Prioritizzazione della prevenzione vaccinale contro le patologie respiratorie nell'anziano e nel fragile: esperti a confronto

16 ottobre 2024
Ministero della Salute

Epidemiologia delle patologie respiratorie vaccino-prevenibili ed impatto sulla salute dell'anziano e del fragile

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

Ministero della Salute
REGIONE MARCHE
ITALIA LONGEVA
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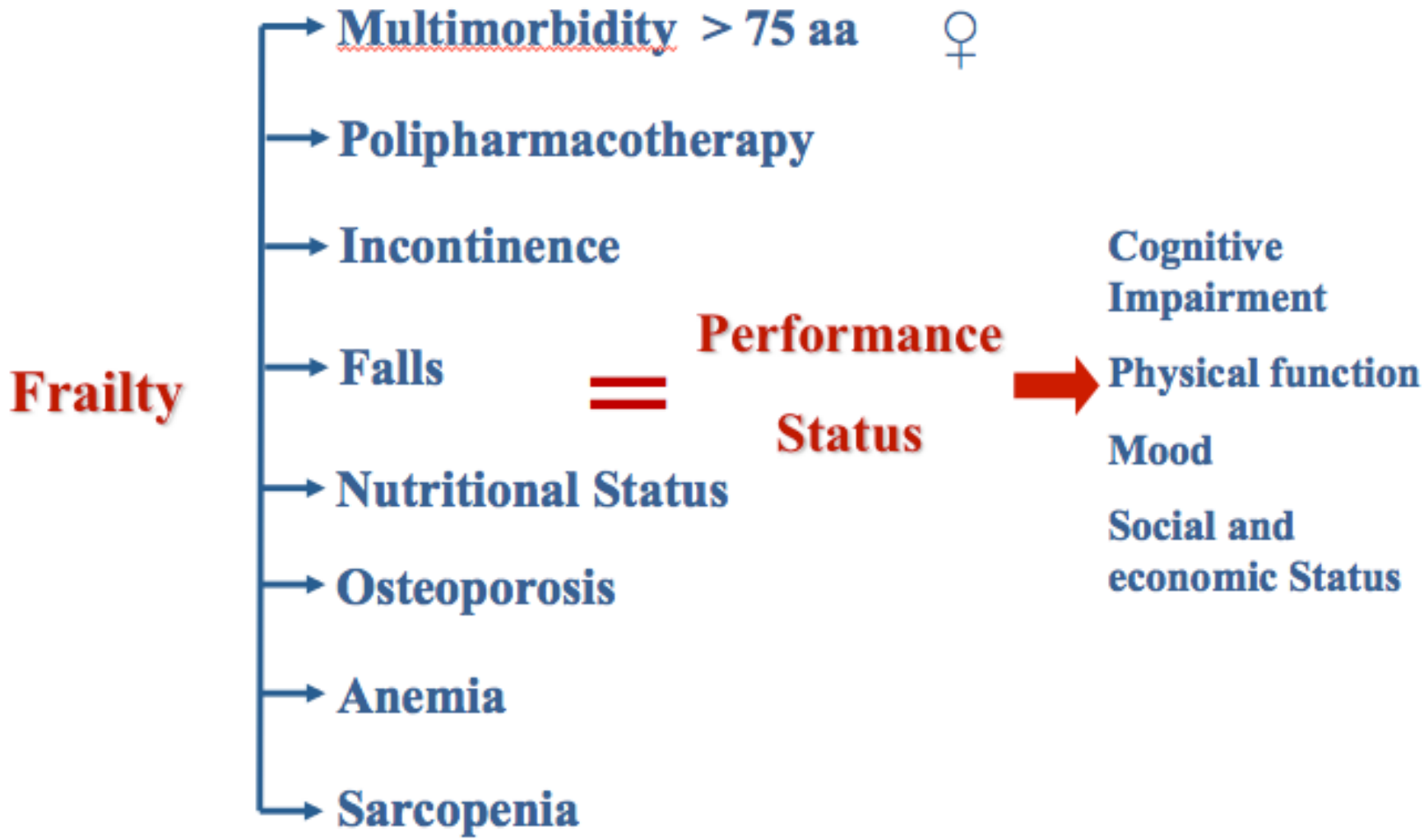
The "MODERN" geriatric patient



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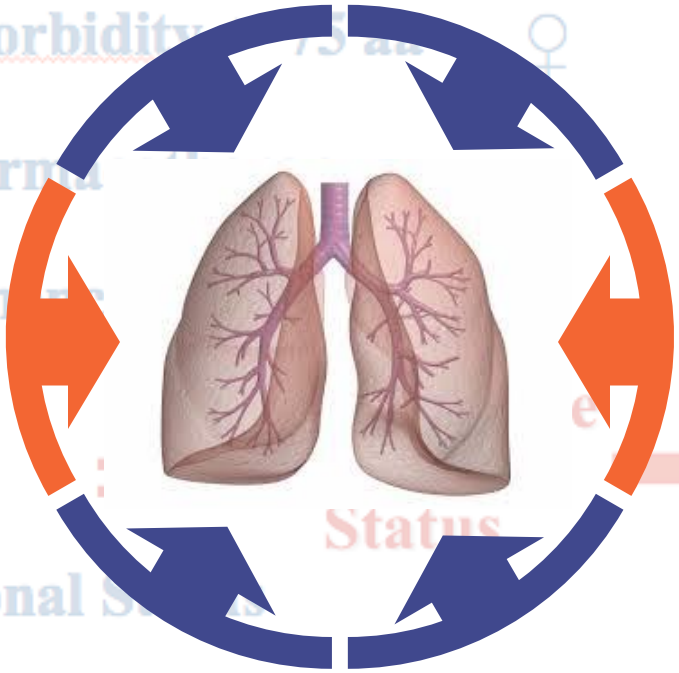
The "MODERN" geriatric patient

Influenza

SARS-CoV2



RSV

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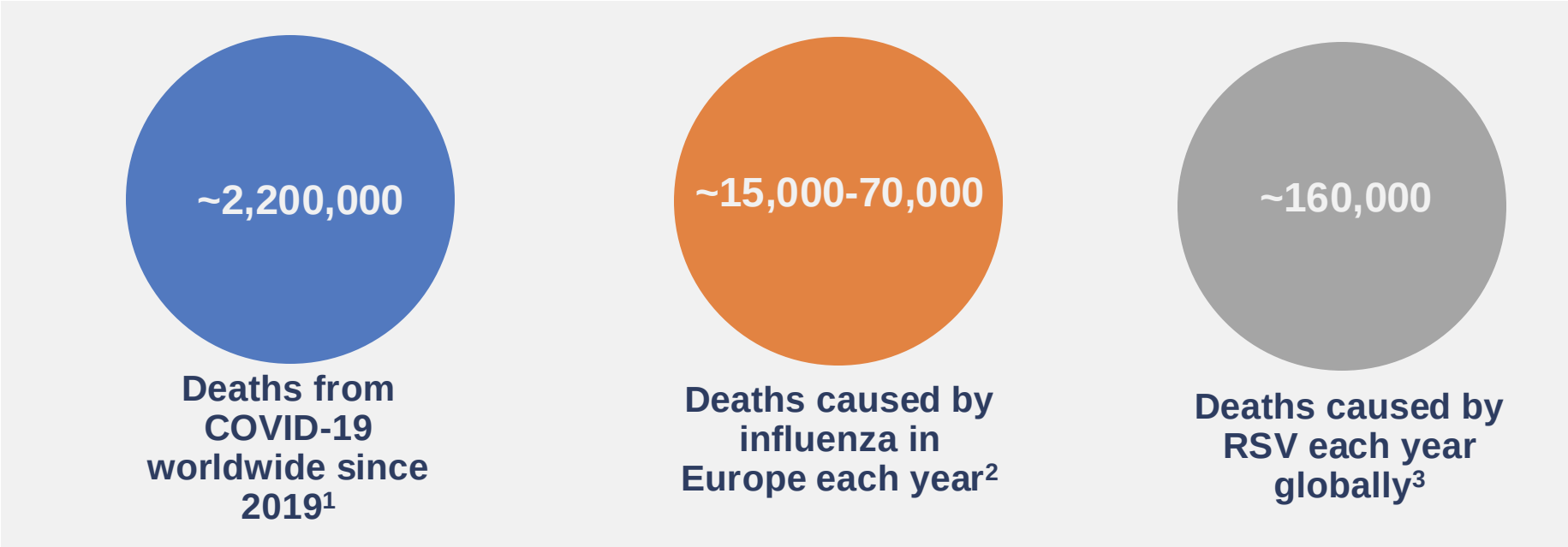
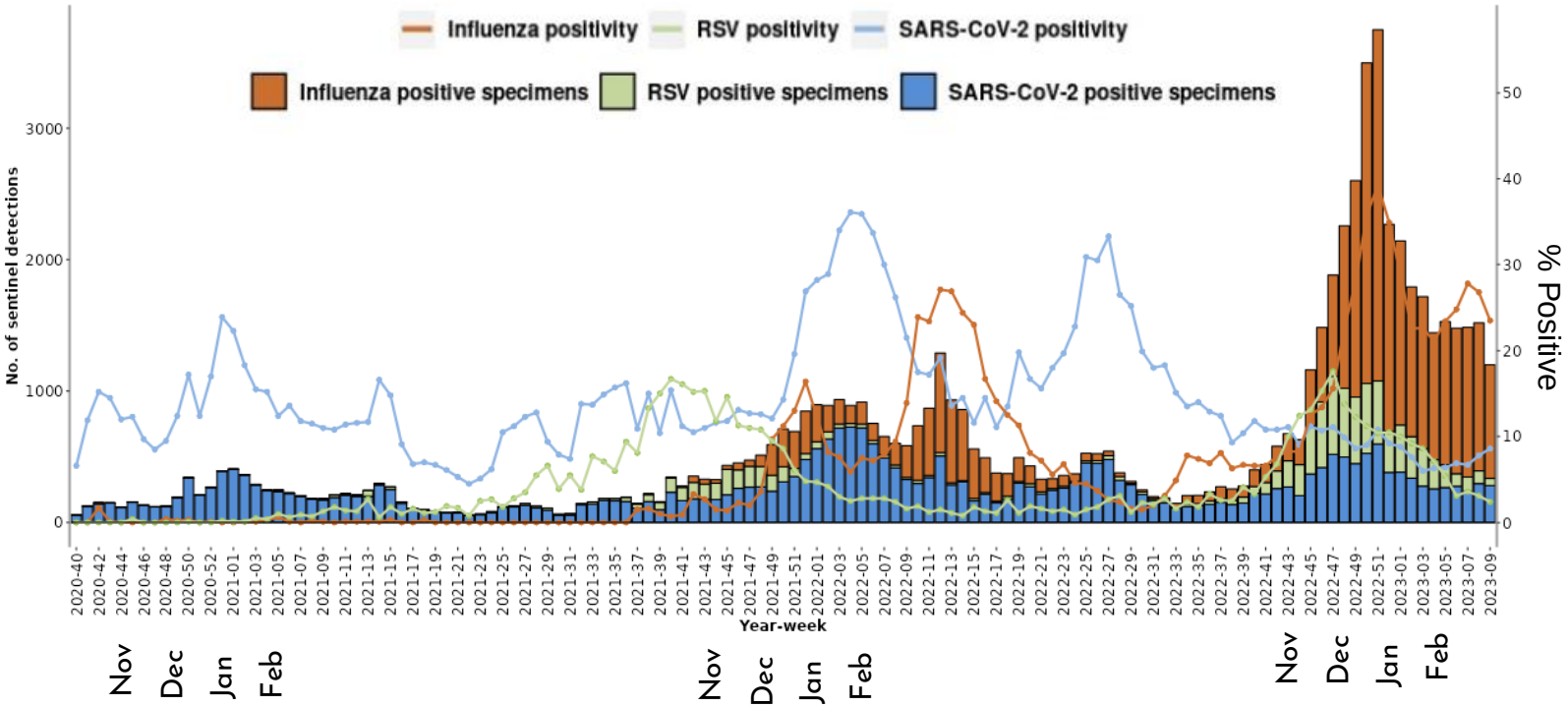
The Health Burden Posed by Vaccine-Preventable Respiratory Diseases



