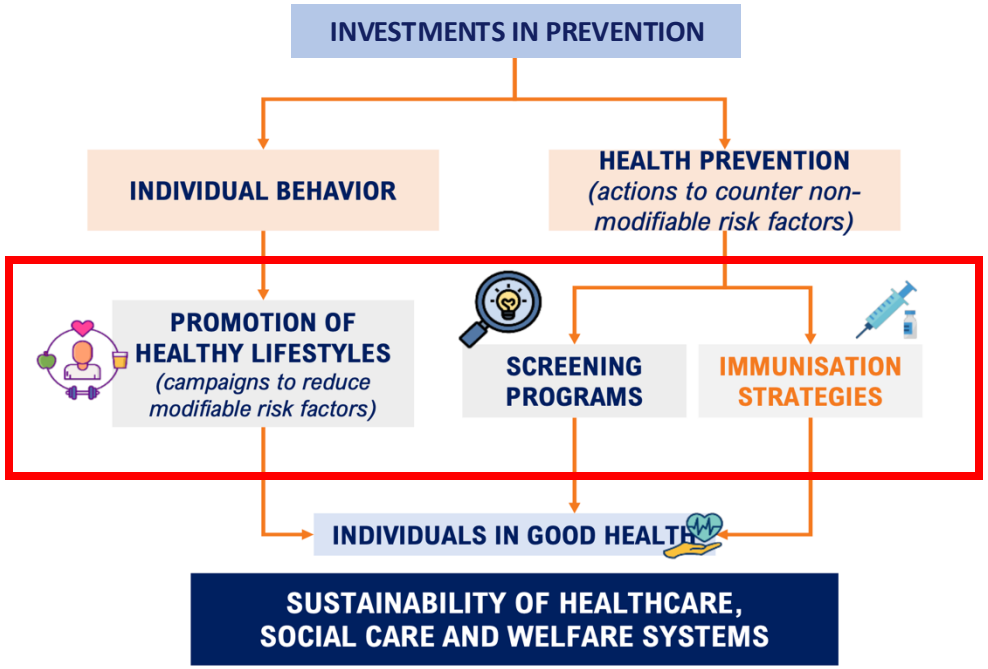
Il trattamento deve essere iniziato il più precocemente possibile, e comunque entro 5 giorni dall'insorgenza dei sintomi. La prescrizione del farmaco richiede un'anamnesi farmacologica preventiva, per escludere la presenza di eventuali interazioni con farmaci assunti contemporaneamente dal paziente. Sul sito dell'AIFA (https://www.aifa.gov.it/uso-degli-antivirali-orali-per-covid-19) sono disponibili il Riassunto delle Caratteristiche del Prodotto e il link ai principali siti web per la verifica delle interazioni farmacologiche.



"**The Value of Prevention for Economic Growth and the Sustainability of Healthcare, Social, and Welfare Systems**" realized by The European House - Ambrosetti in collaboration with **Vaccines Europe** and **IFPMA**

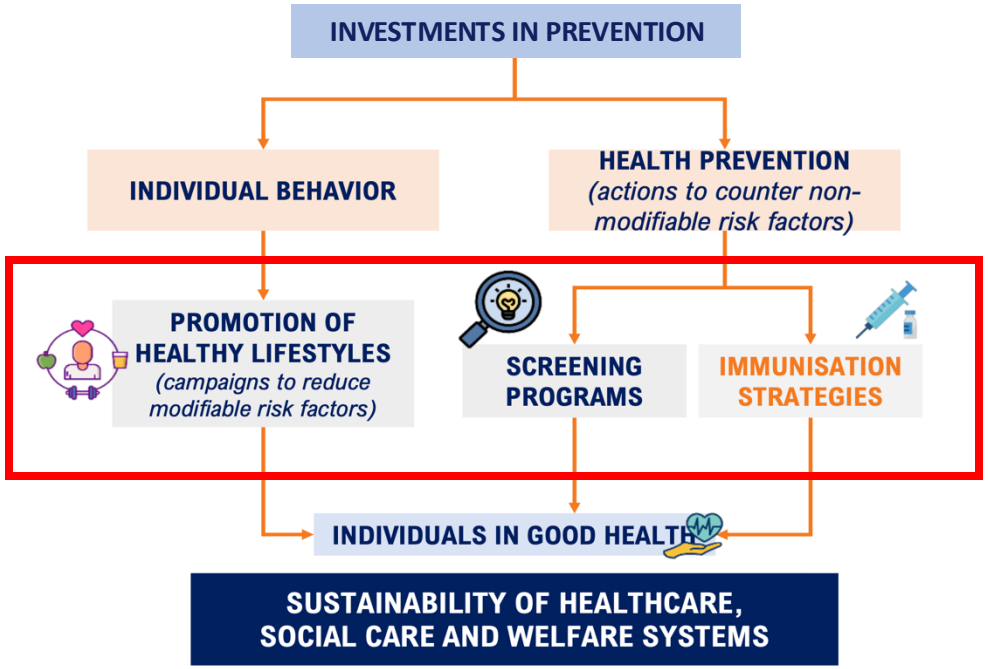
Studies suggest that **every 1 euro spent on preventative healthcare** generates a **14 euro return to the health and social care economy.**

TEHA on Masters, Rebecca, et al.
"Return on investment of public health interventions: a systematic review." J Epidemiol
Community Health 71.8 (2017) data, 2024



"**The Value of Prevention for Economic Growth and the Sustainability of Healthcare, Social, and Welfare Systems**" realized by The European House - Ambrosetti in collaboration with **Vaccines Europe** and **IFPMA**

G7 ITALIA 2024



Studies suggest that **every 1 euro spent on preventative healthcare** generates a **14 euro return to the health and social care economy.**

TEHA on Masters, Rebecca, et al. "Return on investment of public health interventions: a systematic review." J Epidemiol Community Health 71.8 (2017) data, 2024

Studies suggest that **every 1 euro spent on adult vaccination** generates a **19 euro return to the health and social care economy***

TEHA on Steuten, H. E. B. et al. (2024), «Socio-Economic Value of Adult Immunisation Programmes» , 2024

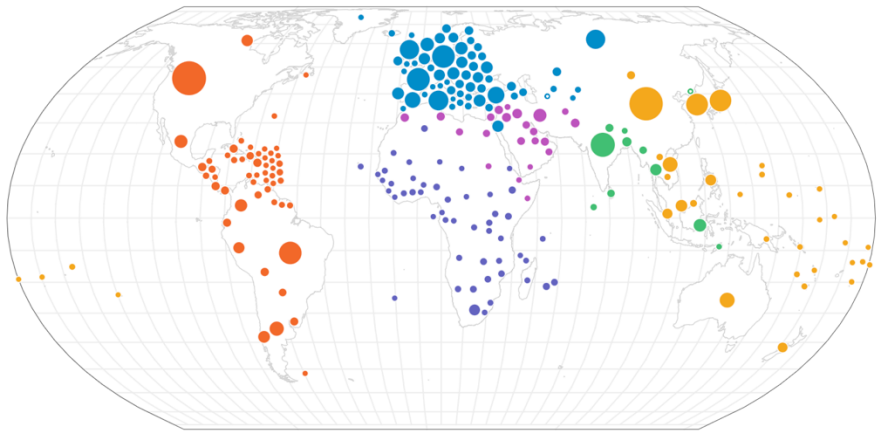
"**The Value of Prevention for Economic Growth and the Sustainability of Healthcare, Social, and Welfare Systems**" realized by The European House - Ambrosetti in collaboration with **Vaccines Europe** and **IFPMA**

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Efficacy and safety of Paxlovid in severe adult patients with SARS-Cov-2 infection: a multicenter randomized controlled study

Number of COVID-19 cases reported to WHO (cumulative total)

World



776,798,873 +44,558
increase on previous 7 days

Reported COVID-19 cases

World, 7 days to 3 November 2024

Number of COVID-19 cases reported to WHO (cumulative total)

World

Country	Cases
World	**777m**
United States of America	103m
China	99.4m
Show 229 more	
Pitcairn	4
Democratic People's Republic of Korea	0
Turkmenistan	0

Source: World Health Organization

Most recent data submission date: 3rd novembre 2024

Original Article

Postacute Sequelae of SARS-CoV-2 Infection in the Pre-Delta, Delta, and Omicron Eras

Yan Xie, Ph.D., Taeyoung Choi, M.S., and Ziyad Al-Aly, M.D.

