COVID-19 Update mit Fokus auf die onkologische Versorgungslandschaft

Arschang Valipour

Karl-Landsteiner-Institut für Lungenforschung

und Pneumologische Onkologie

Abteilung für Innere Medizin und Pneumologie

Klinik Floridsdorf

Wien

Potentielle Interessenskonflikte

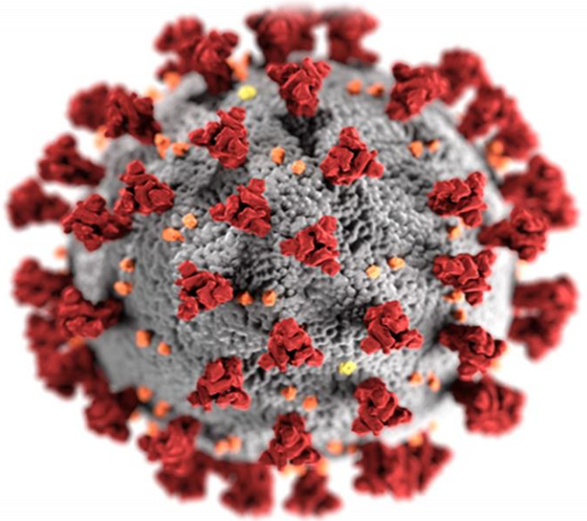
- Vortragshonorare, Konsulentenhonorare, und/oder Forschungsunterstützung von folgenden Firmen (alphabetisch):

  - Amgen, Astra Zeneca, Boehringer Ingelheim, Chiesi, GSK, Medtronic, Menarini, Merck, MSD, Novartis, Olympus, Pulmonx, Roche, Takeda

COVID-19 Update

- Klinisch-Radiologische Aspekte
- Behandlung von COVID-19
- Krebserkrankungen und COVID-19
- Post COVID

Klinisch-Radiologische Aspekte



Laborbefunde
COVID vs. Non-COVID

Befunde bei COVID-19:

- 98% Normal oder Leukopenie
- 28-80% Lymphopenie
- 44-52% CRP-Erhöhung

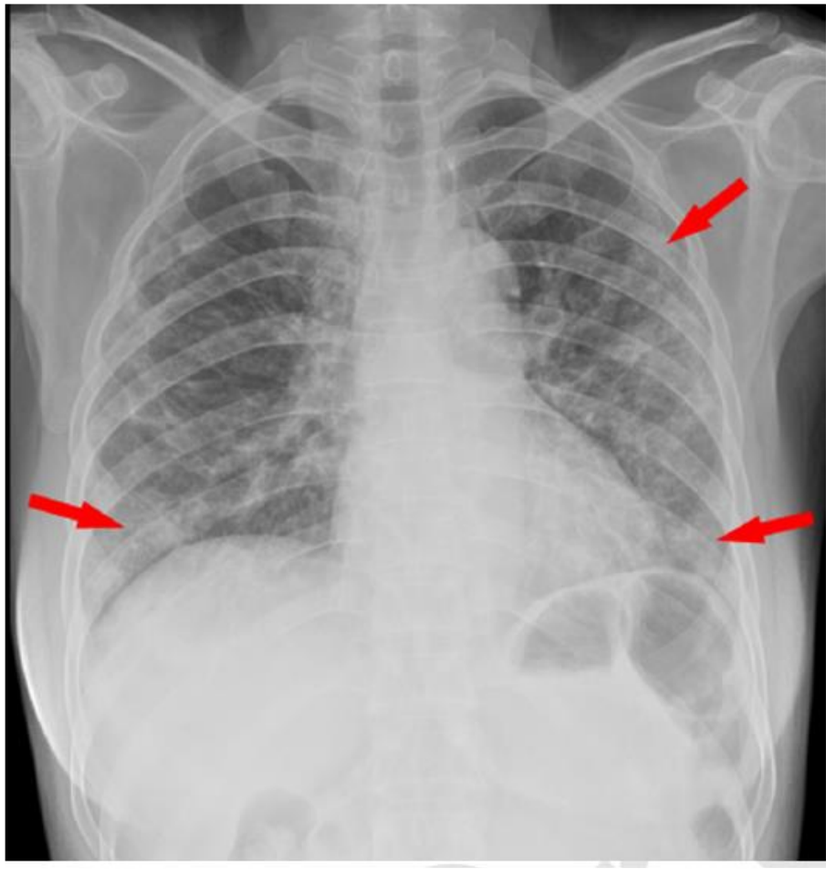
Schwerer Verlauf:

- CRP ↑, D-Dimer ↑, Trop T ↑, IL-6 ↑, PCT ↓

Shah SJ, MedRxiv 2020, Xu, YH, J Infect 2020
Guan WJ, NEJM 2020; Zhang J, Allergy 2020

Thoraxröntgen bei COVID-19

- **Anfangs oft „normal“**
- **Alle Lappen können betroffen sein**
- **Häufig subpleural subpleural**

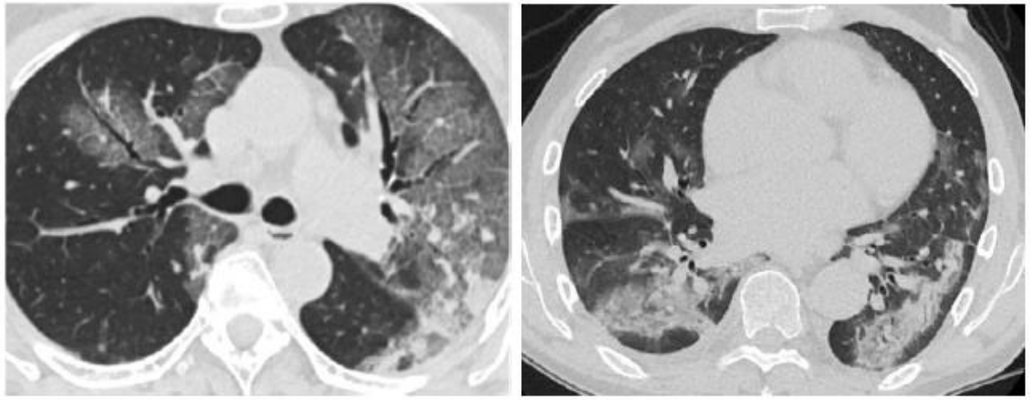


Xu YH, J Infect 2020
Guan WJ, NEJM 2020
Xu X, Eur J Nucl Med Mol Imaging 2020

Thorax-CT bei COVID-19

- 60-90 multilobuläre Infiltrate
- 70-80% Milchglastrübungen
- Im Verlauf auch Konsolidierungen,

  Verdickung der Septen und Fibrosierungen



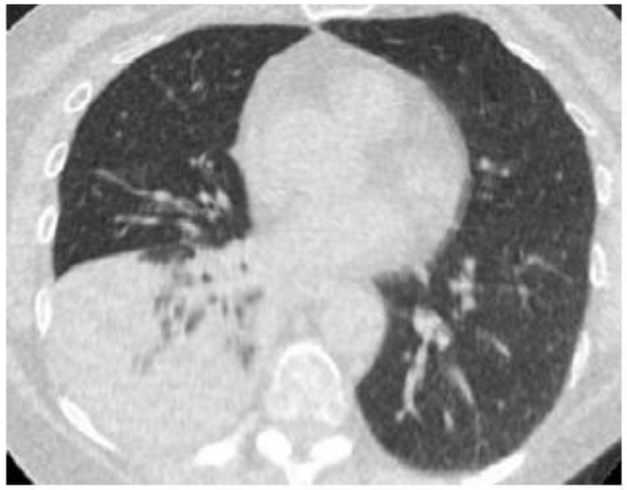
c d

Bernheim A, Radiology 2020; Xu YH, I Infect 2020; Ai T, Radiology 2020
Shi H, Lancet Infect Dis 2020; Xu X, Eur J Nucl Med Mol Imaging 2020, Luyt CE, Chest 2012

CO-RADS – A categorical CT assessment scheme for patients with suspected COVID-19: definition and evaluation

CO-RADS 2 Score

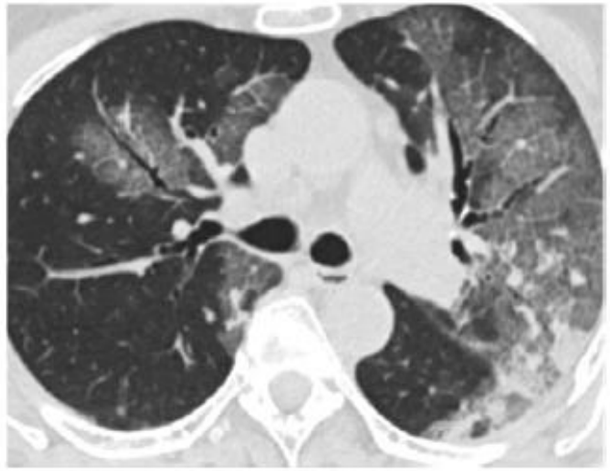
Chronische Bronchitis
Tree in bud
↓
COVID negativ



b

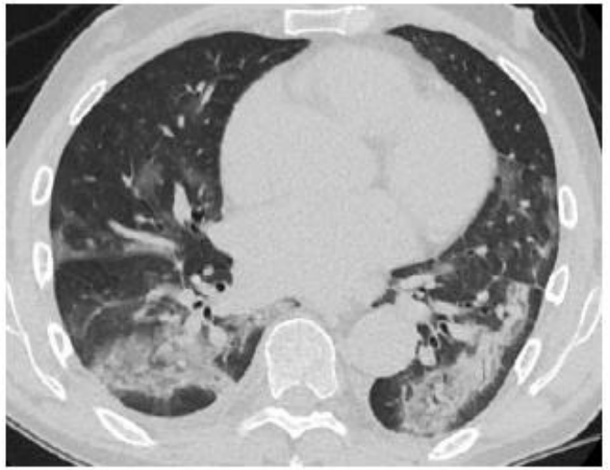
Konsolidierung
Lobärpneumonie
↓
COVID negativ