Health systems are simultaneously managing multiple respiratory diseases, most notably in the Winter

COVID-19, influenza and RSV detections in primary care sentinel-source specimens by week, WHO European Region (as of week 9 of 2023)[1*]



These respiratory diseases contribute to severe illness and high levels of hospitalizations in vulnerable populations every year,[2-5] **putting additional pressure on already strained healthcare systems**

*Data from persons with influenza-like illness or acute respiratory infection presenting to primary care sentinel surveillance sites. Data were excluded for any country-week where no denominator (number of tests carried out) was reported for SARS-CoV-2 or RSV. RSV=Respiratory Syncytial Virus.

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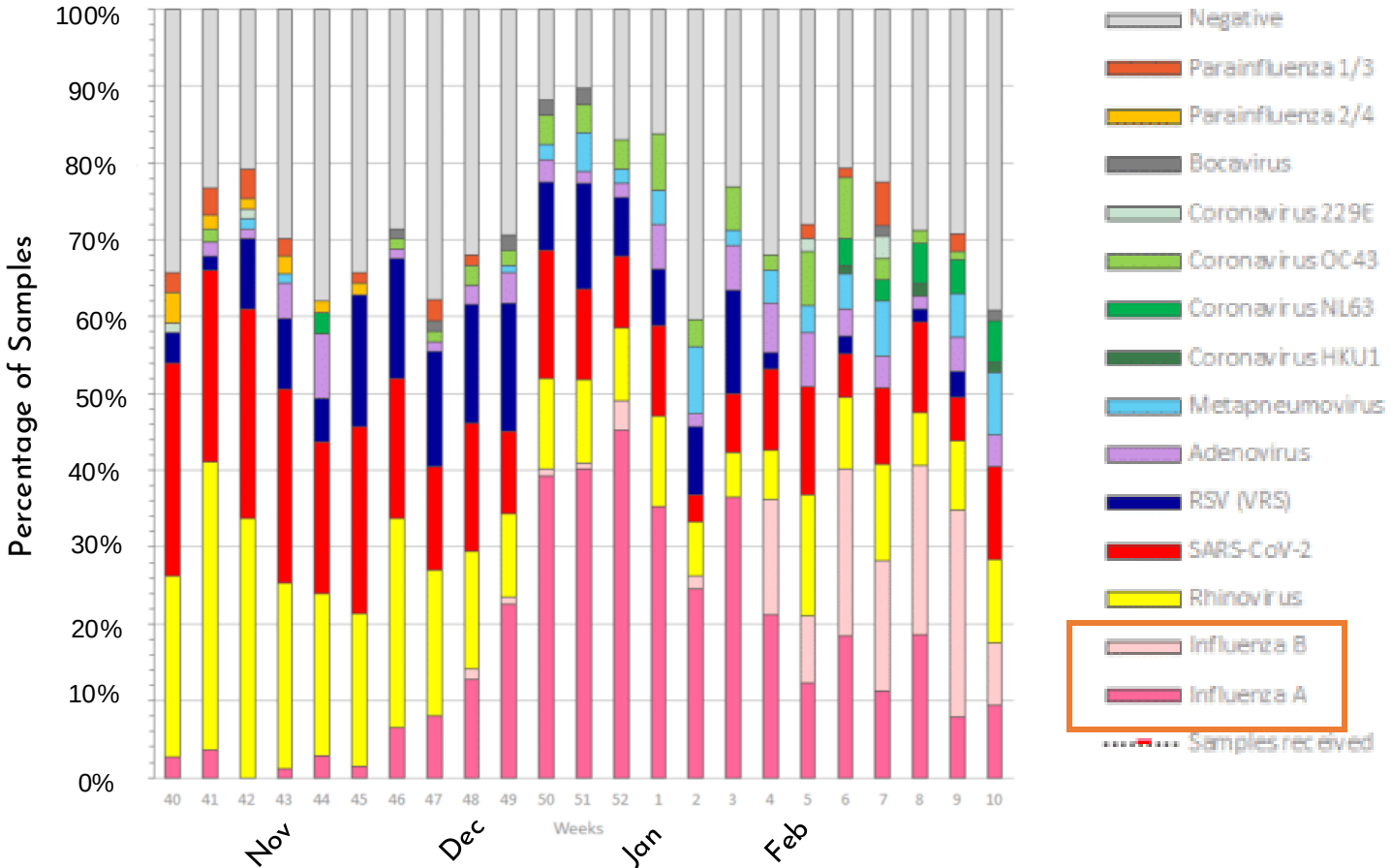
Respiratory disease burden increases in winter

Respiratory viruses detected from week 4 of 2022 to week 10 of 2023 in Switzerland



In particular, **influenza** peaks in winter months – contributing to public health burden caused by vaccine-preventable diseases[1]

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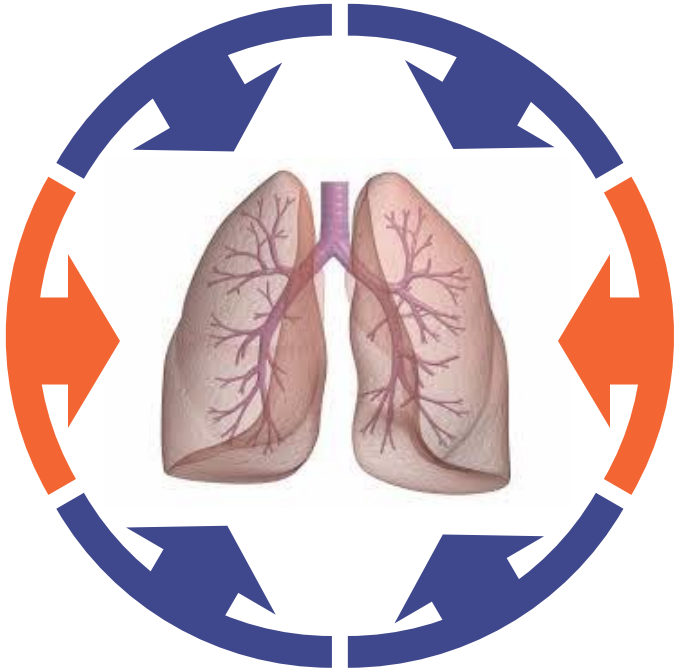
Influenza



SARS-CoV2

RSV

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La forma più efficace di prevenzione è la vaccinazione

•L'Organizzazione Mondiale della Sanità (OMS) e il Ministero della Salute italiano promuovono ogni anno una campagna vaccinale stagionale antinfluenzale con l'obiettivo di:

Ridurre il rischio individuale di malattia, ospedalizzazione e morte.

Ridurre il rischio di trasmissione a soggetti ad alto rischio di complicanze od ospedalizzazione

Ridurre i costi sociali connessi con morbosità e mortalità.