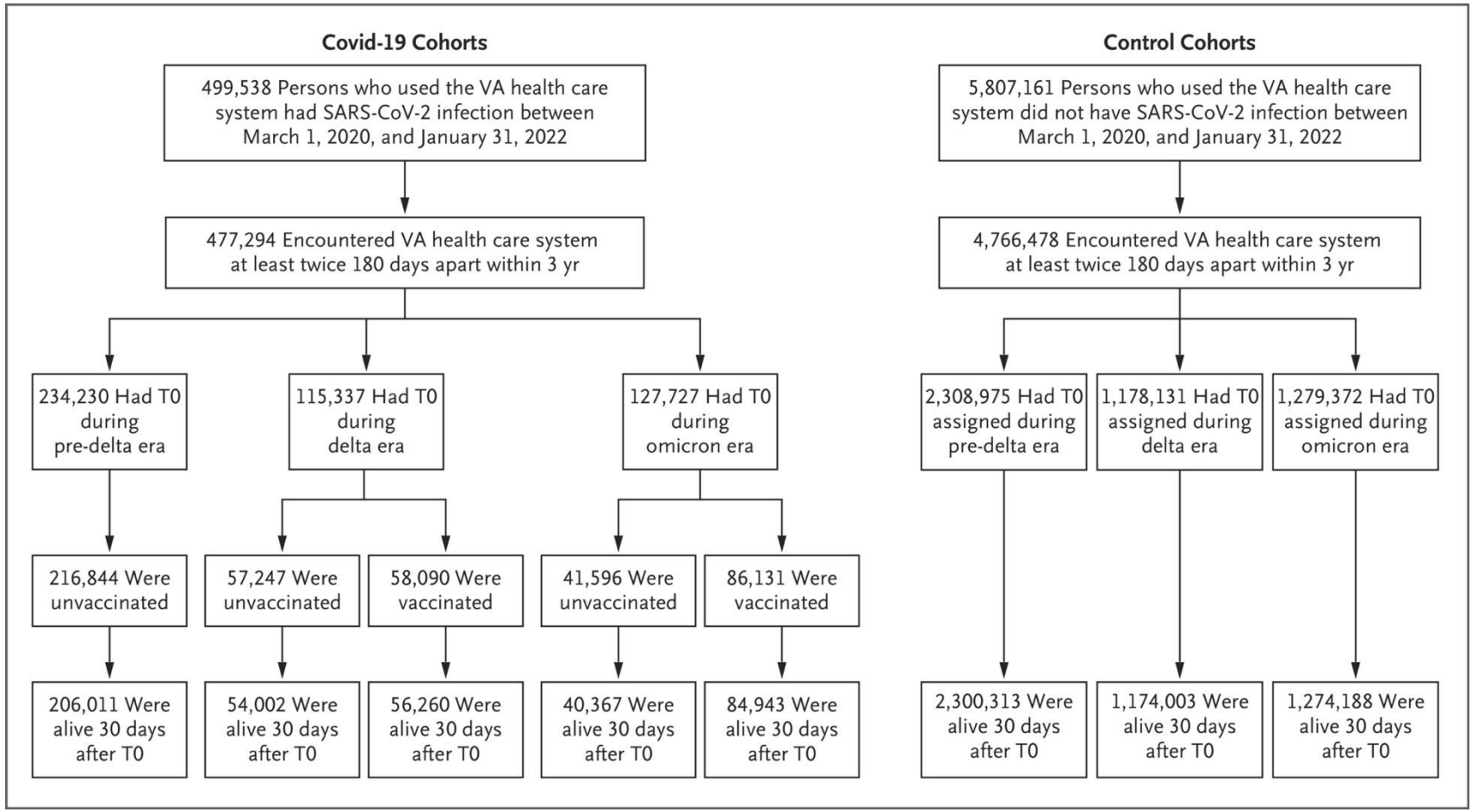
N Engl J Med
Volume 391(6):515-525
August 8, 2024

The NEW ENGLAND JOURNAL of MEDICINE

- SARS-CoV-2 infection leads to postacute sequelae in many organ systems.
- In this study, the risk of postacute sequelae decreased over time but remained substantial even among vaccinated persons infected in the omicron era.

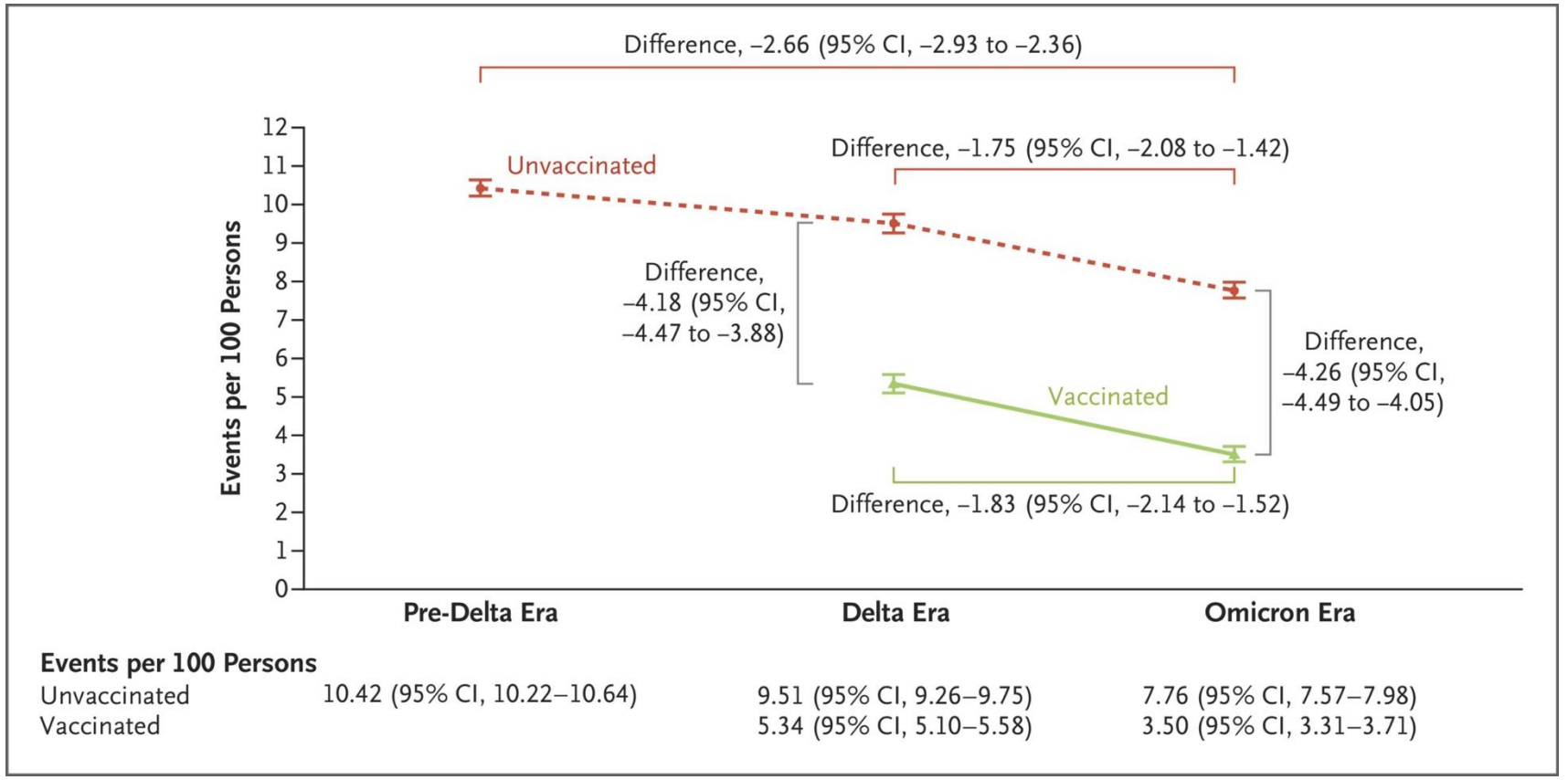
The NEW ENGLAND JOURNAL of MEDICINE

Study Cohorts.



Xie Y et al. N Engl J Med2024;391:515-525

Cumulative Incidence of Postacute Sequelae of SARS-CoV-2 Infection (PASC) in the Pre-Delta, Delta, and Omicron Eras According to Vaccination Status.