CO-RADS 5 Score



c

GGOs + Konsolidierung
Verdickung der Septen
↓
COVID positiv



d

GGOs + Konsolidierung
Subpleural, multifocal
↓
COVID positiv

Prokop M, Radiology 2020

Risikofaktoren für einen kritischen Verlauf bei COVID-19

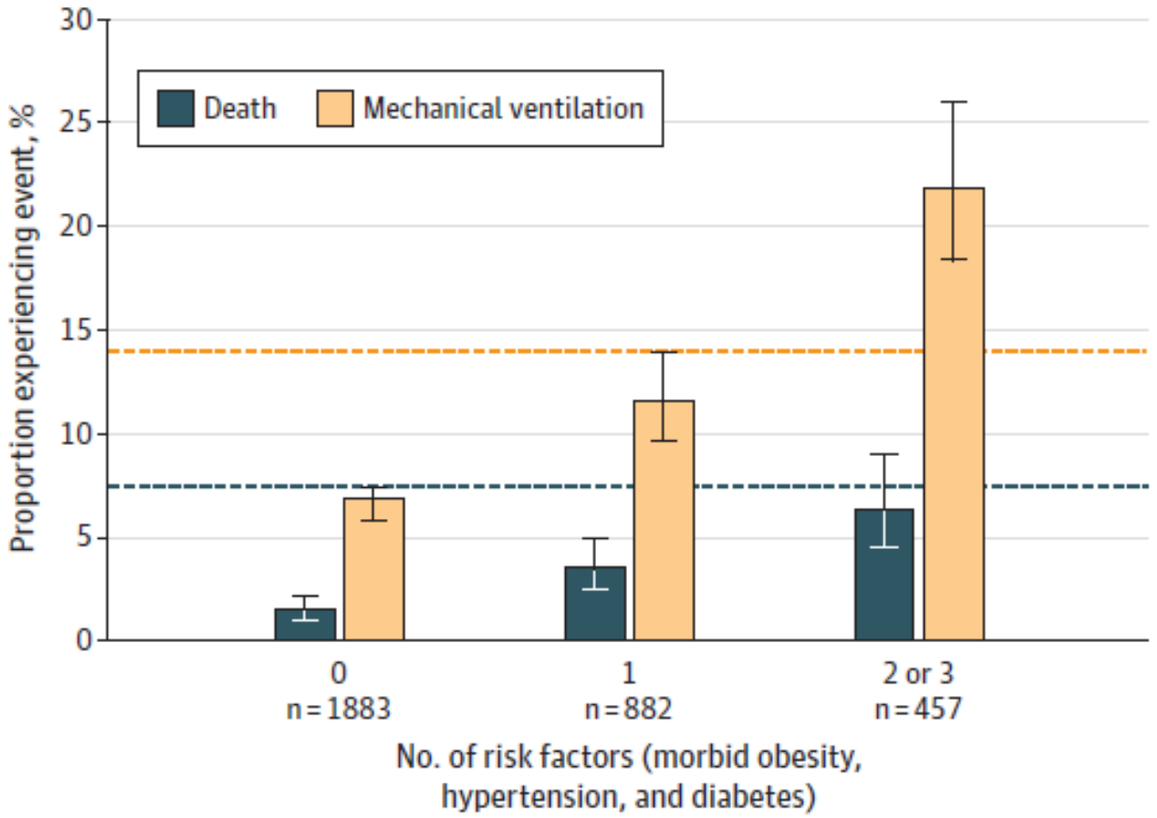
- Alter > 60a
- Adipositas
- Komorbiditäten
  - KHK
  - COPD
  - Hypertonie
  - Diabetes
- Laborparameter
  - CRP > 30 mg/L
  - D-Dimer, Troponin, IL-6

Deng SQ, JCM 2020; Zhou F, Lancet Respir Med 2020
Yang X, Lancet Respir Med 2020

www.derstandard.at

Clinical outcomes in young US adults hospitalized with COVID-19

Figure. Death and Mechanical Ventilation in Young Adults With and Without Morbid Obesity, Hypertension, and Diabetes



3222 young adults (age 18-34 years) admitted to 419 US hospitals

↓

Mean (SD) age 28.3 (4.4) yrs

57.6% men

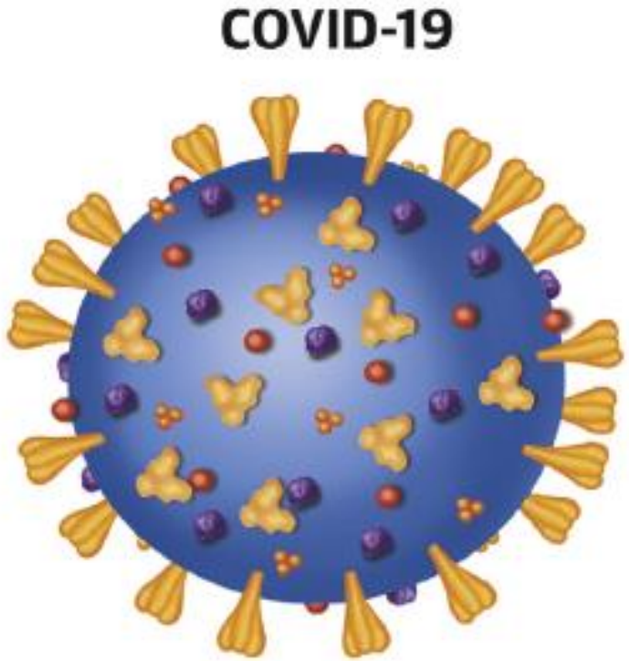
60% had obesity

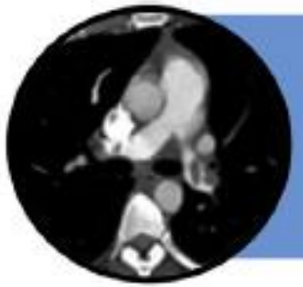
18.2% diabetes

16.1% hypertension

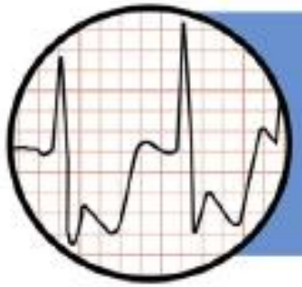
Cunningham JW, JAMA Intern Med 2020

CENTRAL ILLUSTRATION Cardiovascular Complications in Patients With Coronavirus Disease-2019 at 30 Days From Diagnosis

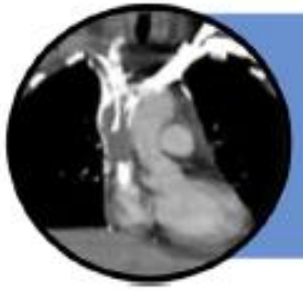




Major Arterial or Venous Thromboembolism
- ICU 35.3%
- Hospitalized non-ICU 2.6%



Major Adverse Cardiovascular Events
- ICU 45.9%
- Hospitalized non-ICU 6.1%

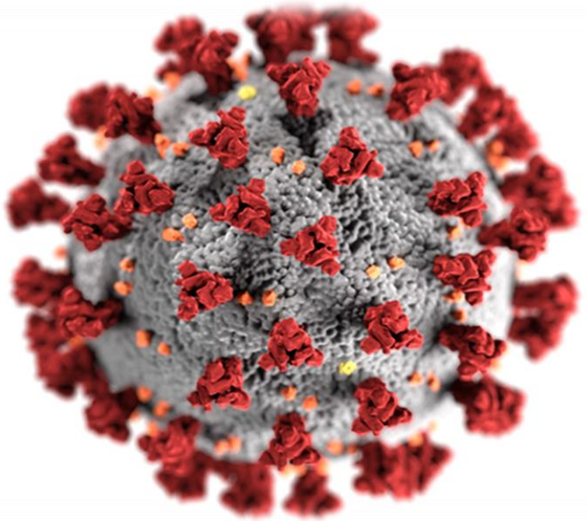


Symptomatic Venous Thromboembolism
- ICU 27%
- Hospitalized non-ICU 2.2%
- Despite 85%-90% thromboprophylaxis rate