Ministero della Salute. Prevenzione e controllo dell'influenza: raccomandazioni per la stagione 2018-19.
http://www.trovanorme.salute.gov.it/norme/renderNormsanPdf?anno=2018&codLeg=64381&parte=1%20&serie=null

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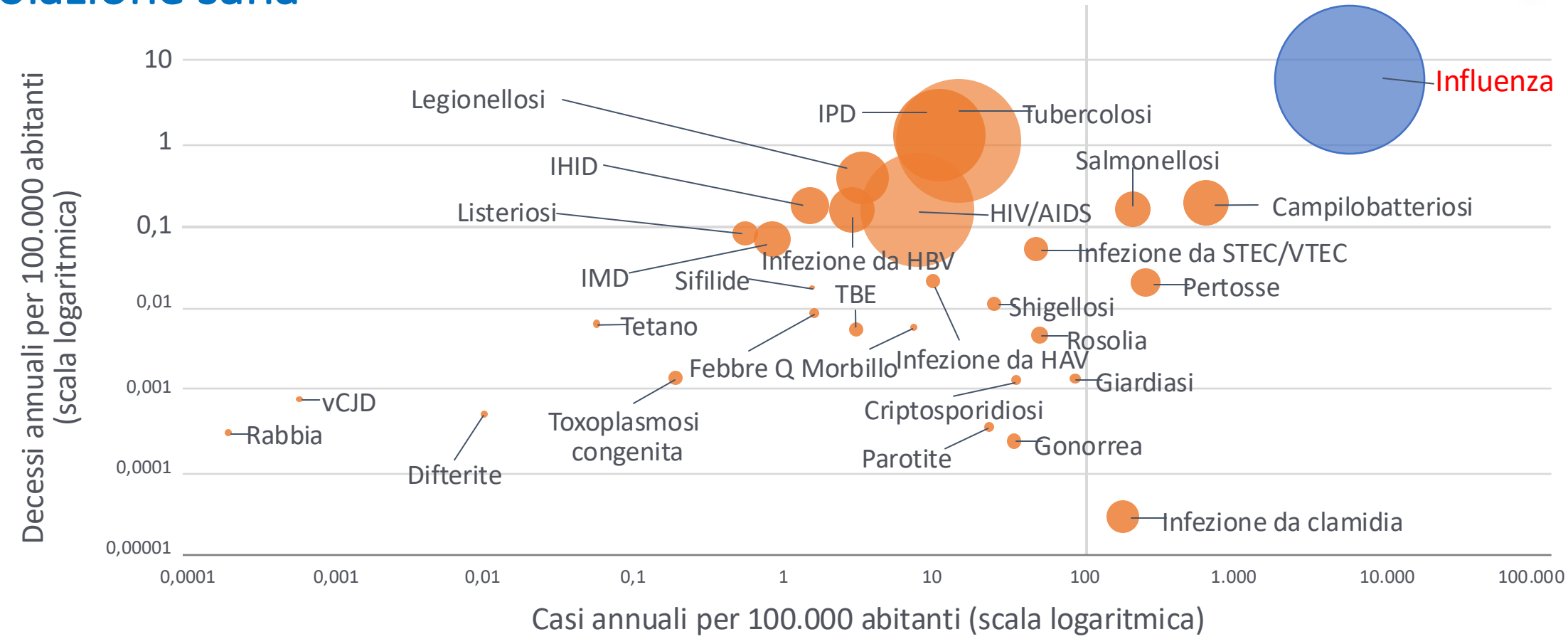
L'influenza è la malattia infettiva con il *burden* più elevato nella popolazione sana



Modificato da Cassini et al. Euro Surveill. 2018 Apr;23(16). doi: 10.2807/1560-7917.ES.2018.23.16.17-00454.

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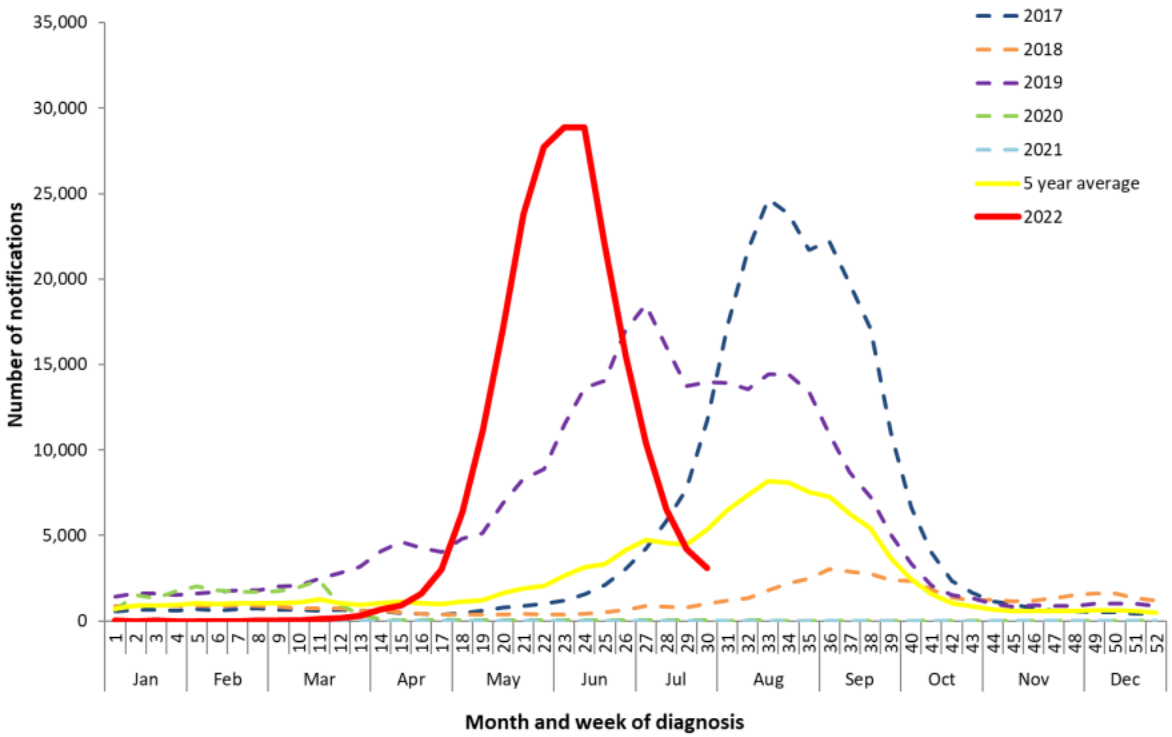
NOTIZIE DALL'EMISFERO SUD: L'INFLUENZA TORNA A CIRCOLARE, LA SITUAZIONE AUSTRALIANA1

Figure 4. Notifications of laboratory-confirmed influenza, Australia, 01 January 2017 to 31 July 2022, by month and week of diagnosis*



Source: NNDSS

*NNDSS notification data provided for the current and most recent weeks may be incomplete. All data are preliminary and subject to change as updates are received, with most recent weeks considered particularly subject to revisions. Please refer to Data considerations for interpretation of the 5 year average.

In Australia, da metà aprile 2022 alla prima metà di luglio 2022, il numero settimanale di segnalazioni di influenza confermata in laboratorio ha superato la media degli ultimi 5 anni[1]

BIBLIOGRAFIA: 1. Australian Government. https://www1.health.gov.au/internet/main/publishing.nsf/Content/cda-ozflu-2022.htm.

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Morti attribuibili all'influenza in Italia nelle ultime stagioni


Contents lists available at ScienceDirect
International Journal of Infectious Diseases
journal homepage: www.elsevier.com/locate/ijid

Investigating the impact of influenza on excess mortality in all ages
in Italy during recent seasons (2013/14–2016/17 seasons)

Aldo Rosano[a,b,*], Antonino Bella[a], Francesco Gesualdo[c], Anna Acampora[d], Patrizio Pezzotti[a], Stefano Marchetti[e], Walter Ricciardi[f], Caterina Rizzo[a,c]

	2013/14	2014/15	2015/16	2016/17
Virus predominante	H3N2 / H1N1	H1N1 / H3N2	B / H3N2	H3N2
Grado di *match*	✓ Buono	✗ Mismatch H3N2	✗ Mismatch H3N2	? Match con qualche mutazione *egg-adaptive* dell'H3N2
***N* stimato di morti**	**7,027**	**20,259**	**15,801**	**24,981**

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MORTALITA PER INFLUENZA E POLMONITE NEGLI ANZIANI ITALIANI NEL CORSO DI 7 STAGIONI: UNO STUDIO ECOLOGICO[1]

Riassunto dei metodi:[1]

Popol.ne	Soggetti di età ≥65 anni italiani
Stagione	2010/2011-2016/2017
Luogo	Italia (Province: 110; Regioni e Province Autonome: 21)
Endpoint primario	Analisi spaziotemporale della mortalità correlata a polmonite ed influenza
Endpoint secondario	Associazione tra mortalità per P&I* e copertura vaccinale antinfluenzale
Disegno	Studio ecologico
Esposizione	Vaccinazione antinfluenzale

* P&I= polmonite ed influenza

Human Vaccines & Immunotherapeutics

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/khvi20

An exploratory study to assess patterns of influenza- and pneumonia-related mortality among the Italian elderly

Elettra Fallani, Andrea Orsi, Alessio Signori, Giancarlo Icardi & Alexander Domnich

Received 27 May 2021, Accepted 09 Nov 2021, Published online: 29 Dec 2021

Download citation https://doi.org/10.1080/21645515.2021.2005381 Check for updates

Premessa

Un precedente studio ecologico italiano non ha trovato alcuna associazione significativa tra il tasso di copertura vaccinale antinfluenzale ed eccesso di mortalità per influenza nel tempo nei ≥65 anni (periodo considerato: dal 1970 al 2001).[2]

Uno studio più recente condotto nella provincia di Treviso ha riportato un rischio di morte per tutte le cause del 33-39% inferiore negli anziani vaccinati rispetto ai non vaccinati in 3 stagioni consecutive (2014/ 15–2016/17) (aTIV vaccino antinfluenzale maggiormente somministrato).[3]

BIBLIOGRAFIA: 1. Fallani et al. Hum Vaccin Immunother. 2021:1-8. doi: 10.1080/21645515.2021.2005381; 2. Rizzo et al. Vaccine. 2006;24(42– 43):6468–75. doi:10.1016/j.vaccine.2006.06.052; 3. Bellino et al. Hum Vaccin Immunother. 2019:1–12. doi:10.1080/21645515. 2019.1661754.

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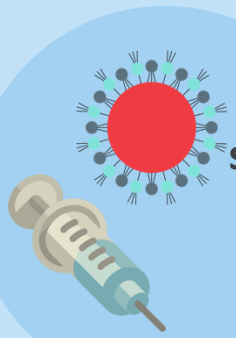
MORTALITÀ PER INFLUENZA E POLMONITE NEGLI ANZIANI ITALIANI NEL CORSO DI 7 STAGIONI: UNO STUDIO ECOLOGICO[1]

Ogni aumento dell'1% nel **tasso di copertura vaccinale antinfluenzale** è stato associato ad una **riduzione** della **mortalità per polmonite ed influenza** pari a:[1]

1,6%-1,9%



Ogni aumento dell'1% **nell'utilizzo del vaccino trivalente adiuvato con MF59** è stato associato ad un'**ulteriore riduzione** della **mortalità per polmonite ed influenza** pari a:[1]

1,6%-1,9%
+ 0,4%

BIBLIOGRAFIA: 1. Fallani et al. Hum Vaccin Immunother. 2021:1-8. doi: 10.1080/21645515.2021.2005381.