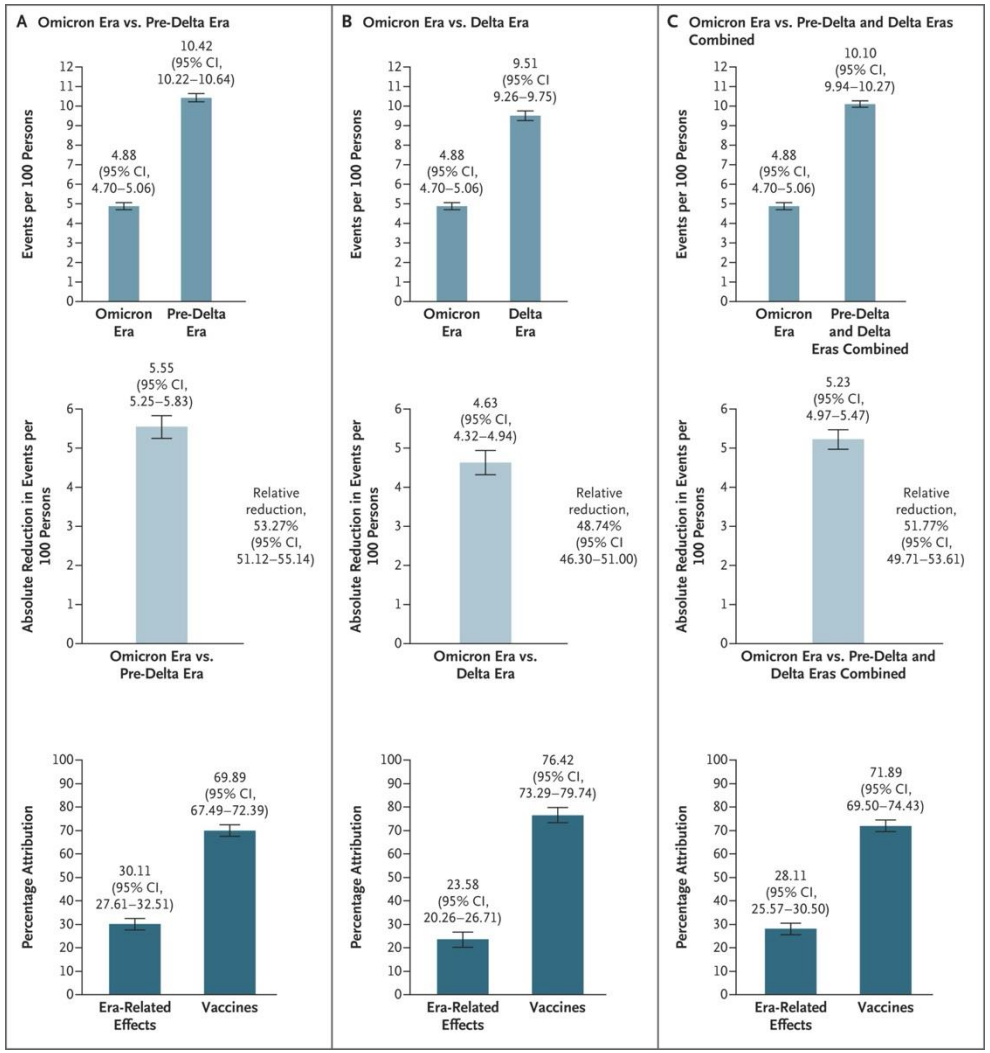


Events per 100 Persons	Pre-Delta Era	Delta Era	Omicron Era
Unvaccinated	10.42 (95% CI, 10.22–10.64)	9.51 (95% CI, 9.26–9.75)	7.76 (95% CI, 7.57–7.98)
Vaccinated		5.34 (95% CI, 5.10–5.58)	3.50 (95% CI, 3.31–3.71)

Xie Y et al. N Engl J Med2024;391:515-525

The NEW ENGLAND JOURNAL of MEDICINE

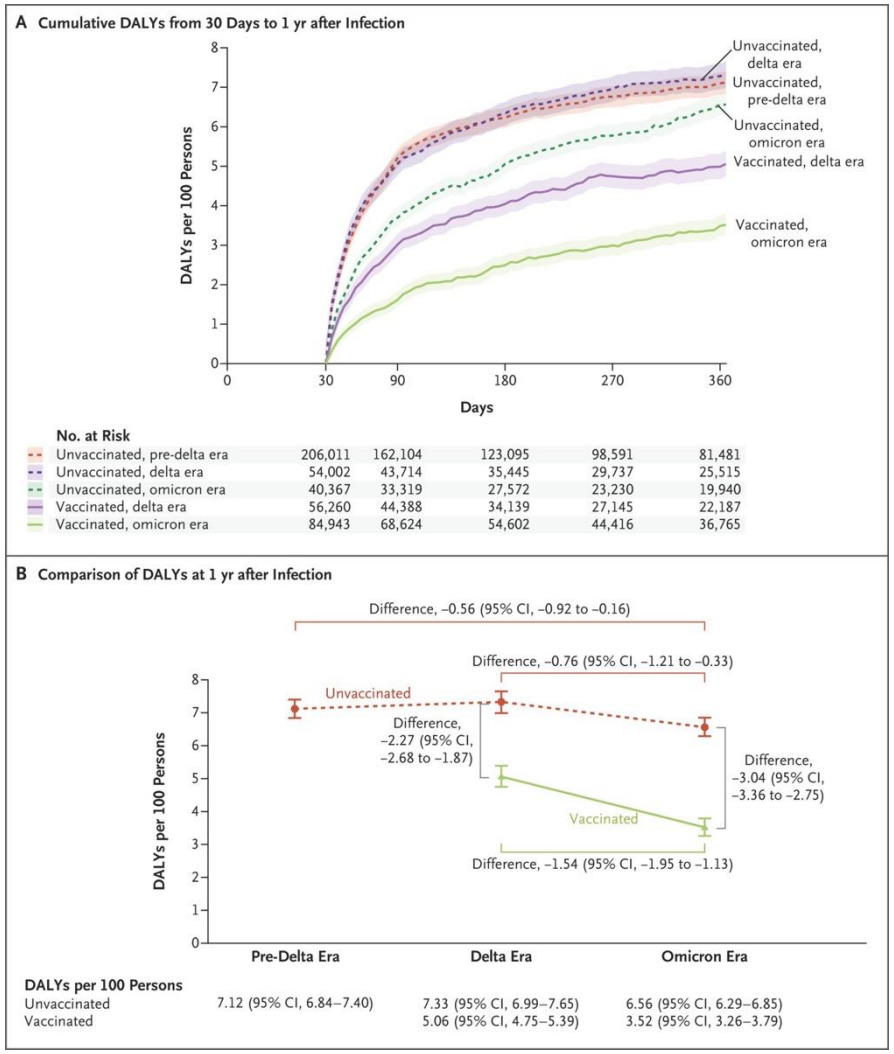
Decomposition Analyses of the Influence of Pandemic Era and Vaccines on PASC.



Xie Y et al. N Engl J Med2024;391:515-525

The NEW ENGLAND JOURNAL of MEDICINE

Disability-Adjusted Life-Years Due to PASC in the Pre-Delta, Delta, and Omicron Eras According to Vaccination Status.



Xie Y et al. N Engl J Med2024;391:515-525

The NEW ENGLAND JOURNAL of MEDICINE

Incidence of Postacute Sequelae of Severe Acute Respiratory Syndrome Coronavirus 2 Infection (PASC) According to Disease Category, Vaccination Status, and Pandemic Era.

Table 1. Incidence of Postacute Sequelae of Severe Acute Respiratory Syndrome Coronavirus 2 Infection (PASC) According to Disease Category, Vaccination Status, and Pandemic Era.*

Disease Category	Unvaccinated: Omicron Era vs. Pre-Delta and Delta Eras Combined		Vaccinated: Omicron Era vs. Delta Era	
	Difference in Cumulative Incidence (95% CI) *events per 100 persons at 1 yr*	Incidence Rate Ratio (95% CI)	Difference in Cumulative Incidence (95% CI) *events per 100 persons at 1 yr*	Incidence Rate Ratio (95% CI)
Cardiovascular	−0.46 (−0.61 to −0.30)	0.80 (0.75 to 0.87)	−0.48 (−0.65 to −0.30)	0.67 (0.58 to 0.78)
Coagulation and hematologic	−0.01 (−0.13 to 0.12)	1.00 (0.94 to 1.06)	−0.57 (−0.72 to −0.42)	0.63 (0.56 to 0.71)
Fatigue	−0.29 (−0.37 to −0.19)	0.85 (0.81 to 0.90)	0.02 (−0.08 to 0.12)	1.03 (0.90 to 1.17)
Gastrointestinal	0.39 (0.23 to 0.56)	1.14 (1.08 to 1.21)	0.08 (−0.11 to 0.27)	1.04 (0.94 to 1.16)
Kidney	−0.17 (−0.31 to −0.03)	0.78 (0.63 to 0.96)	−0.17 (−0.33 to 0.00)	0.67 (0.44 to 1.00)
Mental health	−0.75 (−0.91 to −0.58)	0.77 (0.73 to 0.82)	−0.50 (−0.69 to −0.30)	0.81 (0.75 to 0.88)
Metabolic	0.19 (0.06 to 0.32)	1.14 (1.05 to 1.25)	−0.30 (−0.45 to −0.15)	0.66 (0.53 to 0.81)
Musculoskeletal	0.13 (0.01 to 0.26)	1.08 (1.00 to 1.17)	−0.04 (−0.19 to 0.11)	0.97 (0.88 to 1.08)
Neurologic	−0.37 (−0.53 to −0.20)	0.88 (0.83 to 0.93)	−0.31 (−0.49 to −0.12)	0.79 (0.68 to 0.91)
Pulmonary	−1.15 (−1.27 to −1.03)	0.74 (0.72 to 0.77)	−0.88 (−1.01 to −0.74)	0.67 (0.62 to 0.71)
Any PASC	−2.47 (−2.73 to −2.20)	0.76 (0.74 to 0.78)	−1.83 (−2.14 to −1.52)	0.66 (0.61 to 0.71)