Retrospectice cohort of 1.114 patients at MGH

Piazza G, JACC 2020

Behandlung von COVID-19



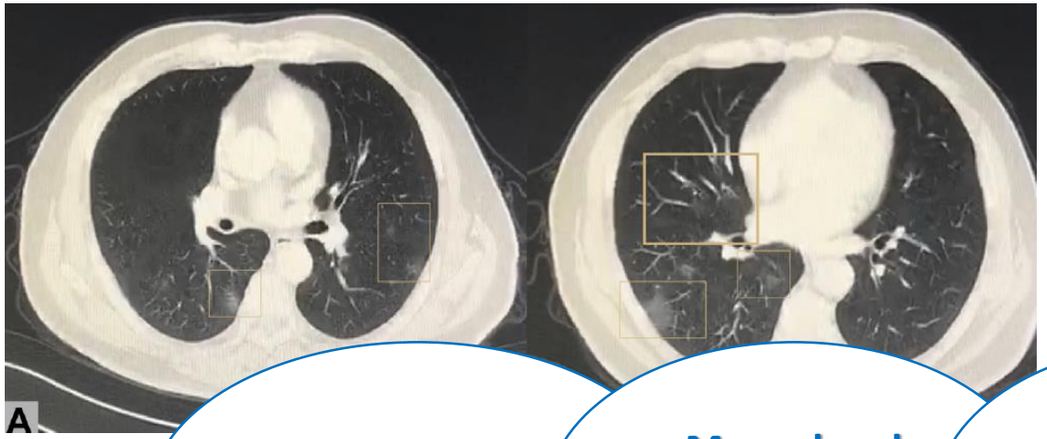
COVID-19 Pneumonie

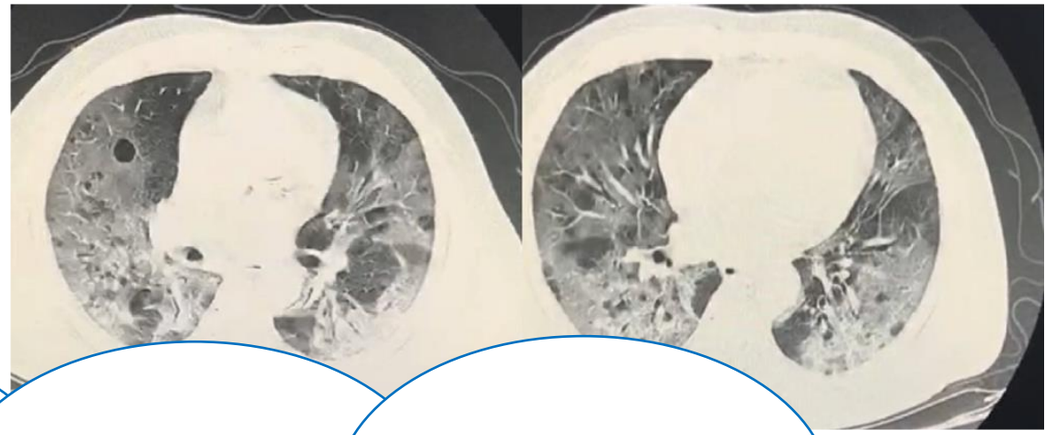
Stage I
Early Infection
Days 5–7

Stage II
Pulmonary
Day 14

Stage III
Hyperinflammation
Day 21

Stage IV
ARDS
Day 28





- Inhaled corticosteroids
- Monoclonal antibody therapy
- Remdesivir (?)
- Dexamethasone
- Anti-IL 6 Therapy
- JAK-Inhibitor

Kooraki S, J Am Coll Radiol 2020

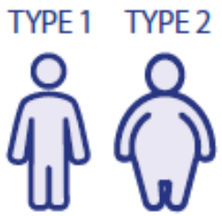
Target population for therapeutic monoclonal antibody therapy

Advanced age

Obesity

Cardiovascular disease
(including hypertension)

Chronic lung disease
(including asthma)



Type 1 or 2
diabetes mellitus

Chronic kidney disease
(including those on dialysis)

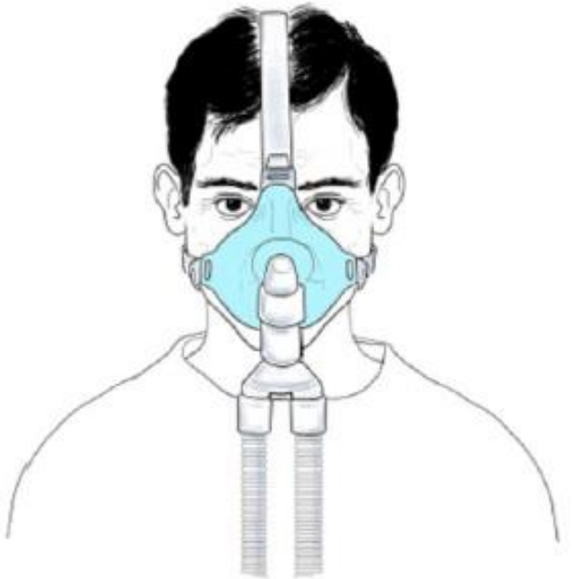
Chronic liver disease

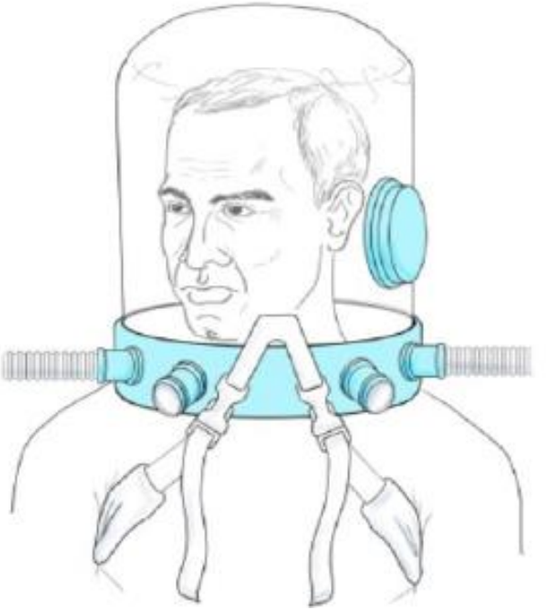
Immunosuppressed,
based on prescriber's
assessment†

† Examples include: cancer treatment, bone marrow or organ transplantation, immune deficiencies, HIV (if poorly controlled or evidence of AIDS), sickle cell anaemia, thalassaemia, and prolonged use of immune-weakening medications.

Noninvasive respiratory support for acute hypoxemic respiratory failure

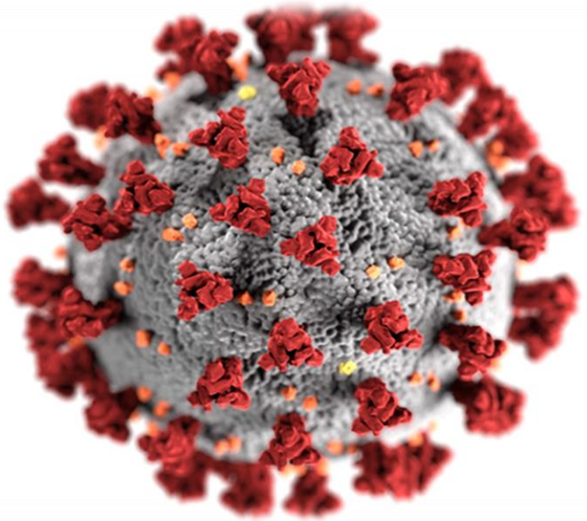
- High-flow nasal oxygen
- Noninvasive ventilation: CPAP and Pressure Support Ventilation (PSV)
  - Facemask
  - Helmet





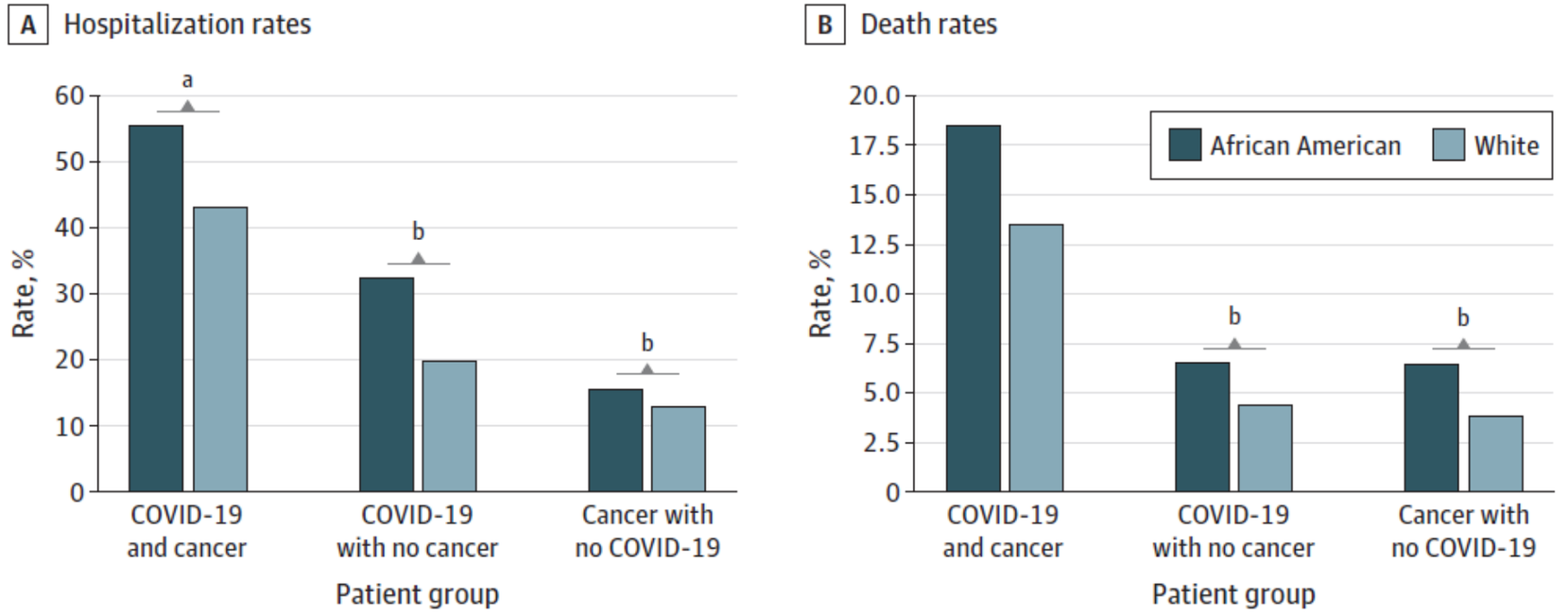
Grieco DL, Intensive Care Med 2021

Krebserkrankungen und COVID-19



Outcomes among US Patients With Cancer and COVID-19 Infection

Figure 4. Hospitalization and Death Rates Among Adults



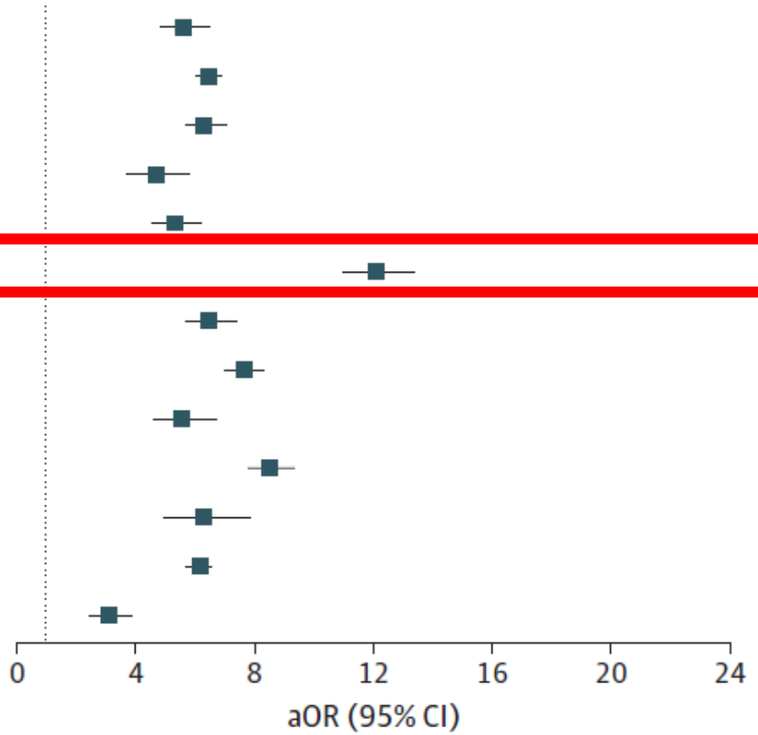
~ 2000 patients with cancer out of 16.000 patients with COVID-19