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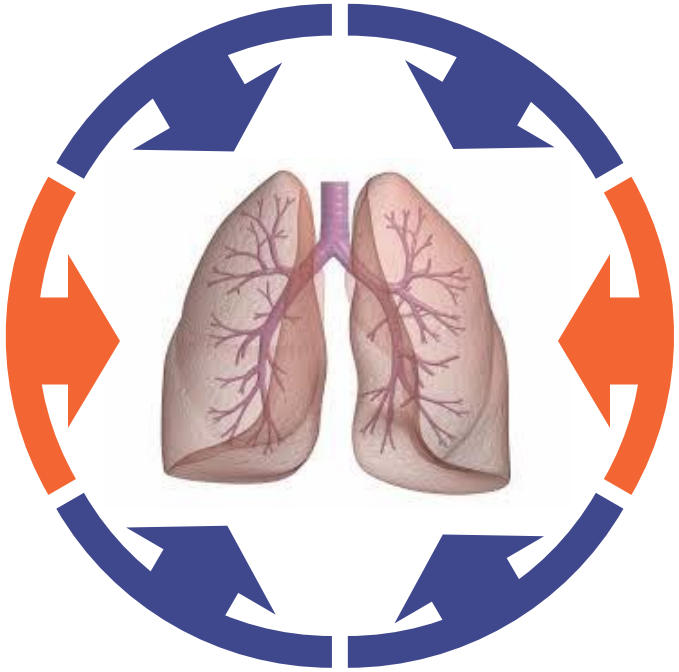
Influenza



SARS-CoV2

RSV

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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.

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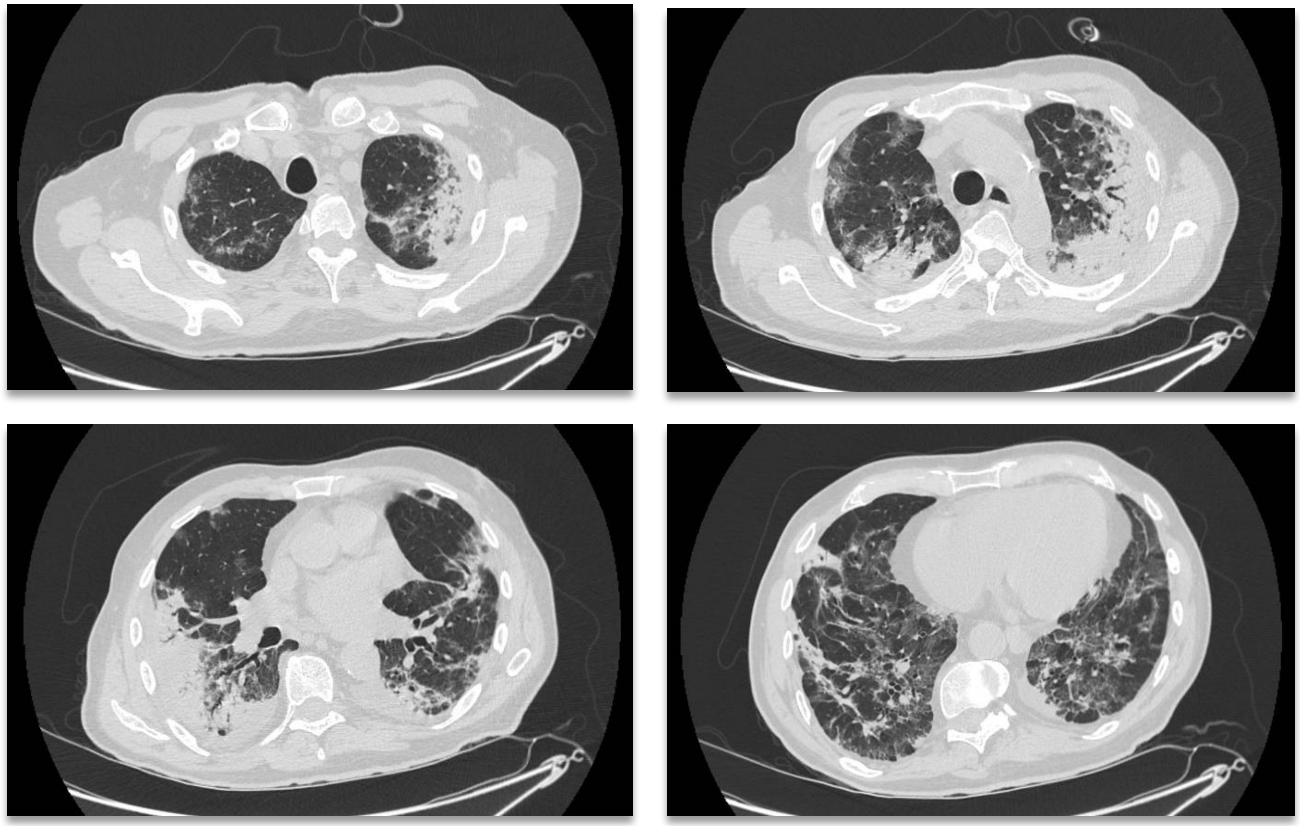
Italian experience

Clinical Features

- The range of clinical presentations of COVID-19 disease have been described varying from asymptomatic infection to severe respiratory failure
- The common clinical manifestations include fever, cough, fatigue, myalgia, shortness of breath, sore throat, and headache
- In addition, patients may have also gastrointestinal symptoms, with diarrhea and vomiting
- Some patients may have taste and smell disturbances, too
- Interstitial pneumonia is present in most COVID-19 patients

Antero-posterior chest radiograph shows patchy ground-glass opacities (78-year-old man)

Chest CT shows diffuse ground-glass opacities, consolidation area, and both ground-glass opacities with consolidation



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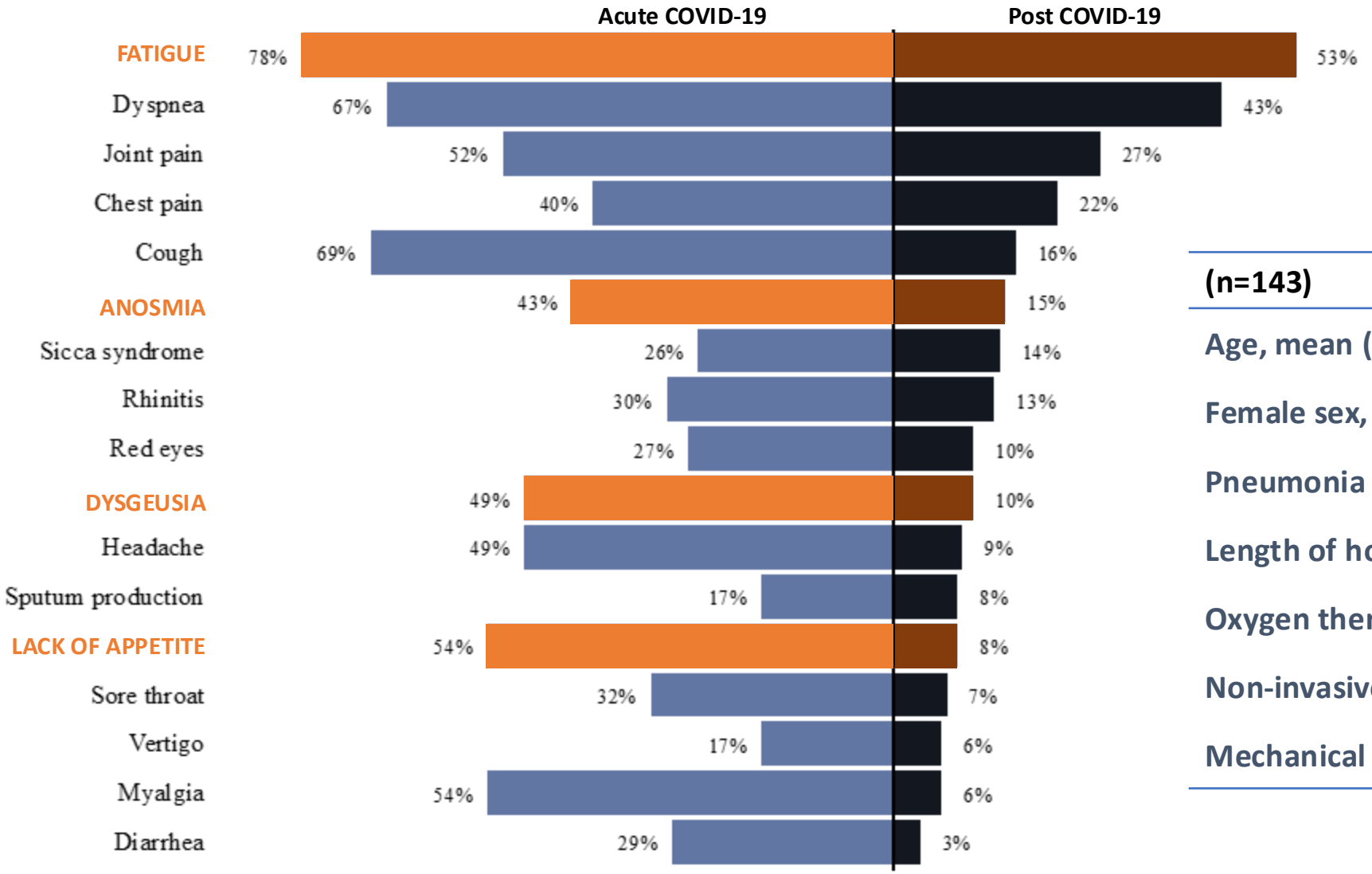

JAMA

(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.