* Models were adjusted for age; race (White, Black, or other); sex as reported by the participant; area deprivation index; smoking status (current, former, or never); use of long-term care services; estimated glomerular filtration rate; systolic and diastolic blood pressures; body-mass index; the presence of cancer, cardiovascular disease, chronic lung disease, coronary artery disease, dementia, diabetes, hyperlipidemia, human immunodeficiency virus infection, immune dysfunction, liver diseases, and peripheral artery disease; the number of outpatient visits, hospital admissions, blood panel tests, medications received, Medicare outpatient visits and hospital admissions, and immunizations; the receipt of seasonal influenza vaccine; and the predicted probability of undergoing testing for Covid-19 during each era.

Xie Y et al. N Engl J Med2024;391:515-525

The NEW ENGLAND JOURNAL of MEDICINE

Conclusions

- The cumulative incidence of PASC during the first year after SARS-CoV-2 infection decreased over the course of the pandemic, but the risk of PASC remained substantial even among vaccinated persons who had SARS-CoV-2 infection in the omicron era.

The NEW ENGLAND JOURNAL of MEDICINE

The effectiveness of COVID-19 vaccines to prevent long COVID symptoms: staggered cohort study of data from the UK, Spain, and Estonia

Martí Català, Núria Mercadé-Besora, Raivo Kolde, Nhung T H Trinh, Elena Roel, Edward Burn, Trishna Rathod-Mistry, Kristin Kostka, Wai Yi Man, Antonella Delmestri, Hedvig M E Nordeng, Anneli Uusküla, Talita Duarte-Salles, Daniel Prieto-Alhambra, Annika M Jödicke**

The Lancet Respiratory Medicine

Volume 12, Issue 3, March 2024, Pages 225-236

Discussion

Our analyses of more than 20 million vaccinated and unvaccinated people show the clinical effectiveness of COVID-19 vaccines to prevent the development of long COVID in three European countries (the UK, Estonia, and Spain), with overall vaccine effectiveness ranging from 29% to 52%. These findings were robust to multiple

bmjmedicine

Check for updates

Efficacy of first dose of covid-19 vaccine versus no vaccination on symptoms of patients with long covid: target trial emulation based on ComPaRe e-cohort

sabelle Pane,[2] Philippe Ravaud[2,3,4]

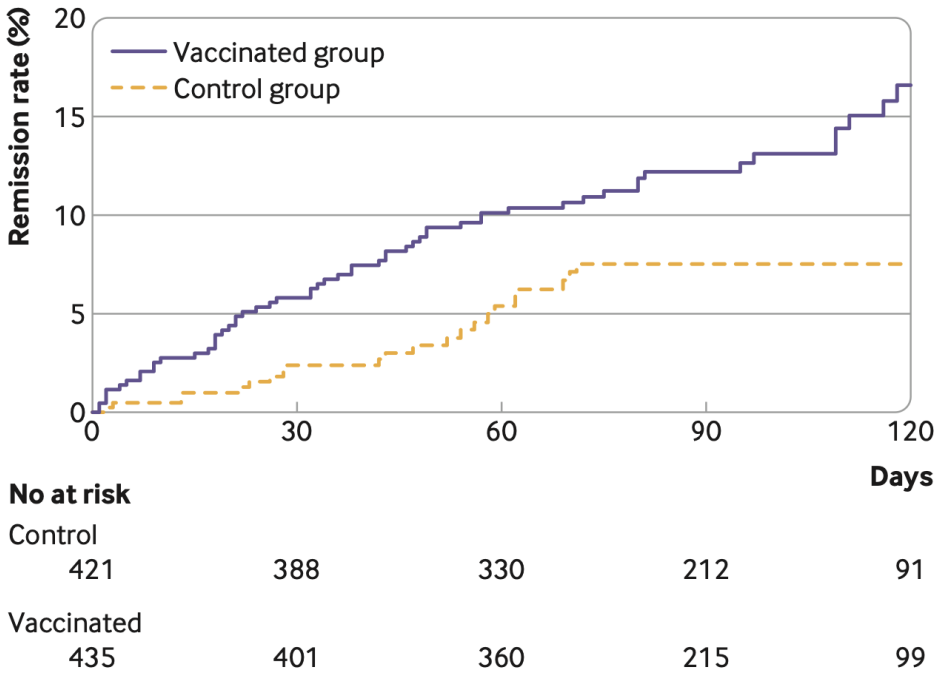


Figure 1 | Cumulative event curve for complete remission of long covid symptoms in the vaccinated and control groups. For 275 patients in the control group, data were censored at the date they received their vaccine before 120 days.

Discussion

Principal findings

In patients with long covid, we found that the first covid-19 vaccine injection was associated with a reduction in the severity of the disease and on the effect on patients' social, professional, and family lives at 120 days after baseline. In particular, our results showed that the remission rate of long covid symptoms was 16.6% in the vaccinated group (n=57) compared with 7.5% (n=27) in the control group (hazard ratio 1.93, 95% confidence interval 1.18 to 3.14). Receiving a vaccine was also associated with

Tran V-T, *et al. BMJMED* 2023;2:e000229. doi:10.1136/bmjmed-2022-000229

Ministero della Salute

Report Vaccini Anti COVID-19

vai all'area **Covid-19** >

Con almeno una dose

49.524.332

91,72 % della popolazione over 12

(persone con almeno una somministrazione)

Ciclo vaccinale

48.730.287

90,25 % della popolazione over 12

(persone che hanno completato il ciclo vaccinale)

Dosi successive fino al 24/09/2023

Dose addizionale/richiamo (booster)

40.494.455

84,89 % della popolazione potenzialmente oggetto di dose addizionale o booster che ha ultimato il ciclo vaccinale da almeno 4 mesi

Booster immuno / 2ª dose booster

6.731.575

16,89 % della popolazione potenzialmente oggetto di dose booster/2ª booster cha ha ultimato il ciclo vaccinale da almeno 4 mesi

3ª dose booster

527.680

8,61 % della popolazione potenzialmente oggetto di 3ª dose booster cha ha ultimato il ciclo vaccinale da almeno 4 mesi

Vaccini anti-covid

Dati aggiornati al 14 novembre 2024

GLI OVER 60

1,28%

Tasso di copertura nella campagna vaccinale 2024/2025

Journal of *Clinical Medicine*

MDPI

Review

Long COVID Syndrome: A Narrative Review on Burden of Age and Vaccination

Panaiotis Finamore [1,2], Elena Arena [1,2], Domenica Lupoi [1,2], Luisa Savito [1,2], Francesca Di Nunzio [1,2], Michela Furbatto [1,2], Silvano Dragonieri [3], Raffaele Antonelli Incalzi [1,2] and Simone Scarlata [1,2,*]

2024. **Results:** Aging influences both the likelihood of developing long COVID and the recovery process, due to age-related physiological changes, immune system alterations, and the presence of comorbidities. Vaccination plays a key role in reducing the risk of long COVID by attenuating the inflammatory responses associated with its symptoms. **Conclusions:** Despite the protection vaccines offer against severe infection, hospitalization, and post-infection sequelae, vaccine hesitancy remains a major obstacle, worsening the impact of long COVID. Promising treatments for this condition include antivirals although further research is needed.