Wang Q, JAMA Oncol 2020

Outcomes among US Patients With Cancer and COVID-19 Infection

B Associations between recent diagnosis of cancer and COVID-19 infection

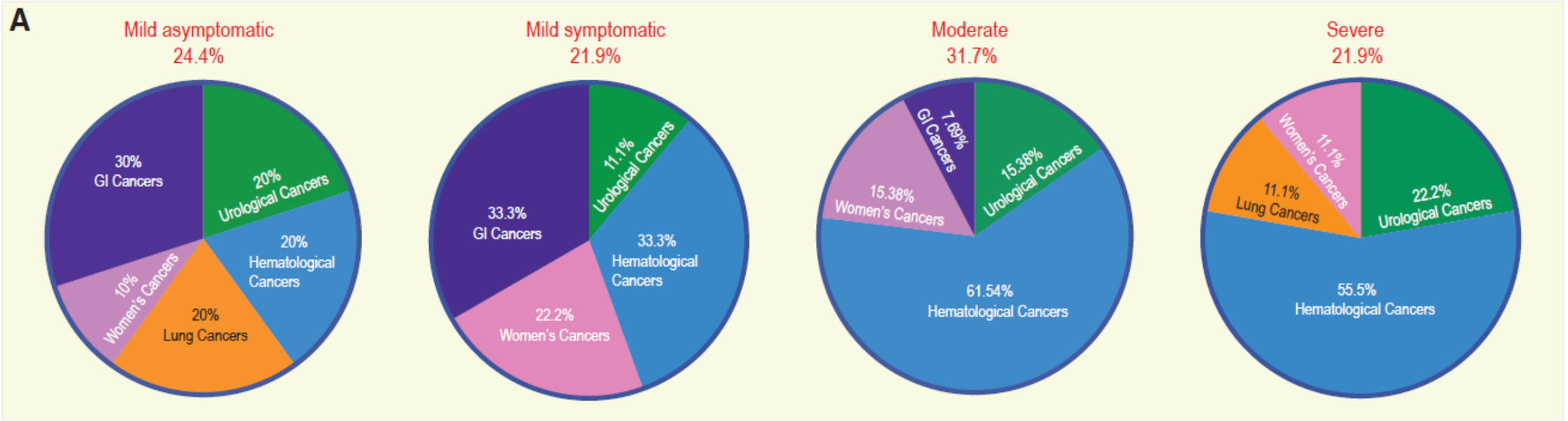
Exposure	Outcome	aOR (95% CI)	*P* value
Bladder cancer	COVID-19	5.63 (4.86-6.52)	<.001
Breast cancer	COVID-19	6.47 (6.06-6.91)	<.001
Colorectal cancer	COVID-19	6.36 (5.71-7.08)	<.001
Endometrial cancer	COVID-19	4.70 (3.79-5.82)	<.001
Kidney cancer	COVID-19	5.33 (4.58-6.21)	<.001
Leukemia	COVID-19	12.16 (11.03-13.40)	<.001
Liver cancer	COVID-19	6.49 (5.71-7.38)	<.001
Lung cancer	COVID-19	7.66 (7.07-8.29)	<.001
Melanoma	COVID-19	5.58 (4.62-6.73)	<.001
Non-Hodgkin lymphoma	COVID-19	8.54 (7.80-9.36)	<.001
Pancreatic cancer	COVID-19	6.26 (4.98-7.87)	<.001
Prostate cancer	COVID-19	6.14 (5.72-6.60)	<.001
Thyroid cancer	COVID-19	3.10 (2.47-3.87)	<.001



After adjusting for age, sex, race, asthma, cardiovascular disease, diabetes, obesity, COPD, and cancer treatment

Wang Q, JAMA Oncol 2020

SARS-CoV-2 disease severity and cancer aetiology



Abdul-Jawad S, Cancer Cell 2021

COVID-19 pandemic: a burden to cancer management

- Delay in diagnosis and treatment in current outpatient and inpatient care
- Barriers to hospital admission for acute problems
- Health care workers infected or in quarantine
- Social and physical isolation of cancer patients

https://thedoctorweighsin.com/physician-burnout-leadership/

Qu J, Ann Oncol 2020

Management of Lung Cancer During the COVID-19 Pandemic

2020

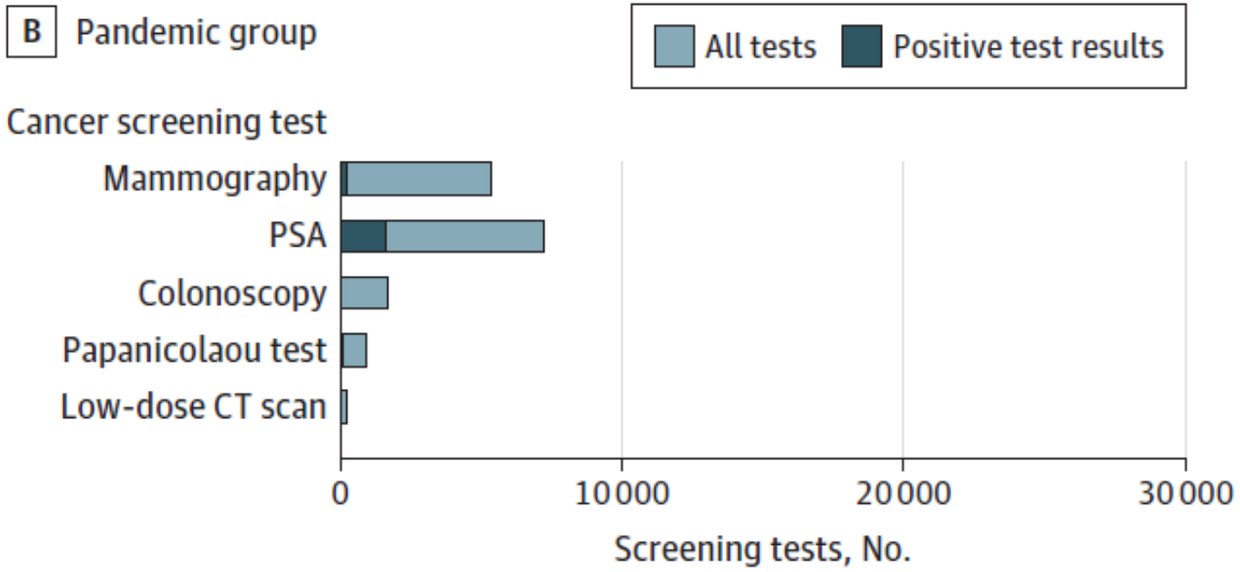
Diagnostic

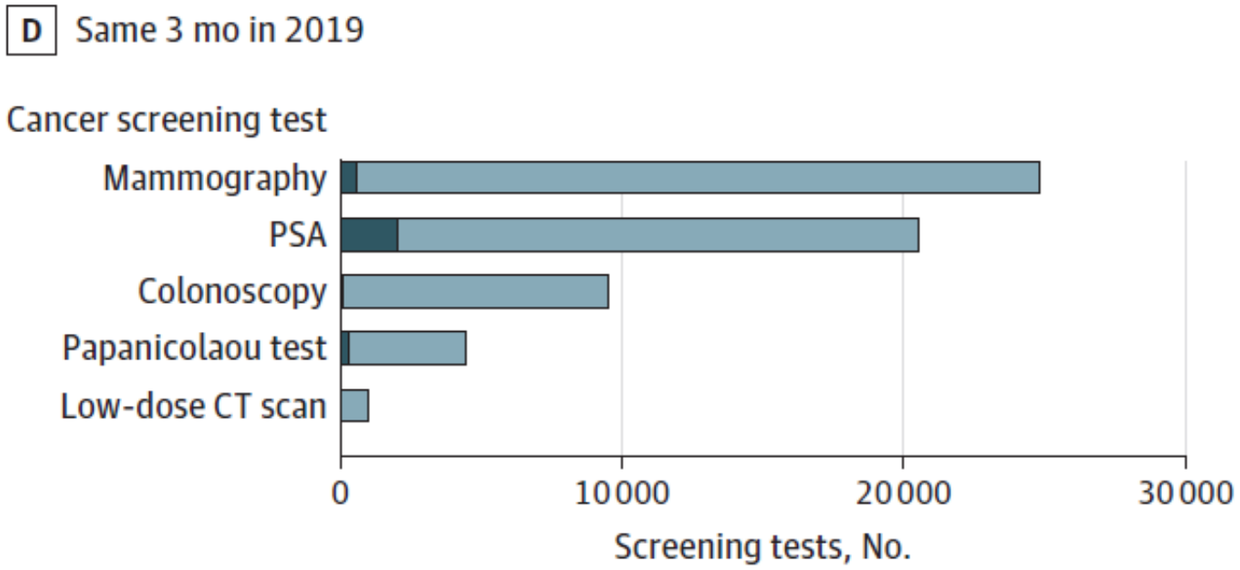
- CT guided biopsy instead of bronchoscopy
- Mediastinoscopy instead of EBUS
- ctDNA instead of biopsy

Therapeutic

- SBRT for nodules < 2cm, GGOs, and carcinoids
- Delay adjuvant Chemo up to 4mo
- Extend treatment intervals