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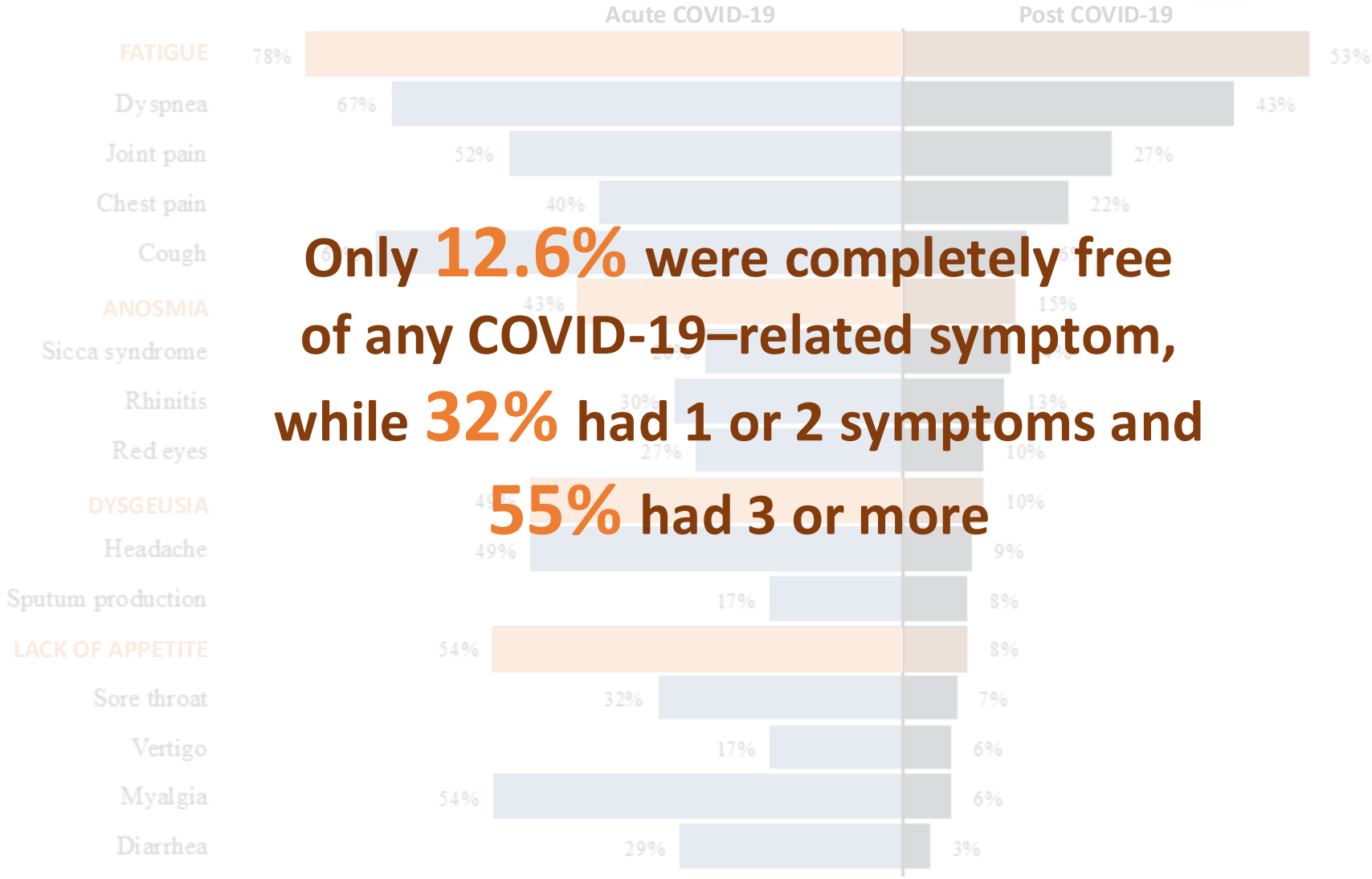

Only 12.6% were completely free of any COVID-19–related symptom, while 32% had 1 or 2 symptoms and 55% had 3 or more

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

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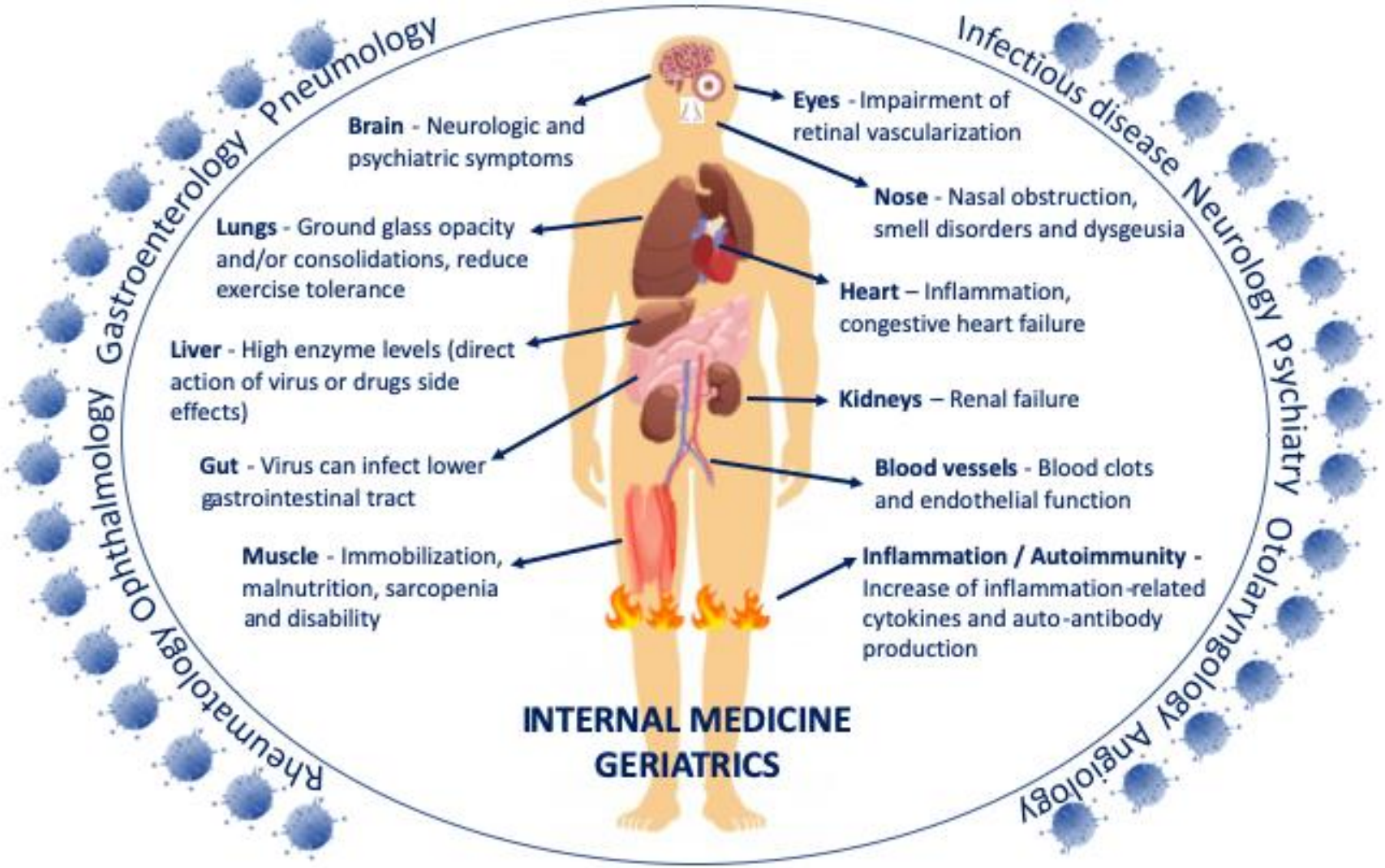
Aging Clinical and Experimental Research (2020) 32:1613–1620
https://doi.org/10.1007/s40520-020-01616-x

POINT OF VIEW

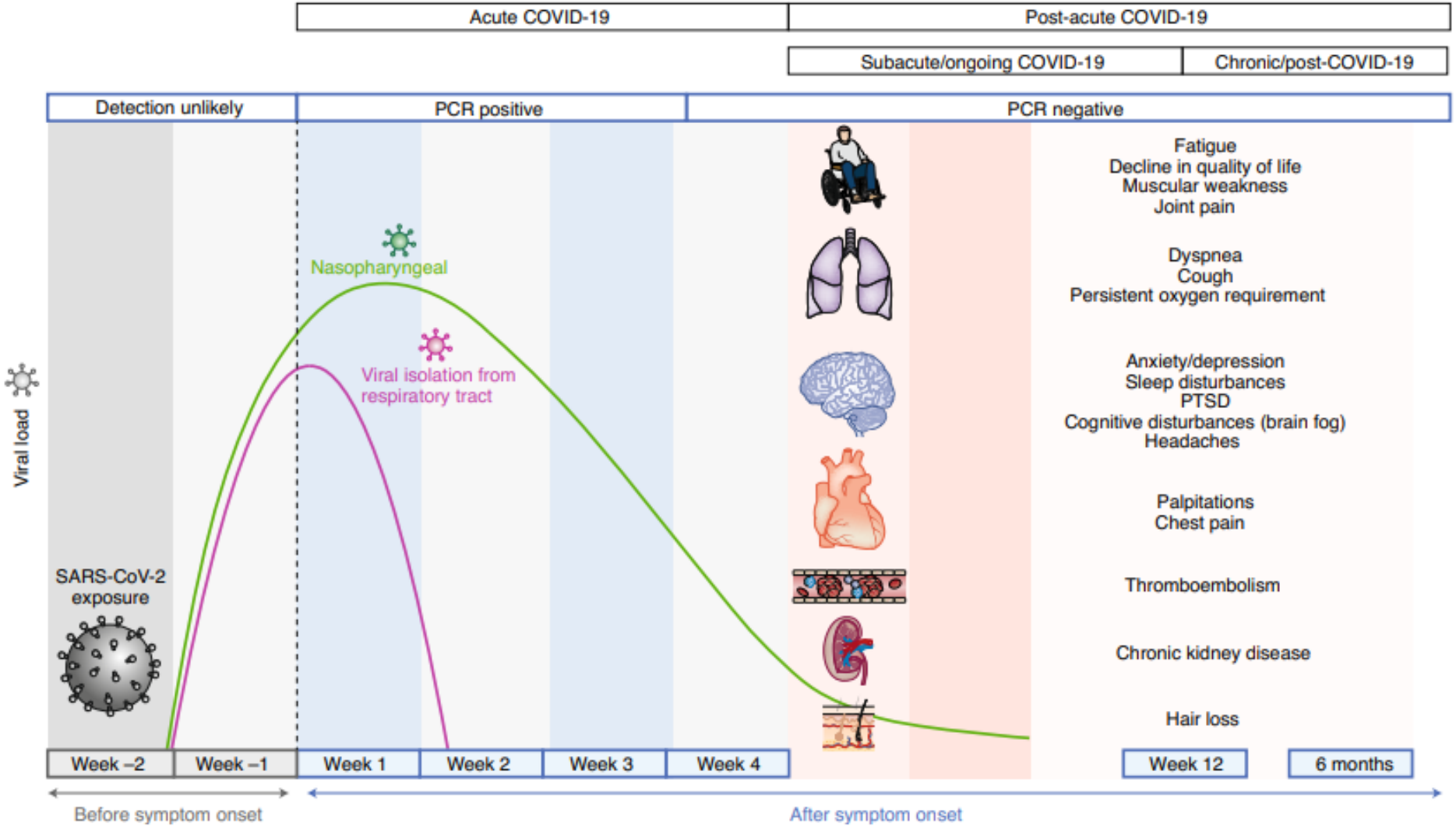
Post-COVID-19 global health strategies: the need for an interdisciplinary approach

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.