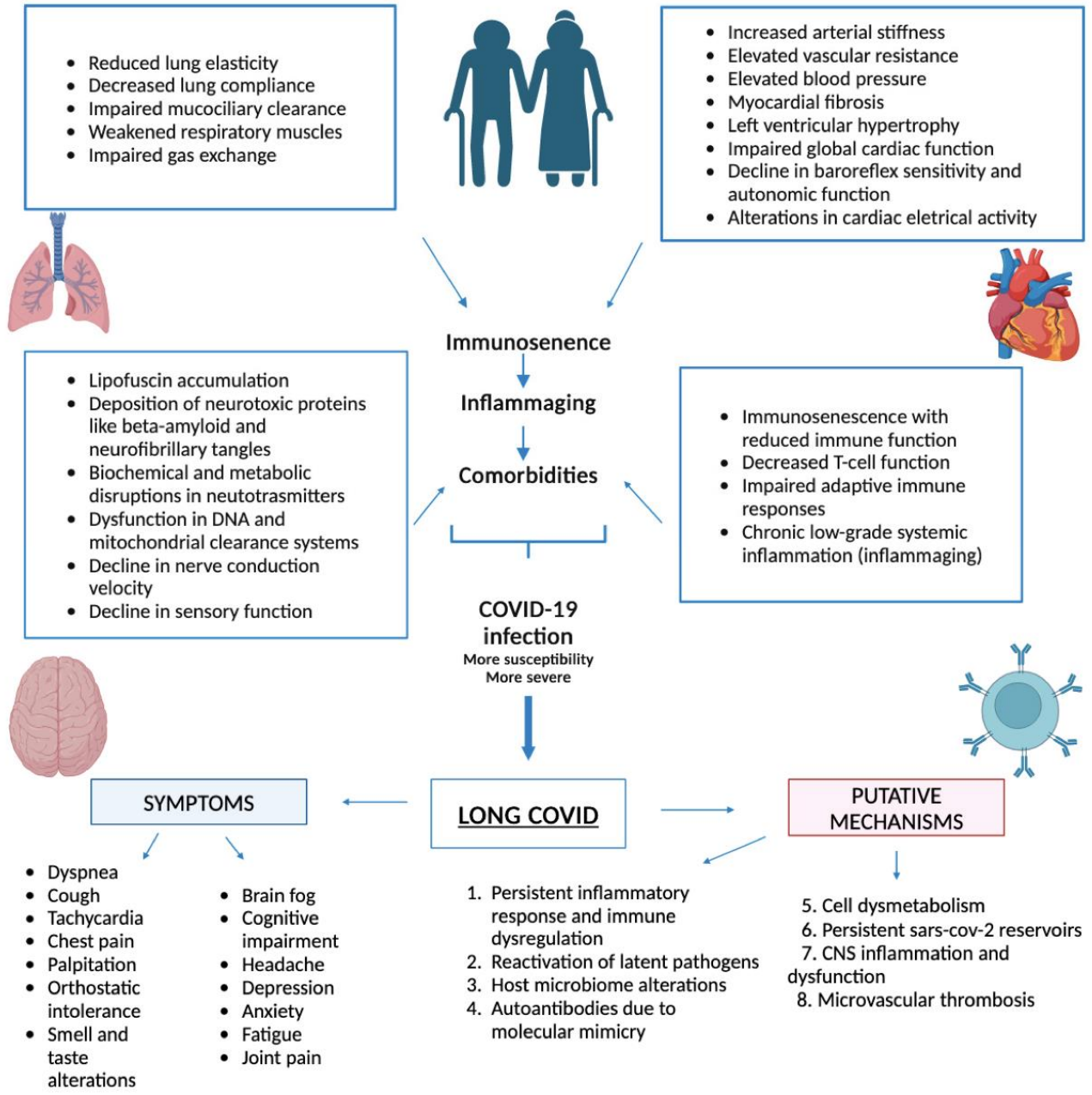


Figure 2. Age-related changes in the function of various organ systems and their role in the patho-physiology and clinical expression of long COVID.

Istituto Superiore di Sanità

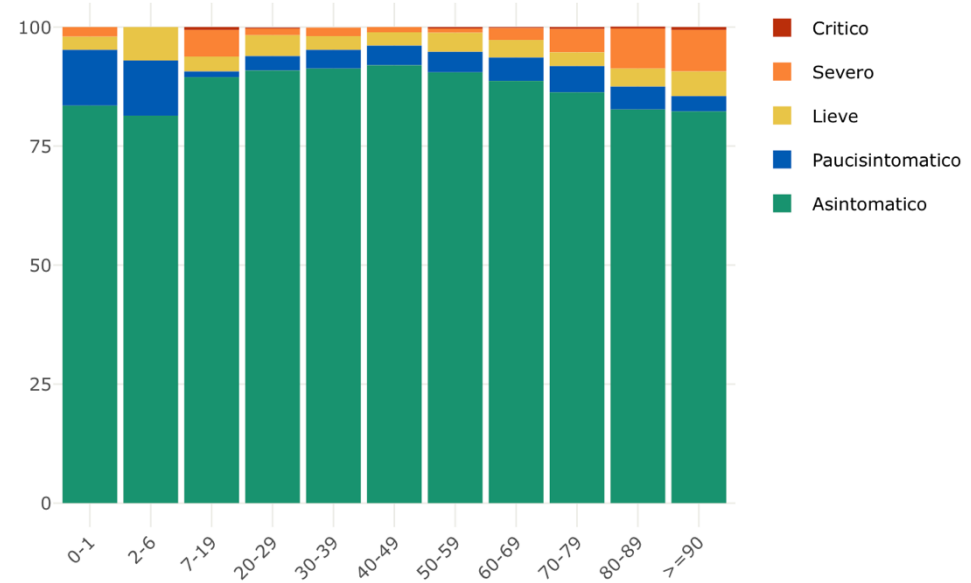
EpiCentro - L'epidemiologia per la sanità pubblica

Coronavirus

26.428	441	68 anni	45,1% | 54,9%	287	19.234
Casi negli ultimi 30 giorni***	Casi tra gli operatori sanitari negli ultimi 30 giorni*	Età mediana dei casi negli ultimi 30 giorni	Maschi (%) | Femmine (%) negli ultimi 30 giorni	Deceduti negli ultimi 30 giorni**	Guariti negli ultimi 30 giorni**

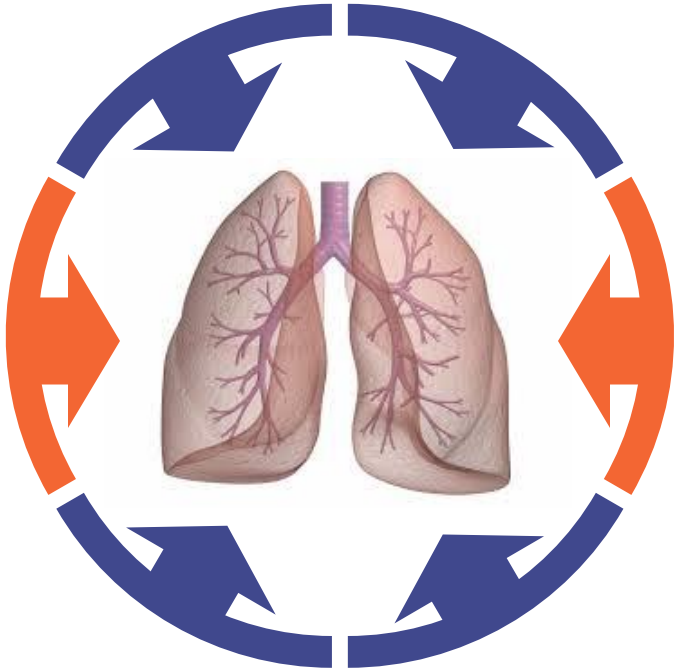
27.167.646	513.461	45 anni	46,4% | 53,6%	196.909 (0,7%)	25.370.545
Casi***	Casi tra gli operatori sanitari*	Età mediana dei casi	Maschi (%) | Femmine (%)	Deceduti (CFR)	Guariti

Proporzione (%) di casi di COVID-19 segnalati in Italia negli ultimi 30 giorni per stato clinico e classe di età (dato disponibile per 12.516 casi)



ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Influenza



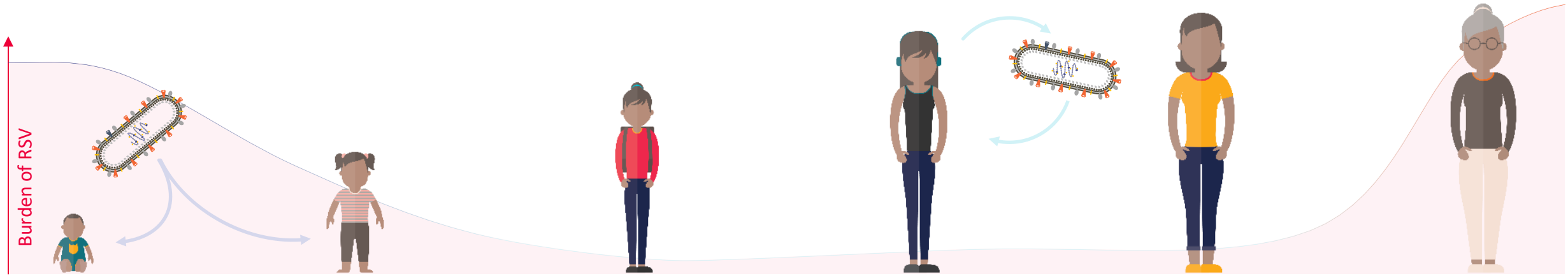
SARS-CoV2

RSV

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

RSV is a disease of all ages

Natural immunity is short-lived, and RSV may cause repeated infections throughout life, not only in childhood