Singh AP, JCO Oncol Pract 2020





Cancer Screening Tests and Cancer Diagnoses in the USA During the COVID-19 Pandemic

Bakouny Z, JAMA Oncol 2021

Impact of COVID-19 on cancer service delivery: a follow-up international survey of oncology clinicians

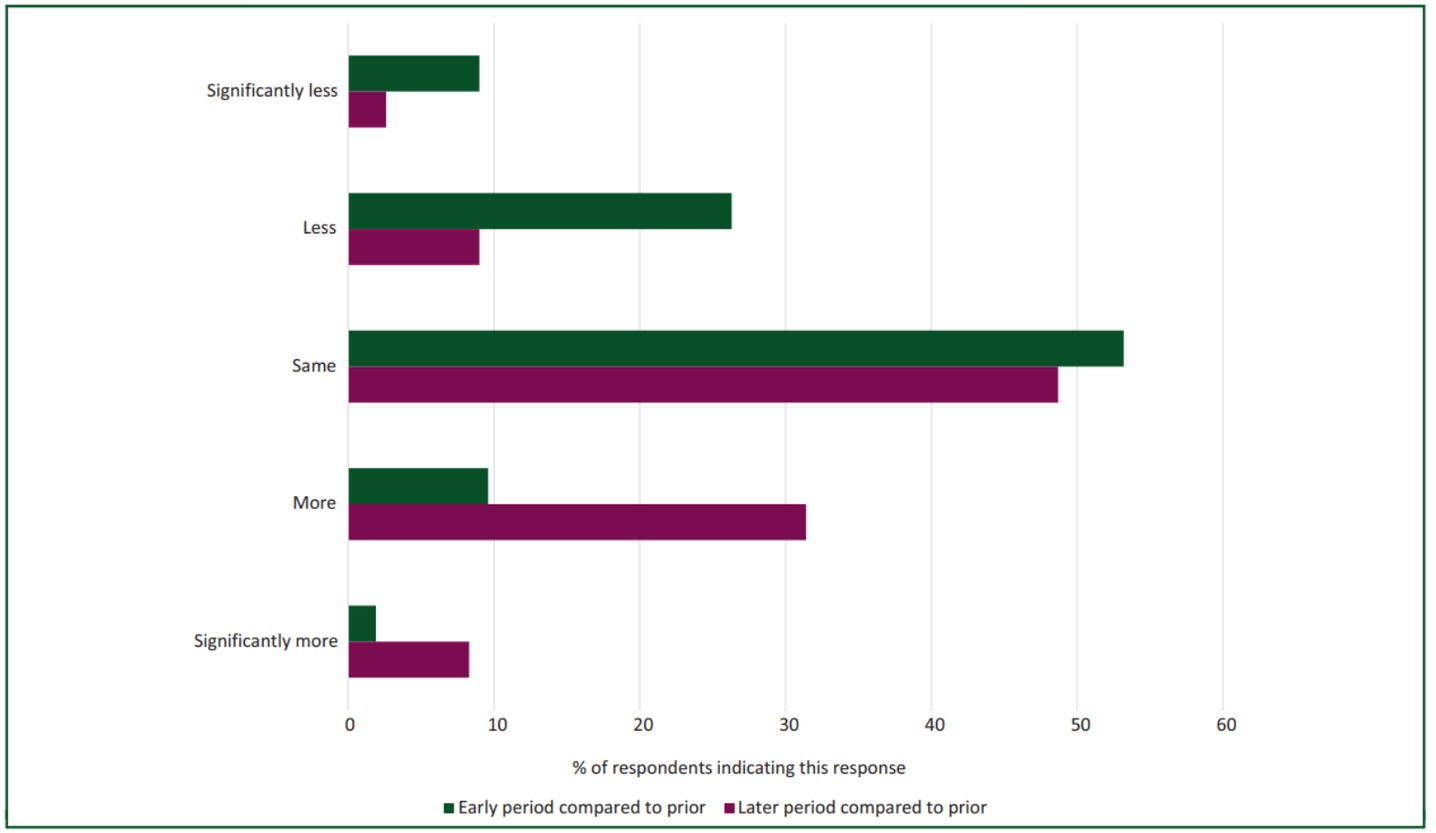
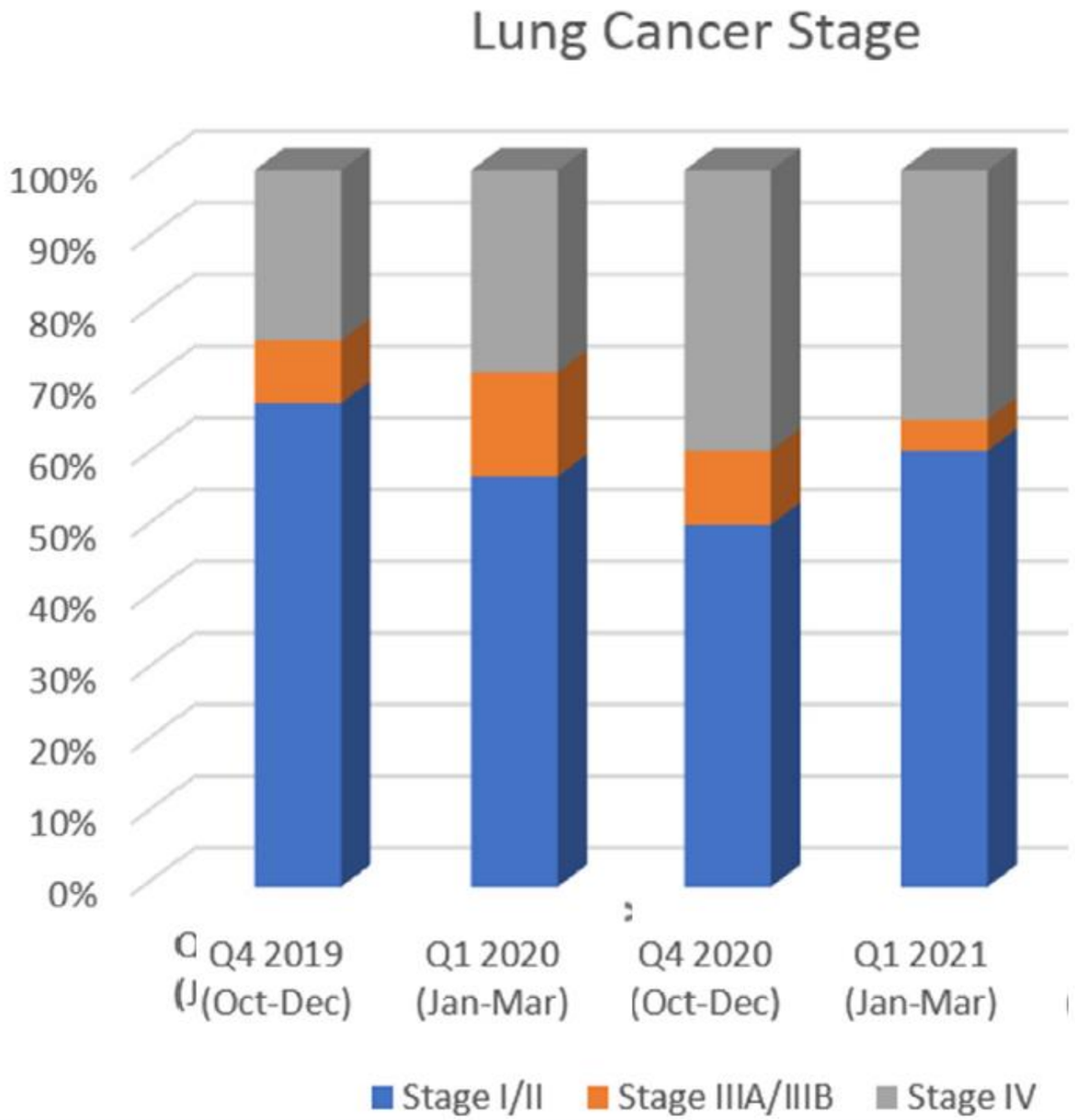


Figure 2. Changes to numbers of patients presenting with advanced disease compared with before the pandemic.
The figure shows reported changes to the number of patients presenting with advanced disease in both the 'early period' of the COVID-19 pandemic (defined as March-April 2020) compared to before the pandemic, and in the 'later period' (defined as October-November 2020) compared to before the pandemic.