Nalbandian A, et al. *Nat Med*. 2021;27(4):601-615.

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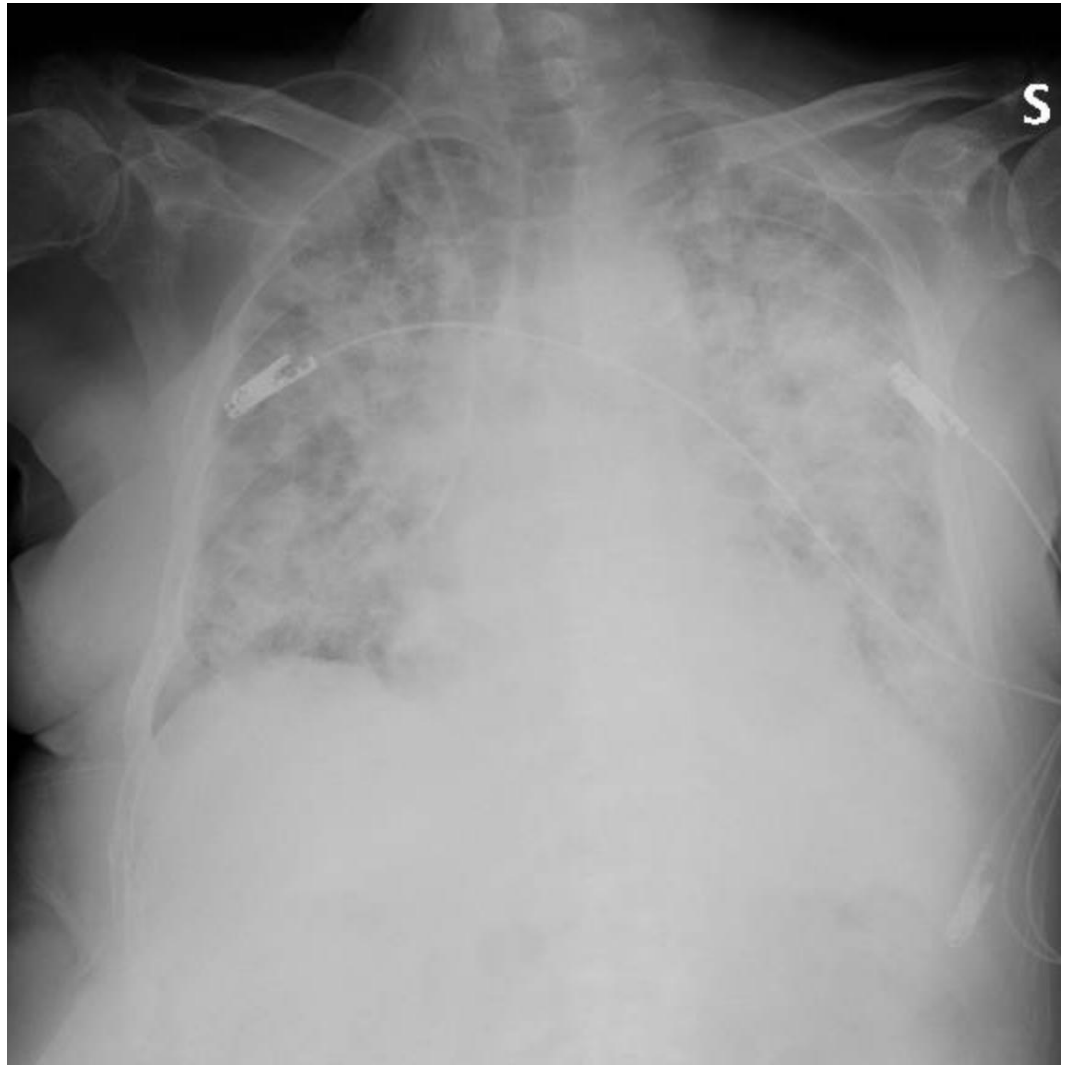

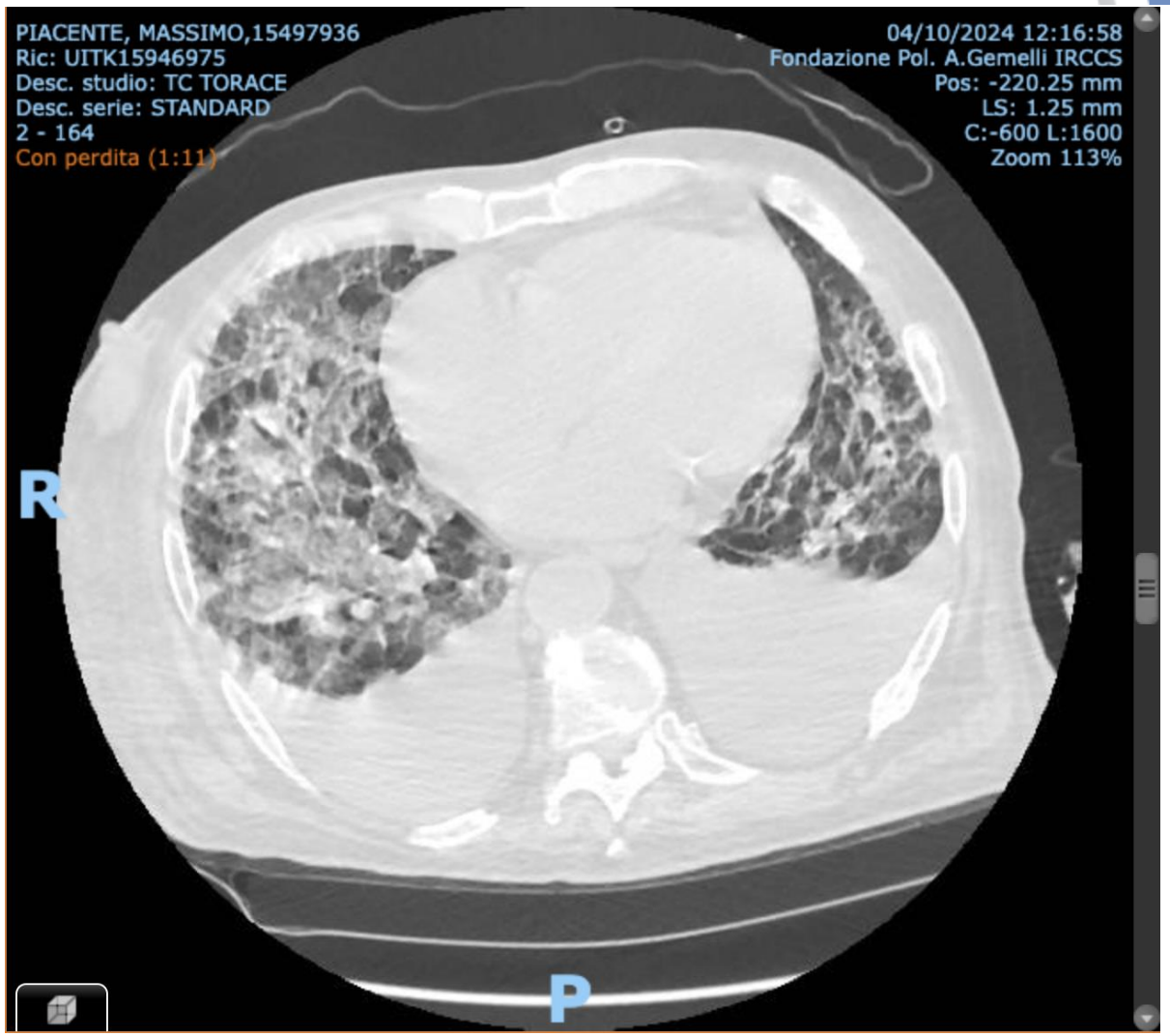

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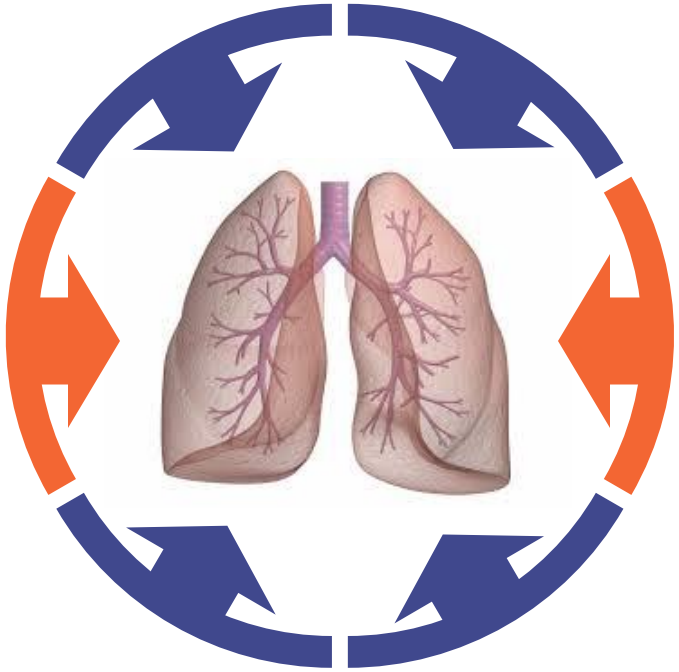
Influenza



