COVID a POST-COVID seminář CHIESI

Vladímír Koblížek, Michal Kopecký, Mikuláš Skála

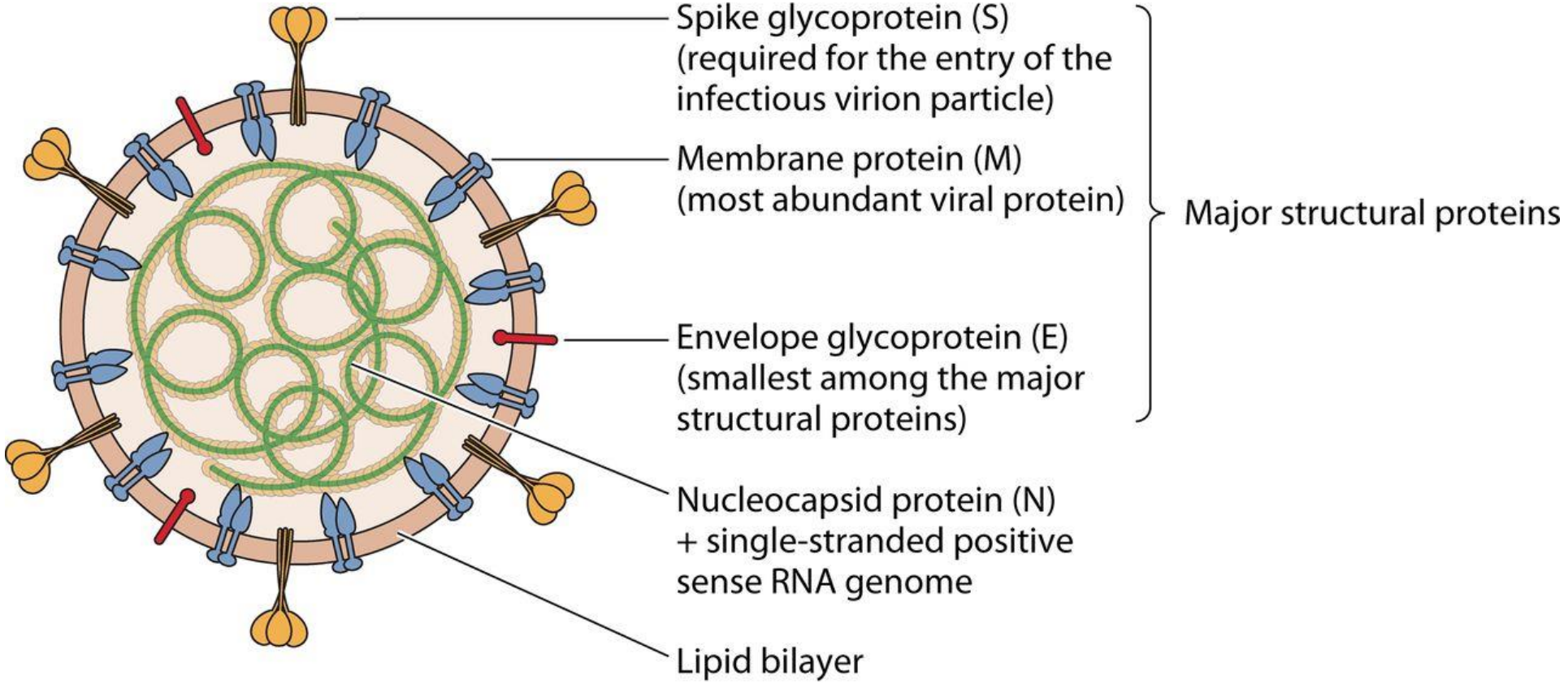
Plicní klinika FN HK a UK LF HK

Agenda

- Akutní COVID-19