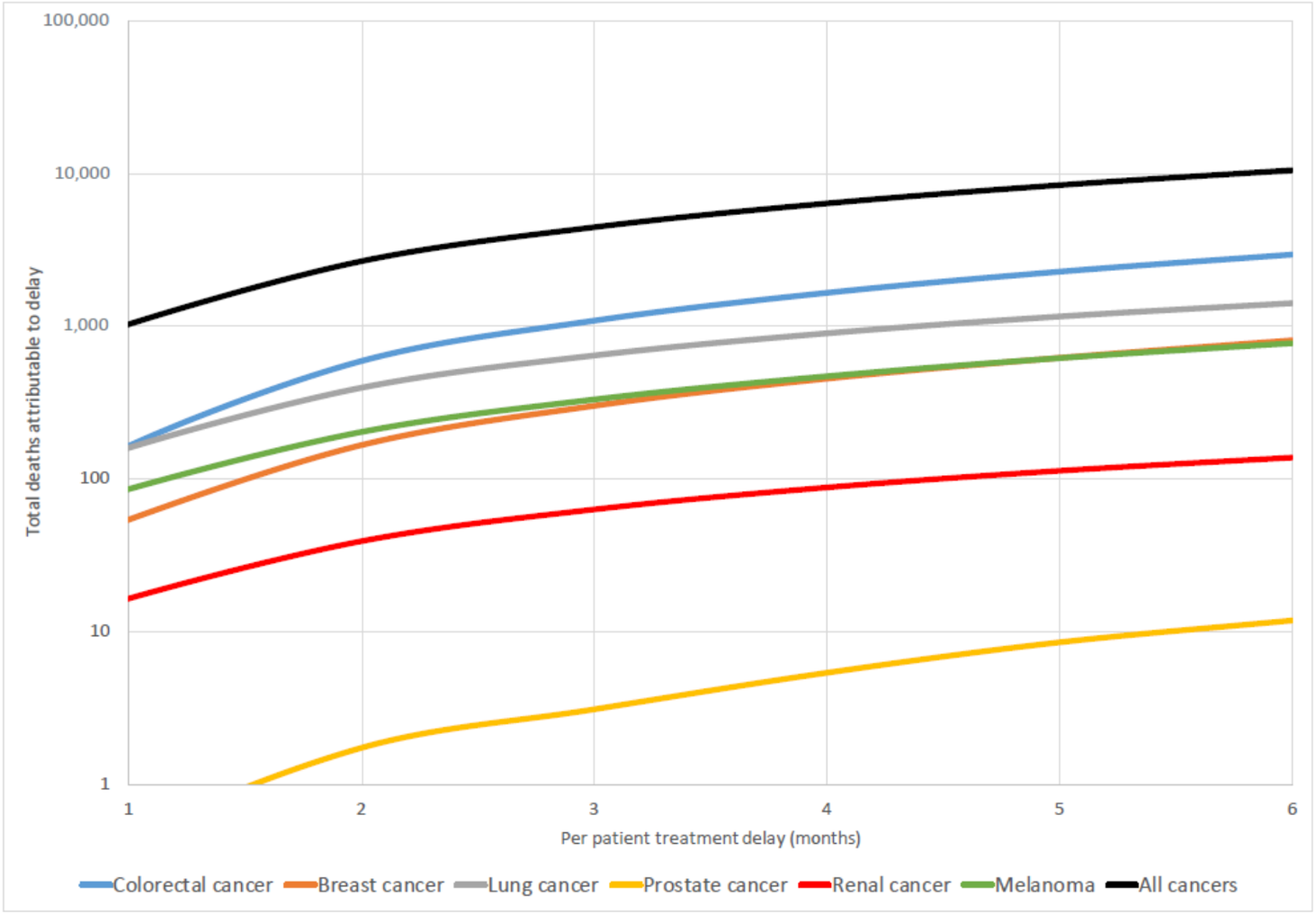
~40% of physician report that patients present with more advanced disease compared to pre-pandemic times

Chazan G, ESMO Open 2021



Lung Cancer Stage Shift as a Result of COVID-19 Lockdowns in New York City, a Brief Report

Mynard N, Clin Lung Cancer 2021



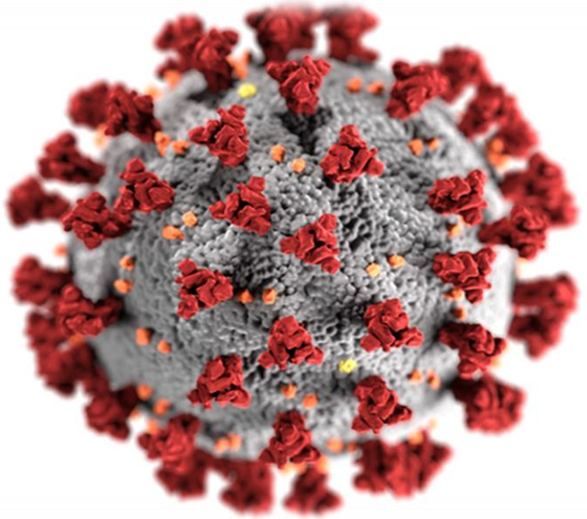
The impact on outcomes from cancer surgery of the COVID-19 pandemic

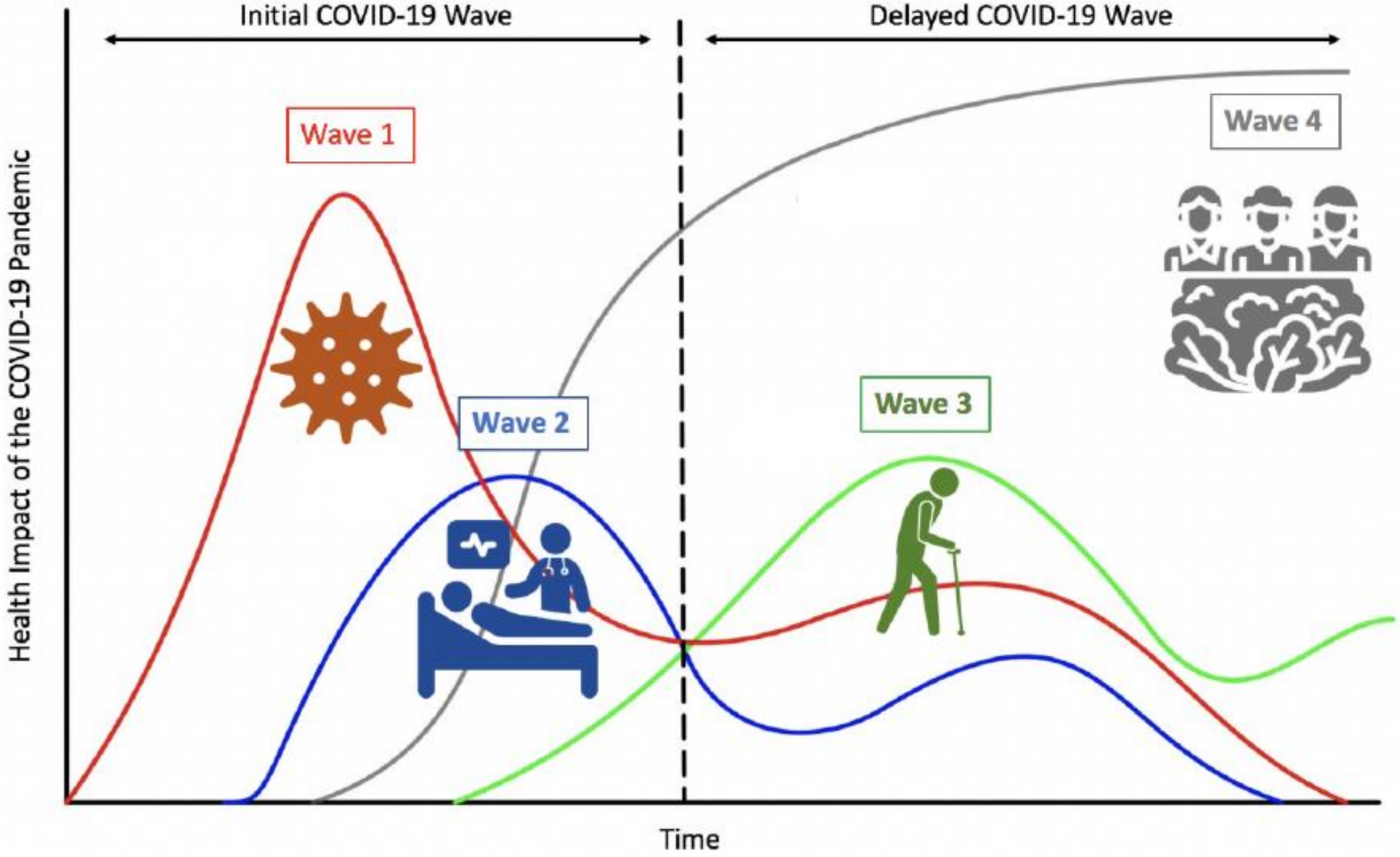
↓

An average loss of 2.19 Life Years Gained per patient associated with a 6 months delay

Sud A, Ann Oncol 2020

Post-COVID



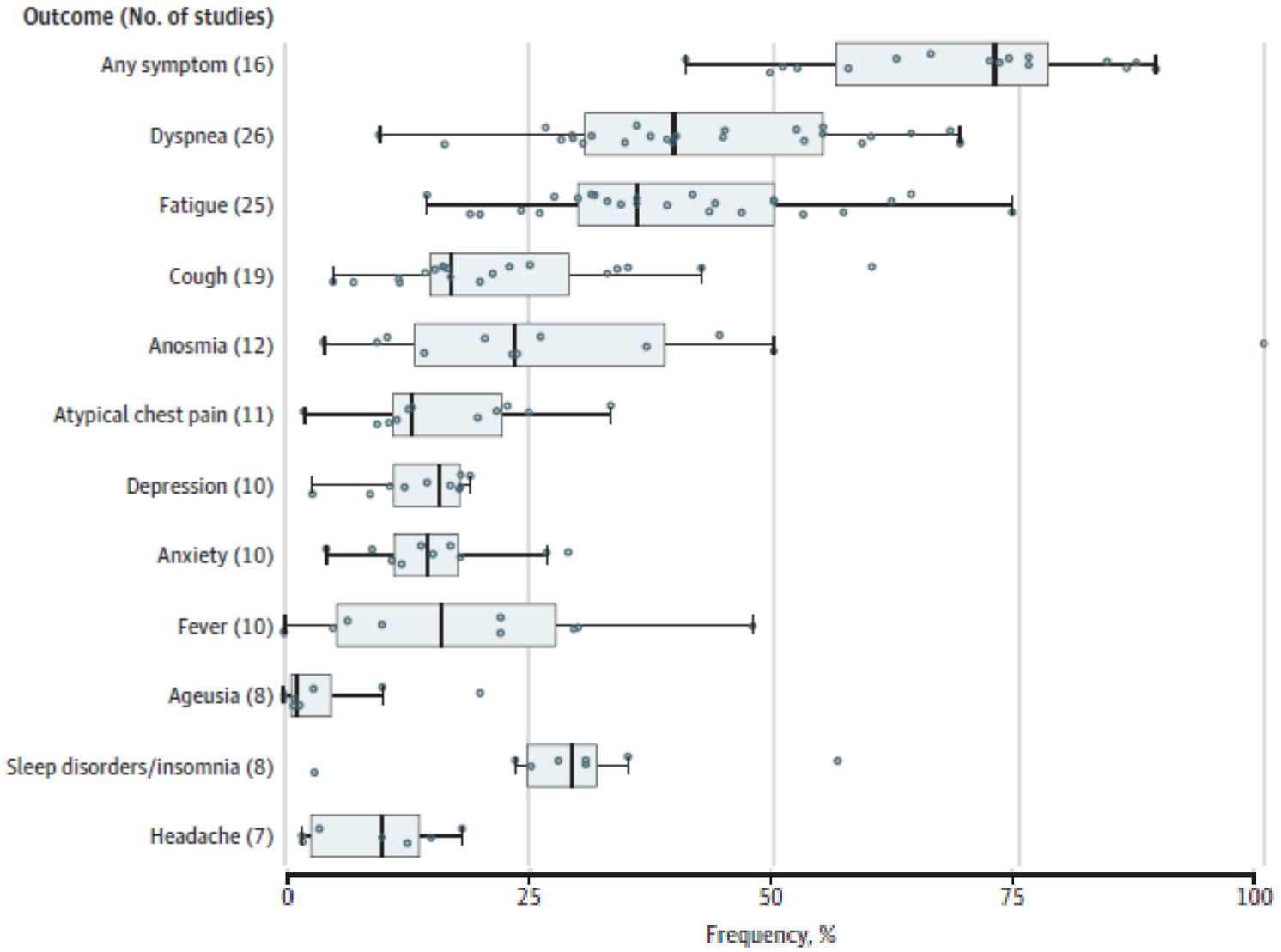


Wave 4: Post COVID-19 Era

- Loss of / Sick Healthcare Workers
- Economic and Social Unrest
- Psychological Trauma
- Backlog of Patients Requiring Care