SARS-CoV2

RSV

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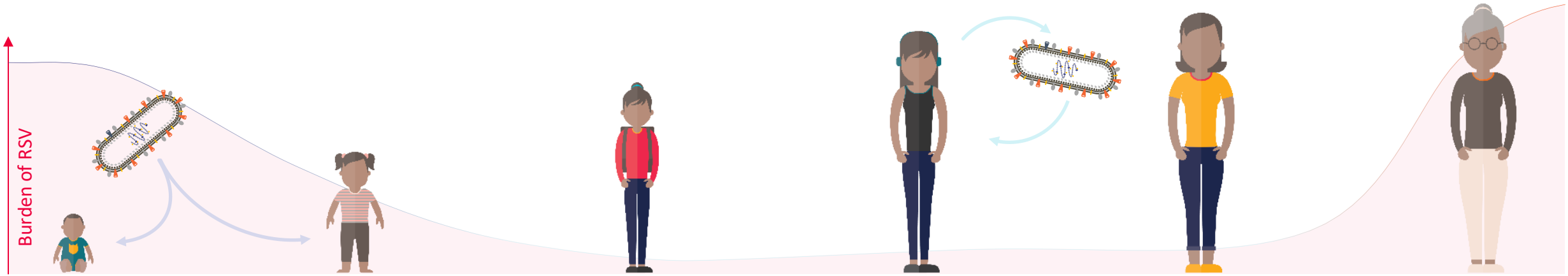
RSV is a disease of all ages

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)

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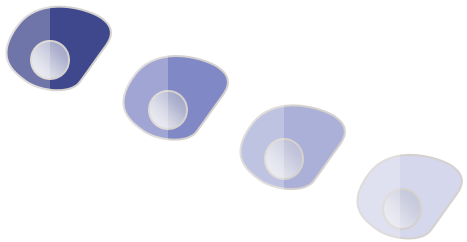
Older adults are particularly susceptible to severe RSV-associated disease due to age-related decline in immunity, aging of the lung, and high rates of comorbidities

Age-related decline in immunity



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

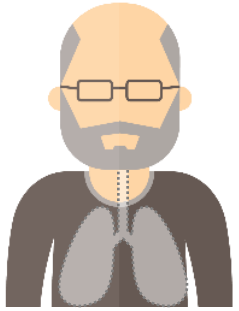
T-cells play a critical role in viral clearance and controlling RSV disease progression[1]

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]

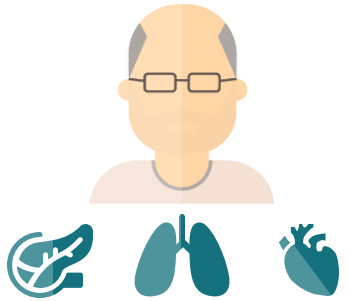
Age-related changes in lung tissue



- 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

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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

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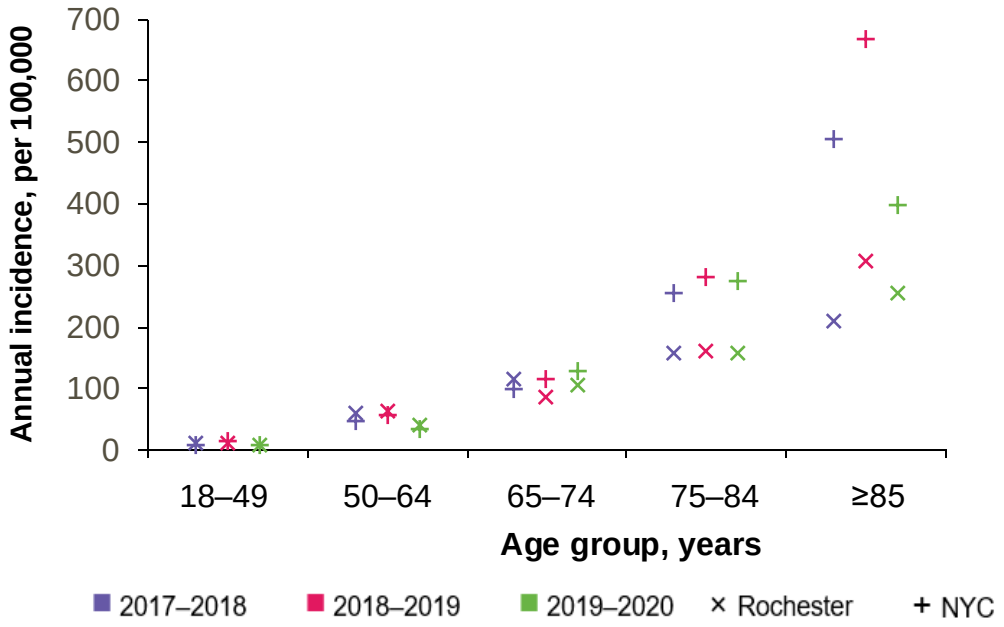
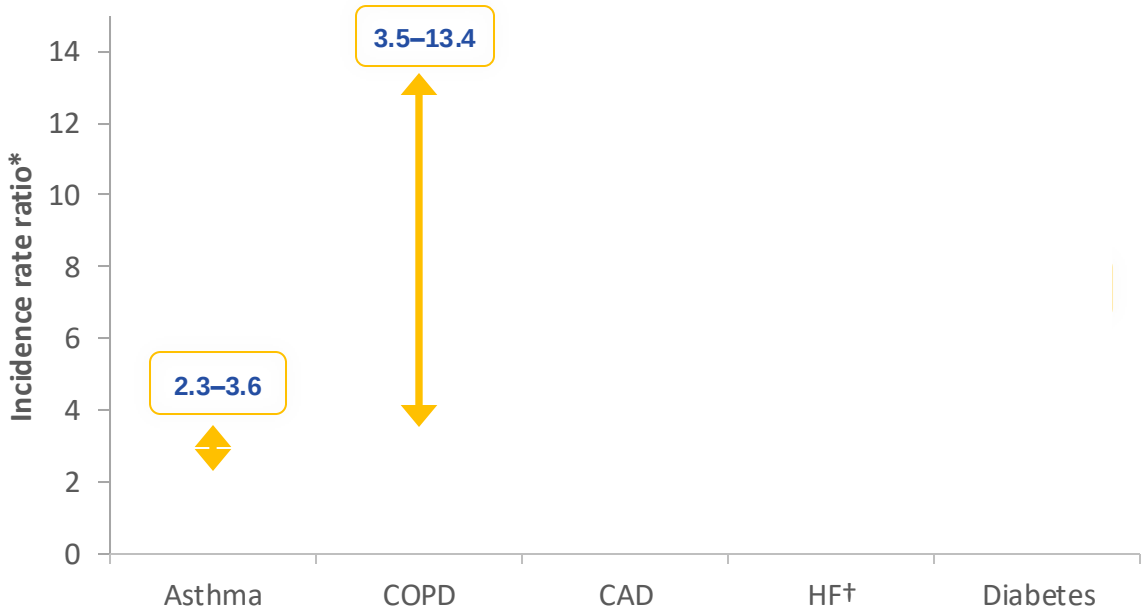
Risk of RSV-associated hospitalization increases with age and certain comorbidities

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

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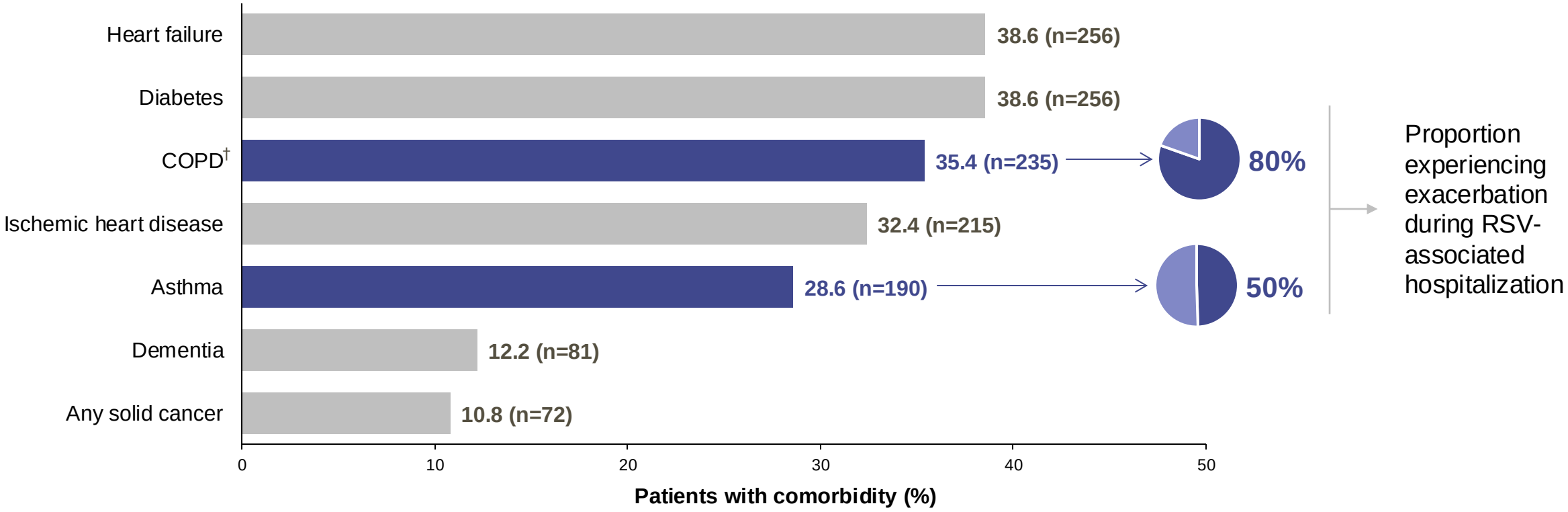
Underlying conditions are common among older adults hospitalized with RSV