Most children will have been infected with RSV by age 2 years[1–3]

Immune response after natural infection is incomplete and is short-lived[4,5]
RSV reinfections may occur throughout life[5]

Older adults are at high risk of severe RSV infection. Those with certain comorbidities are at even greater risk[6,7]

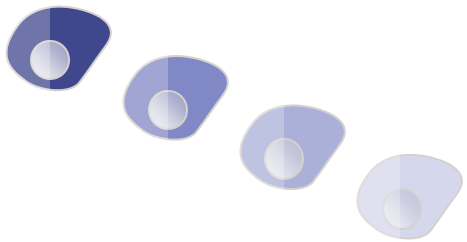
The figure is for illustrative purposes only

1. Andeweg SP *et al. Sci Rep*. 2021;11(1):8953; 2. Sarna M *et al. J Infect Dis*. 2018;217(3):418–427; 3. Pasittungkul S *et al. Int J Infect Dis*. 2022;125:177–183; 4. Openshaw PJM *et al. Annu Rev Immunol* 2017;35:501–532; 5. Walsh E *et al. Clin Chest Med* 2017;38(1):29–36; 6. Branche AR *et al. Clin Infect Dis* 2022;74(6):1004–1011; 7. Centers for Disease Control and Prevention (CDC), 2023. RSV in Older Adults and Adults with Chronic Medical Conditions. https://www.cdc.gov/rsv/high-risk/older-adults.html (accessed January 2024)

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Older adults are particularly susceptible to severe RSV-associated disease due to age-related decline in immunity, aging of the lung, and high rates of comorbidities

Age-related decline in immunity



- Negative changes in the quality and quantity of immune cells, particularly T-cells[1,2]

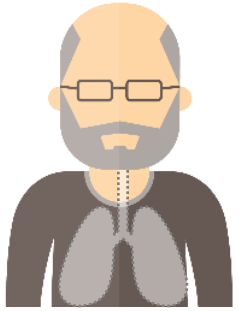
T-cells play a critical role in viral clearance and controlling RSV disease progression[1]

Inflammaging

- Chronic, low-grade inflammation, contributing to dysfunction and imbalance in immune responses[1–3]

Thought to contribute to older adults developing more severe forms of respiratory diseases[1–3]

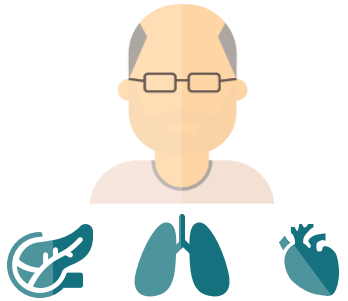
Age-related changes in lung tissue



- Physiological changes reduce pulmonary function affecting[4]:
  - Epithelial barrier integrity
  - Mucociliary clearance
  - Tissue elasticity

May enhance susceptibility to severe respiratory infections[4]

Aging and comorbidities



- Health surveys conducted in the US found[5]:
- >30% of adults 45–64 years had ≥2 chronic condition
- >60% of adults ≥65 years had ≥2 chronic conditions

Certain comorbidities increase the risk of severe RSV-associated disease[6,7]

1. Stephens LM and Varga SM. *Vaccines (Basel)* 2021;9(6):624; 2. Watson A and Wilkinson TMA. *Ther Adv Respir Dis* 2021;15:17534666211995050; 3. Torrelles JB *et al. Front Aging* 2022;3:818700;
4. Cho SJ *et al. Annu Rev Physiol* 2020;82:433–459; 5. Boersma P *et al. Prev Chronic Dis* 2020;17:E106; 6. CDC, 2022. Older adults are at high risk for severe RSV https://www.cdc.gov/rsv/factsheet-older-adults.pdf (accessed January 2024); 7. Branche AR *et al. Clin Infect Dis* 2022;74(6):1004–1011

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Clinical annual burden of RSV in older adults in Italy

A retrospective analysis estimated RSV-associated hospitalization in adults aged ≥18 years in Europe

Observational period: 2006 - 2017

Data from **RESCEU** (REspiratory Syncytial virus Consortyum in Europe)

~19 900

RSV-associated hospitalization in adults ≥18

~93% of them occurred **in adults ≥65**

- **18 553** (95% CI, 14 388 – 22 719) in adults **≥65**
  - **10 531** (95% CI, 9 126 – 11 936) in adults **75-84**
    - **4 419** (95% CI, 2 818 – 6 021) in adults **≥85**

CI, confidence interval; RSV, respiratory syncytial virus.

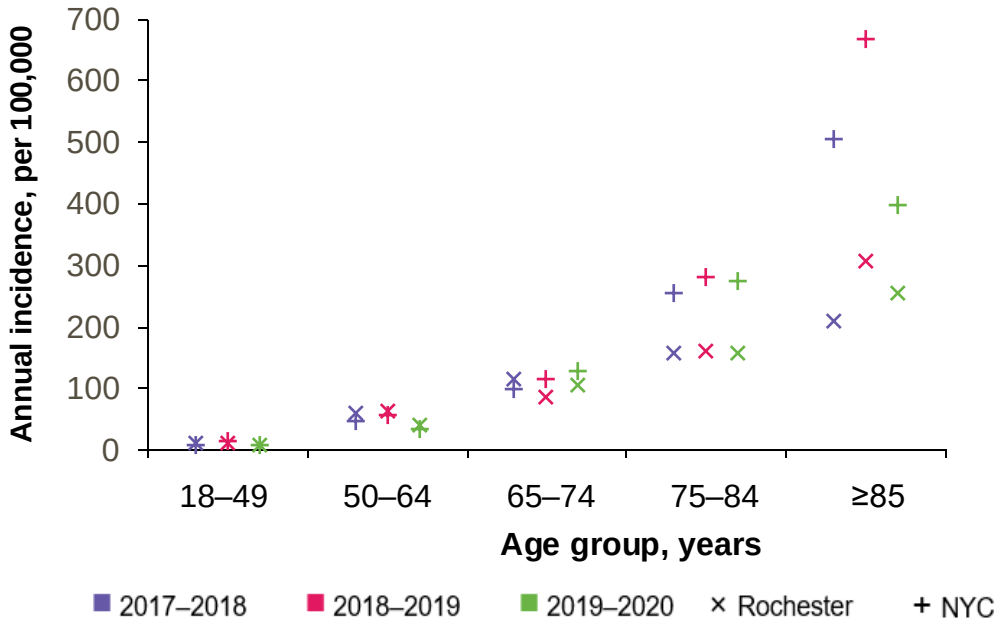
1. Osei-Yeboah R *et al. J Infect Dis* 2023:jiad510. Epub ahead of print; 2.The European house Ambrosetti su dati Istat 2023. 3. Antonelli-Incalzi, *et al*. Manifesto on the Value of Adult Immunization:"We Know, We Intend, We Advocate". Vaccines 2021, 9, 123 - Chronic diseases in the resident population in Italy according to PASSI and PASSI d'Argento data

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

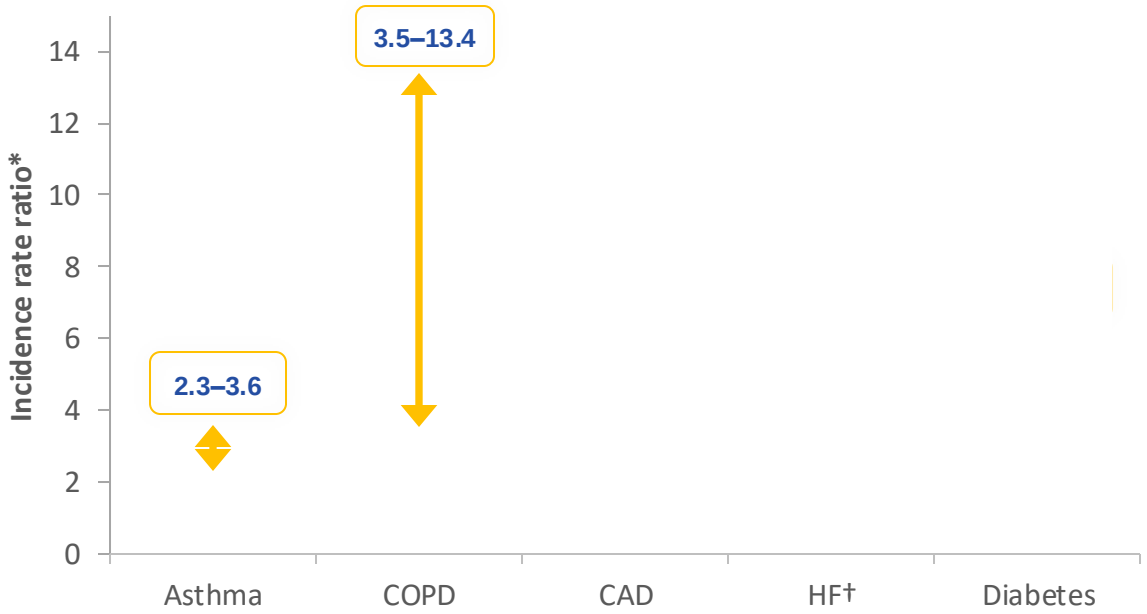
Risk of RSV-associated hospitalization increases with age and certain comorbidities