Vervoort D, Ann Thorac Surg 2020

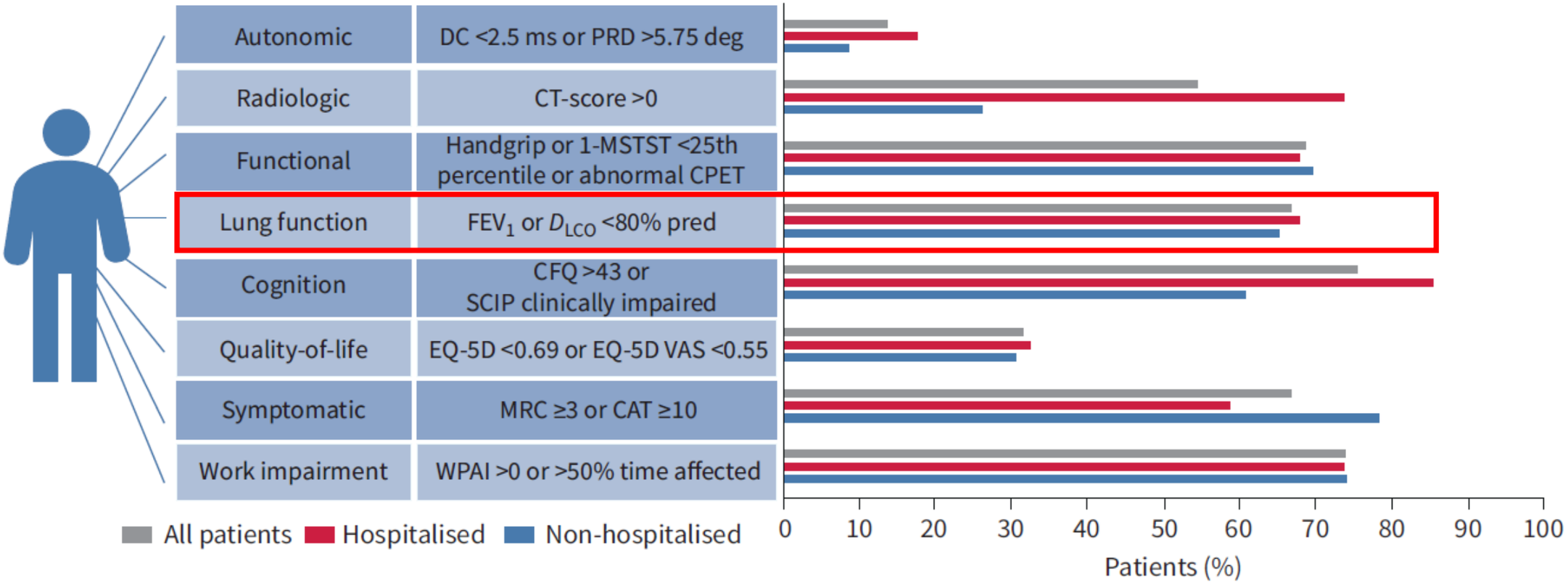
Figure 1. Reported Frequencies of Symptoms Examined by 5 or More Studies



Assessment of the Frequency and Variety of Persistent Symptoms Among Patients With COVID-19

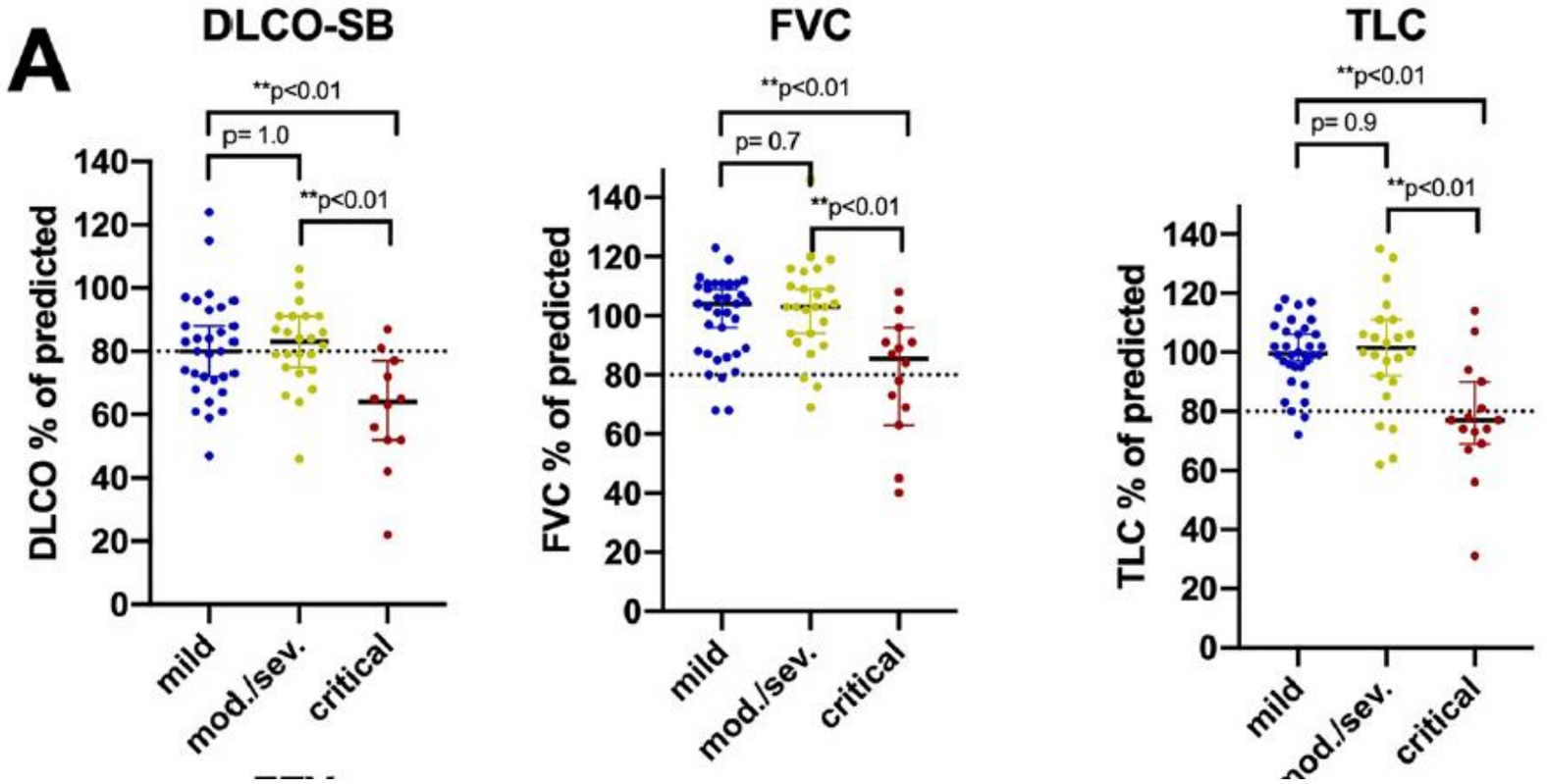
Nasserie T, JAMA Open 2021

Long term impact of COVID-19



Johnsen S, ERJ Open 2021

Pulmonary function impairment 4 months after COVID-19 according to disease severity



Munker D, Infection 2021

Lung scans from a 50-year-old show that damage from COVID-19 (red) can improve with time — but many patients have lasting symptoms.

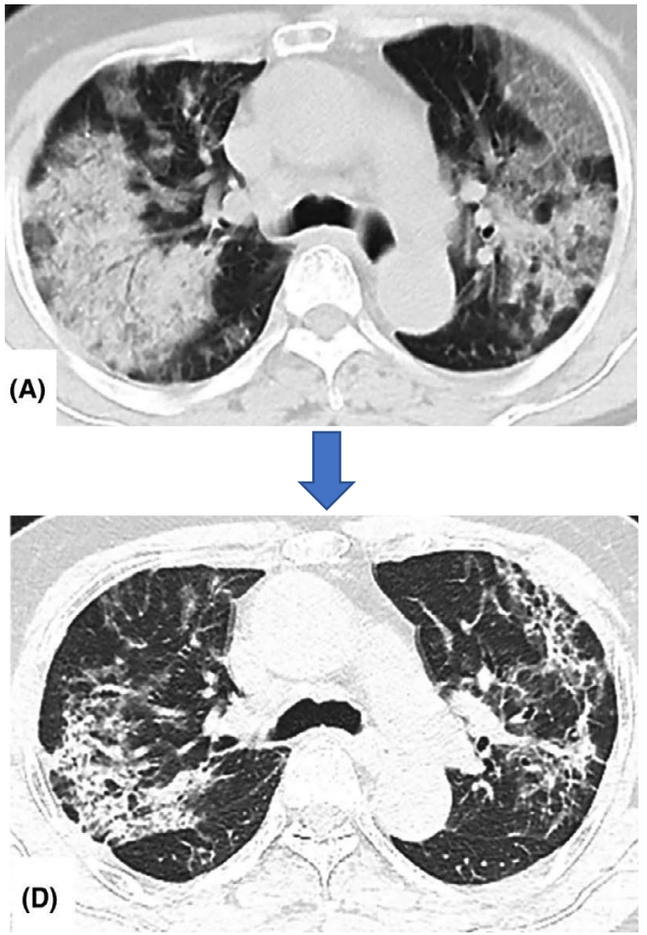
JAMA 2020

Covid-19: Radiologischer Verlauf

„Normaler“ Verlauf:
Resolution von mindestens 75%
der Läsionen innerhalb von 2 Wochen

Beobachtung bei Covid-19:
18-24% der Betroffenen erfüllen o.a. Kriterien nicht!