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

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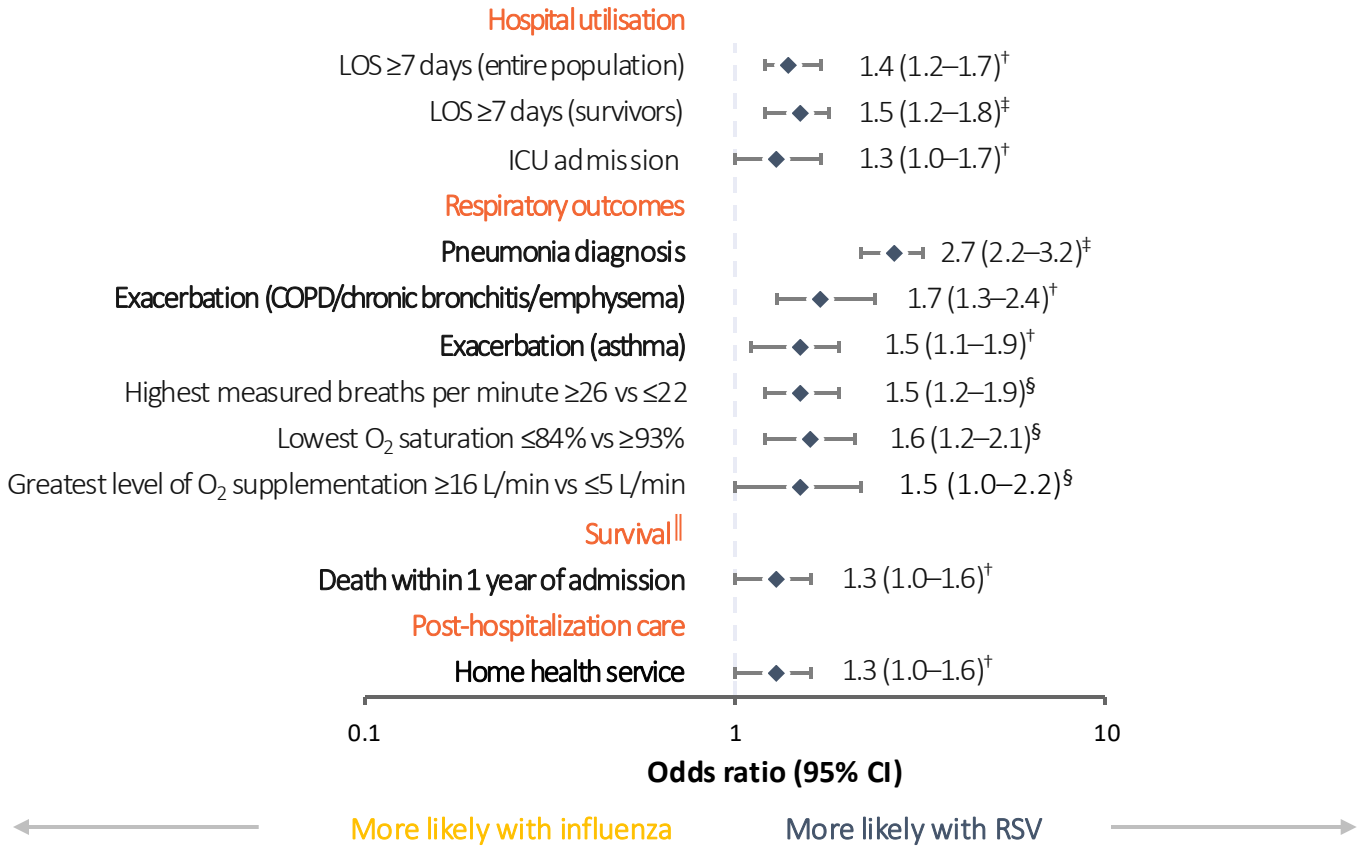
Rates of complications and severe outcomes are similar or worse in older adults with RSV than in older adults with influenza

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



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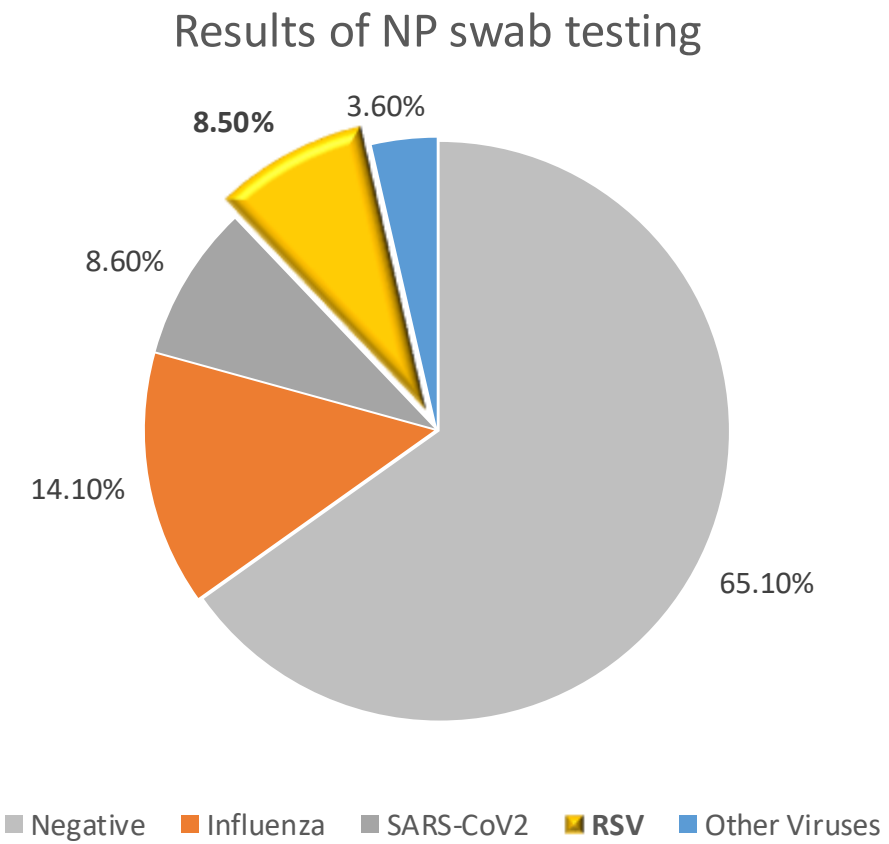
RSV burden and risk factors for severe disease

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

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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

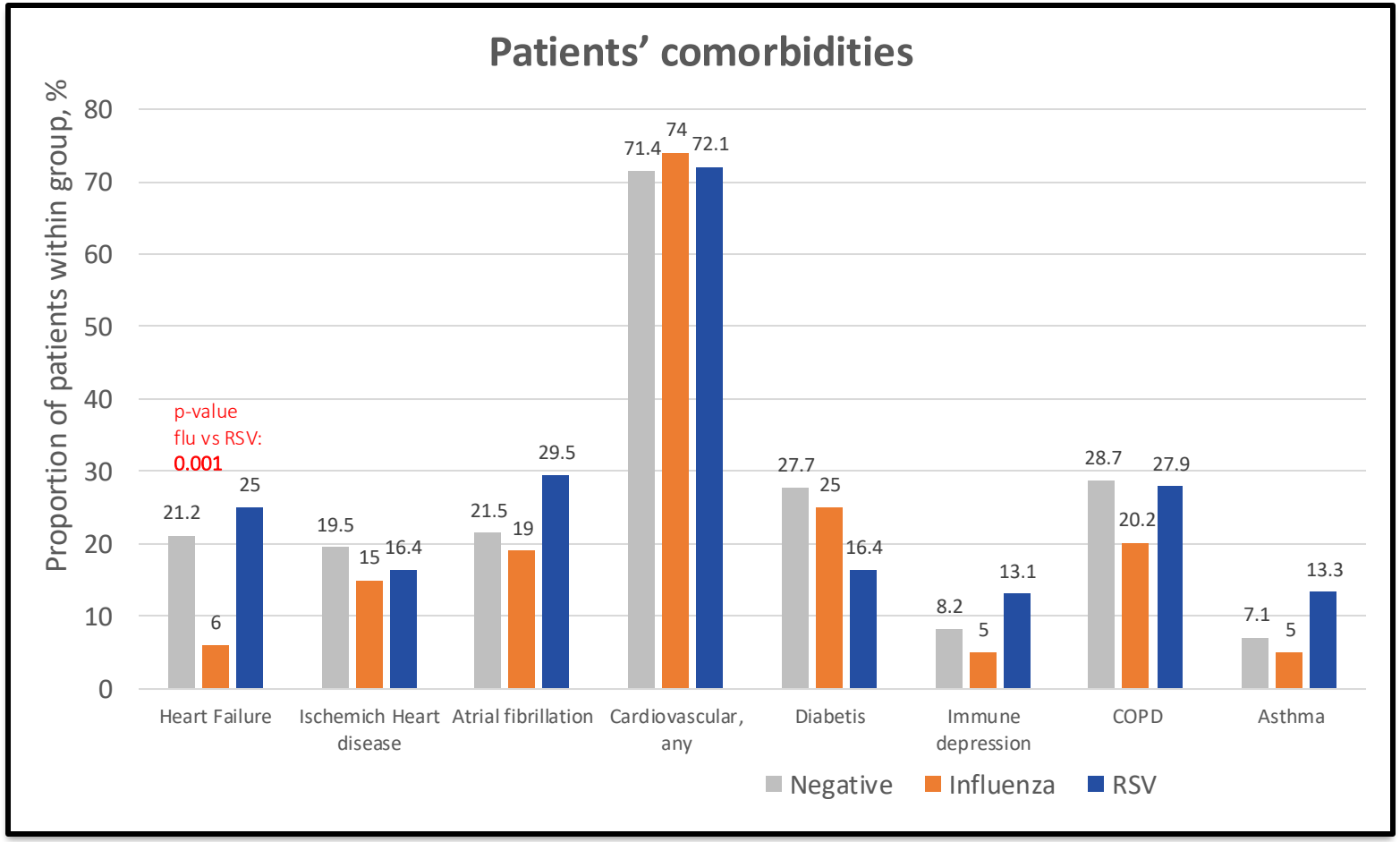

Figure independently created for GSK from the original data
ICS: Inhaled corticosteroids; CHF: Congestive heart failure; COPD: chronic obstructive pulmonary disease
Santus P. et al. Resp Medicine 2023;vol 218,107404

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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]