A large prospective study estimated incidence of RSV-associated hospitalization in two regions of New York State, USA, 2017–2020. N=1099 cases

Incidence of RSV-associated hospitalization by age group and season



Hospitalization rates for RSV were higher in adults aged ≥50 years with comorbidities

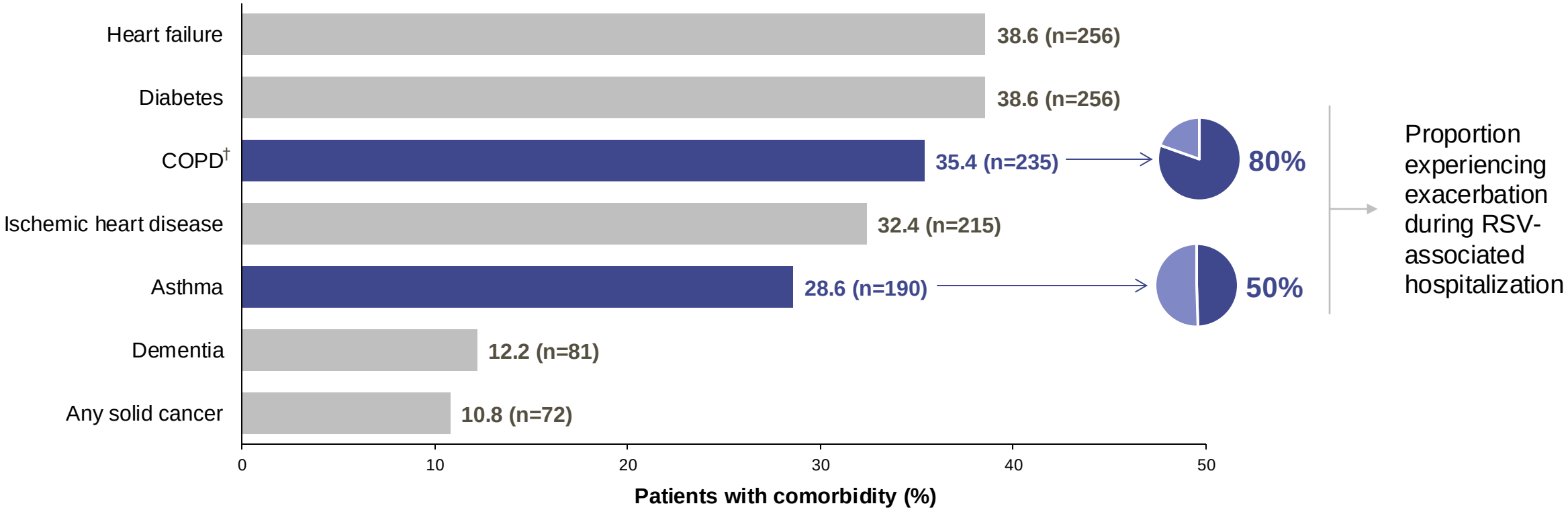


The figures were independently created for GSK from the original data
*Ratio of rate among people with each comorbidity vs those without it, in the surveillance area population; †Adults aged ≥60 years (incidence rate ratio for adults aged ≥40 years: 4.0–18.8)
CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; HF, heart failure; NYC, New York City
Branche AR *et al. Clin Infect Dis* 2022;74:1004–1011

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Underlying conditions are common among older adults hospitalized with RSV

Comorbidities among patients aged ≥60 years hospitalized with RSV in Kaiser Permanente Southern California, USA, 2011–2015 (N=664)*

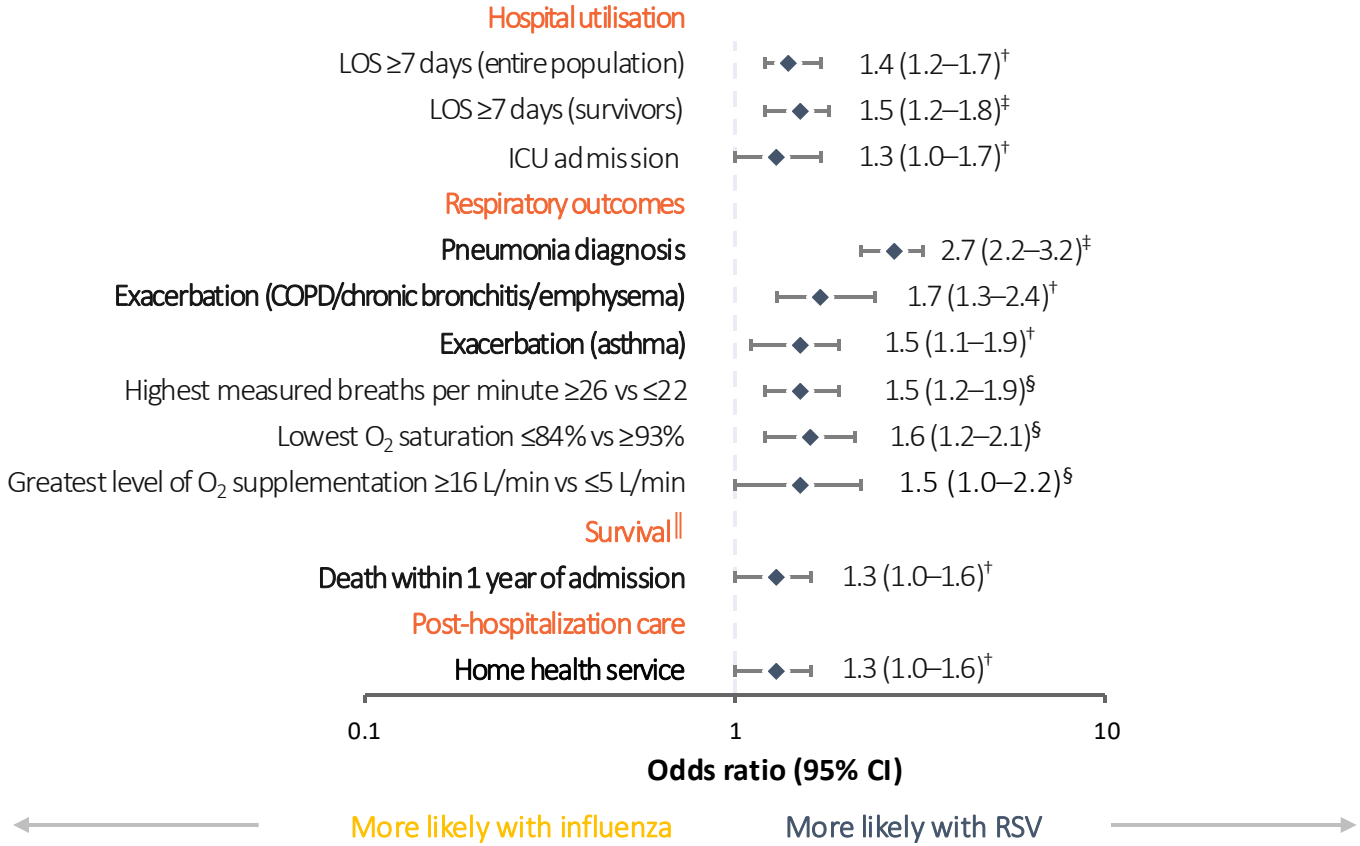


The graph was independently created for GSK from the original data
*Comorbidities were present in the year prior to hospital admission; †COPD, chronic bronchitis, or emphysema
COPD, chronic obstructive pulmonary disease
Tseng HF *et al*. *J Infect Dis* 2020;222:1298–1310