Zheng C, Int J Infect Dis 2020



Zhang J, Allergy 2020

Organizing pneumonia following Covid19 pneumonia

Georg-Christian Funk[1,2]
Wolfgang Pokieser[3]
Birgit Thaler[1]
Gernot Rainer[4]
Arschang Valipour[5,2]

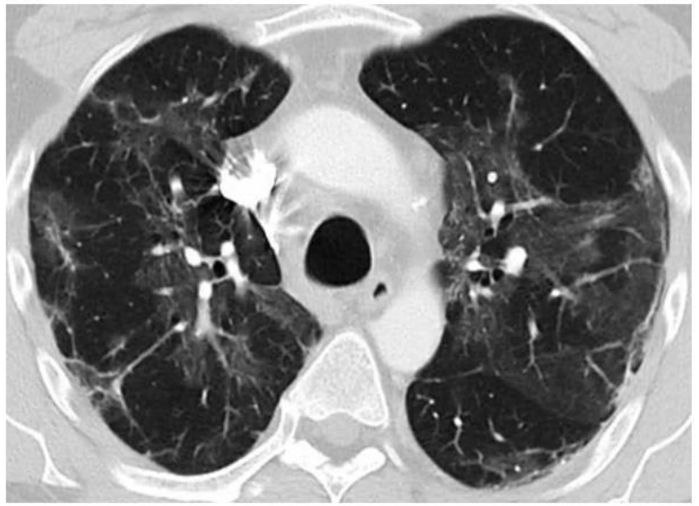


Figure 2. Lung CT scan in the upper lobe four weeks after symptom onset showing pathy subpleural ground glass opacities and linear consolidation

Figure 3. Lung CT scan in the lower lobes showing ground glass, arcade-like bands of parenchymal consolidation, peribronchial consolidation and bronchiolectasis.

49 a, zuvor gesund, Atemnot -> Thorax-CT 4 Wochen nach Covid 19

Funk et al., manuscript submitted

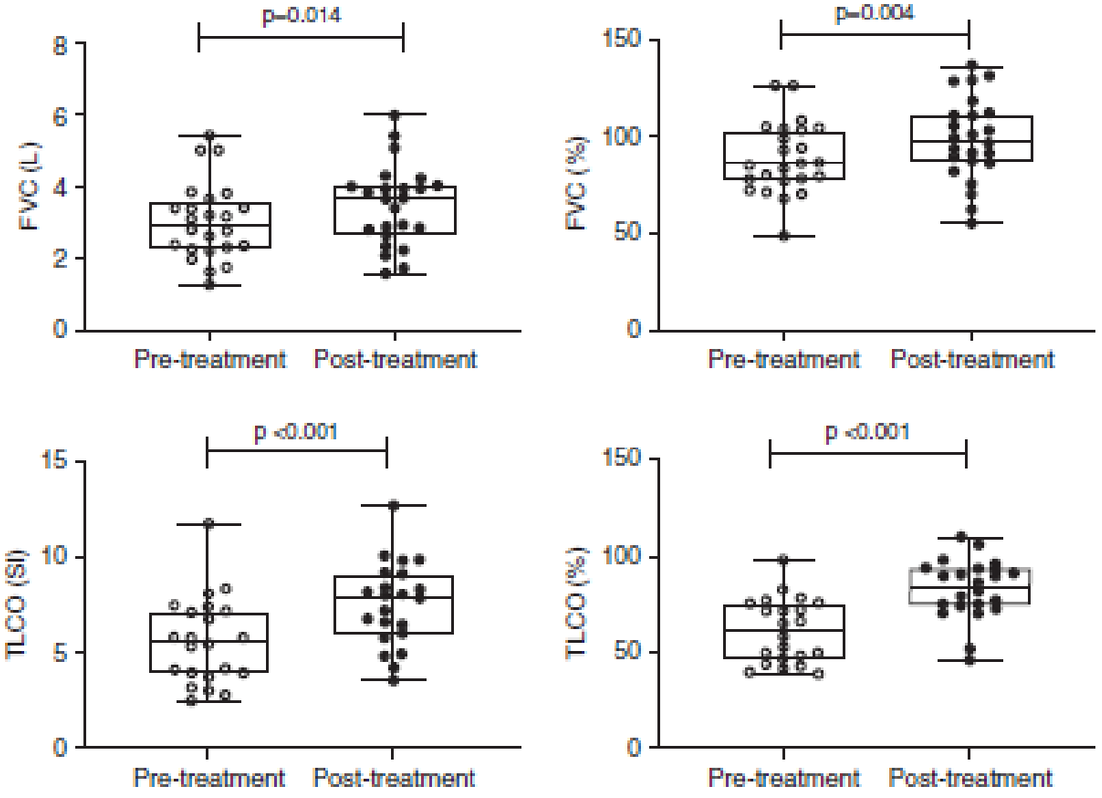
Persistent Post–COVID-19 Interstitial Lung Disease
An Observational Study of Corticosteroid Treatment

837 patients with COVID-19

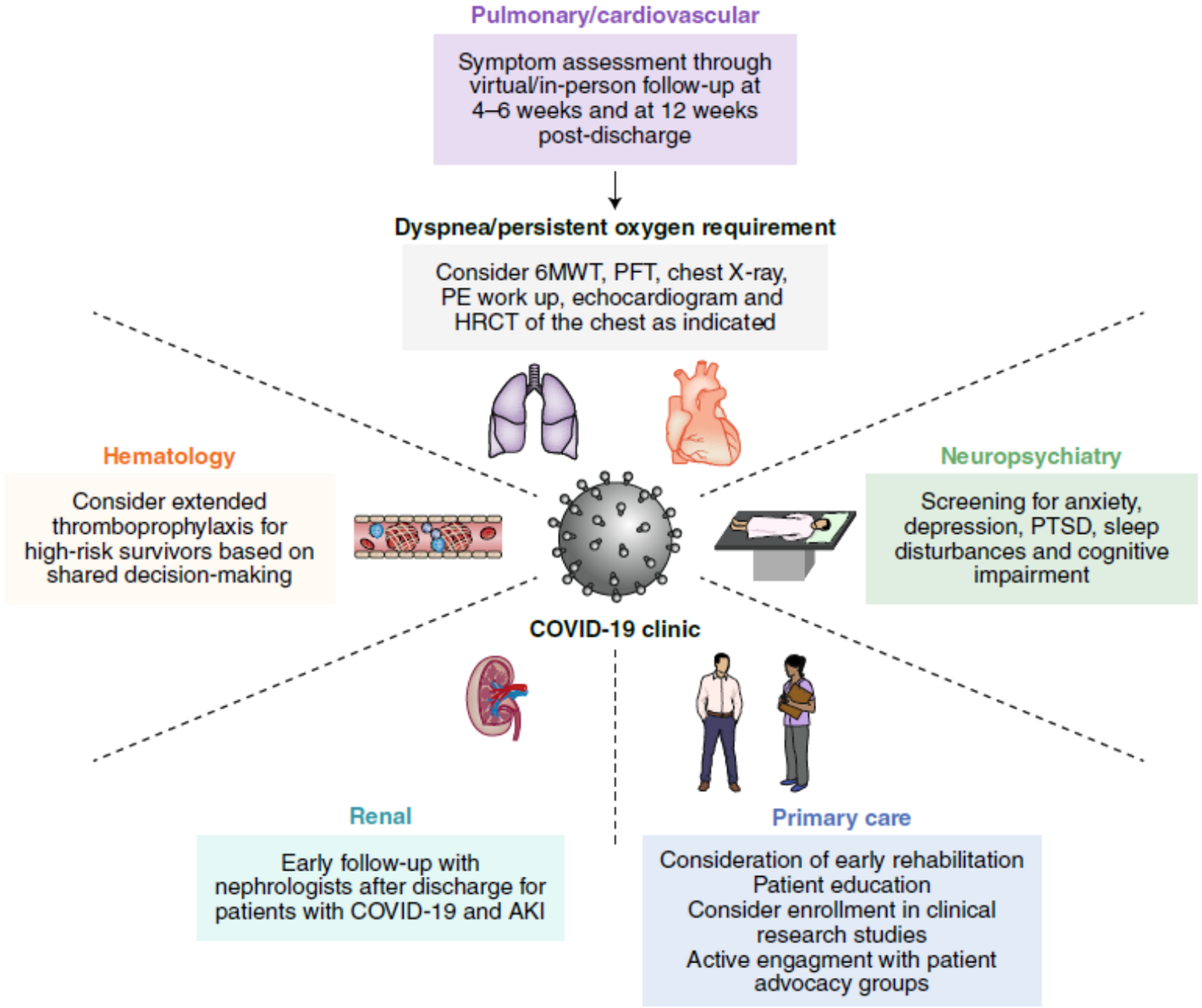
39% with symptoms at 4 weeks

4.8% with ILD (mainly organizing pneumonia)

Systemic steroid therapy



Myall KM, Ann ATS 2021



Systematic assessment of the post-acute COVID-19 syndrome

Nalbandian A, Nat Med 2021