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

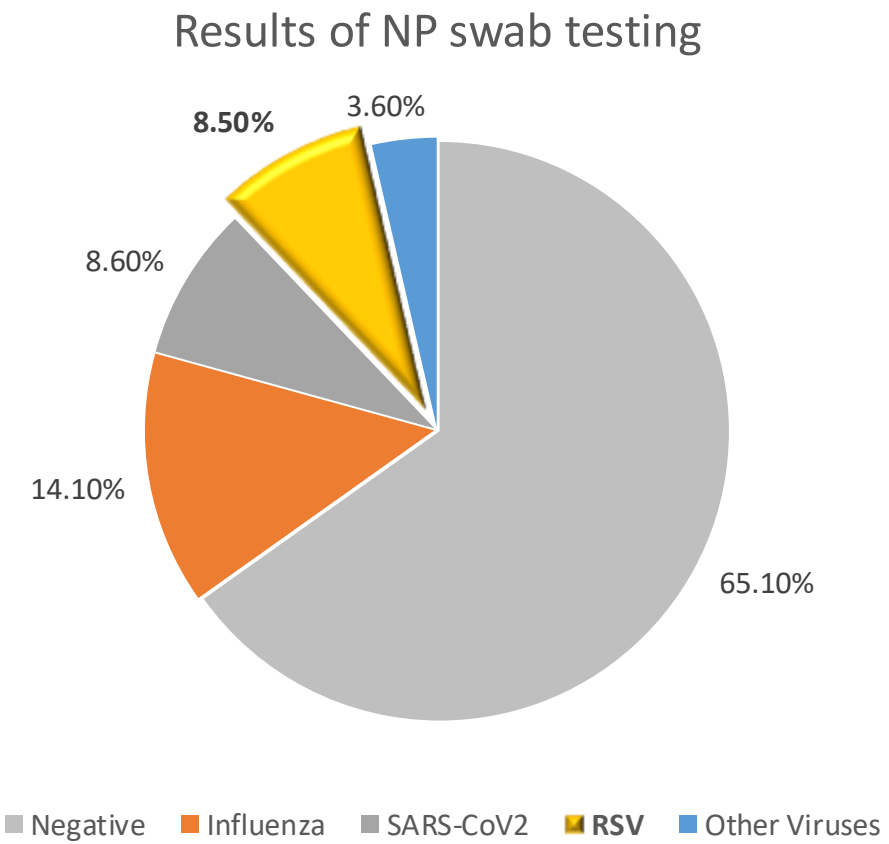
Rates of complications and severe outcomes are similar or worse in older adults with RSV than in older adults with influenza

Outcomes in older adults aged ≥60 years hospitalized in the US with influenza (N=1878) vs RSV (N=645)[2]*



RSV burden and risk factors for severe disease

Retrospective study



WHEN: a winter season (from 2022-Oct-10 to 2023-March-31)

WHERE: Sacco Hospital, Lombardy

- **717 adults** patients referring to ED with acute respiratory failure (aRF) or flu like syndrome were tested per protocol for SARS-CoV-2, RSV, Influenza A and other viruses (NP swab)
- A total of **61 patients (8.5%)** resulted **positive to RSV** detection. Negative swabs: 467 (65,1%); InvA: 62 (14.1%); SARS-Cov-2 62 (8.6%); other viruses 26 (3.6%). Median age of population for persons over 65 years

Figure independently created for GSK from the original data

NP: nasopharyngeal; ED: emergency department; InvA: influenza A; RSV: respiratory syncytial virus; SARS-CoV2: Severe acute respiratory syndrome coronavirus

Santus P. et al. Resp Medicine 2023;vol 218,107404

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

RSV-positive patients' characteristics

RSV positive patients compared to the other groups:

- higher median age
- higher Charlson Index
- higher proportion of active/former smokers
- more exposed to bronchodilators, ICS and immunosuppressant agents
- more frequently an history of hepatopathy and immune depression
- more likely to have a history of CHF

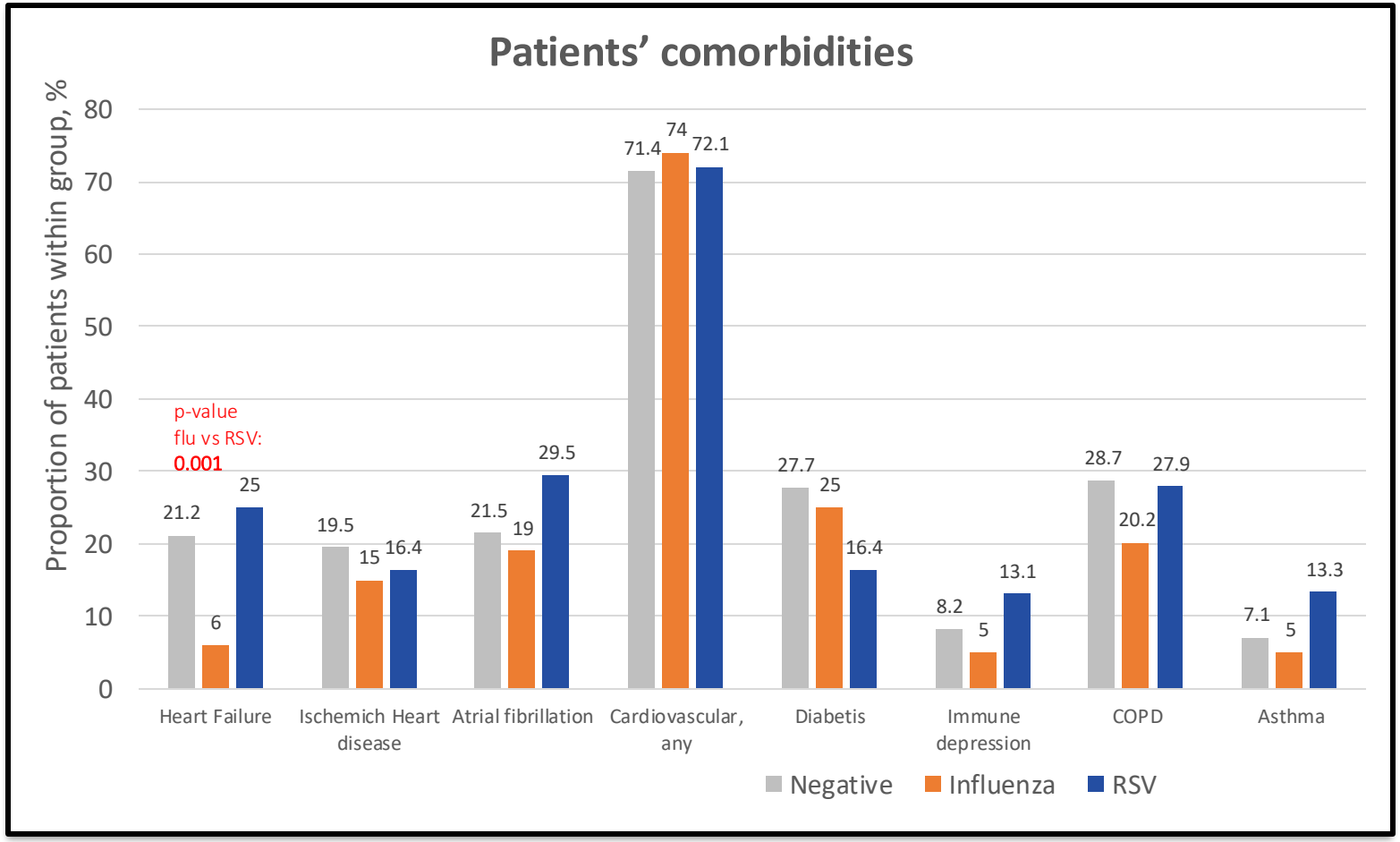


Figure independently created for GSK from the original data
ICS: Inhaled corticosteroids; CHF: Congestive heart failure; COPD: chronic obstructive pulmonary disease
Santus P. et al. Resp Medicine 2023;vol 218,107404

ITALIA LONGEVA
PER L'INVECCHIAMENTO E LA LONGEVITÀ ATTIVA

Vaccines can help alleviate public health and economic burdens posed by co-circulating Vaccine-Preventable Respiratory Diseases (VPRDs)

Achieving the 75% flu vaccination coverage target rate in Europe could reduce the public health and economic burden by an estimated:[4]

767,800
physician visits [3]

1,015,100
working days lost annually [3]

31,400
hospitalizations [3]

14,300
deaths [3]

Improved vaccination across VPRDs can help alleviate the burden on healthcare systems while protecting patients, particularly those at-risk. [1]

Progress towards improved vaccination coverage would help to increase health system capacity and strengthen immunization systems, building resilience for any future virus outbreaks, variants and seasonal pressures. [2]