- Následky po COVID-19
- Souhrn pro praxi

Akutní COVID-19

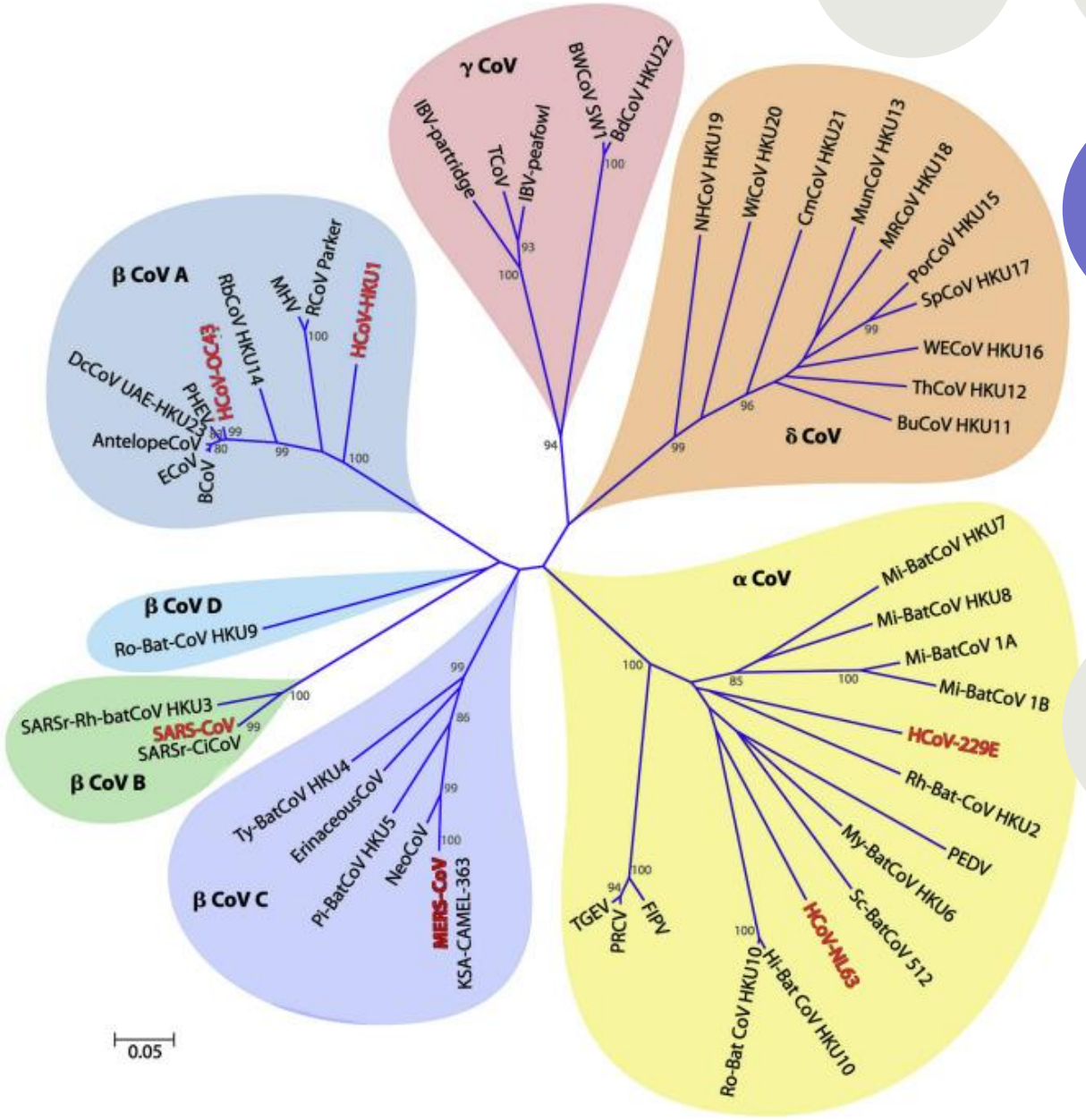
Původce onemocnění COVID-19
SARS-CoV-2



https://doi.org/10.1128/CMR.00028-20

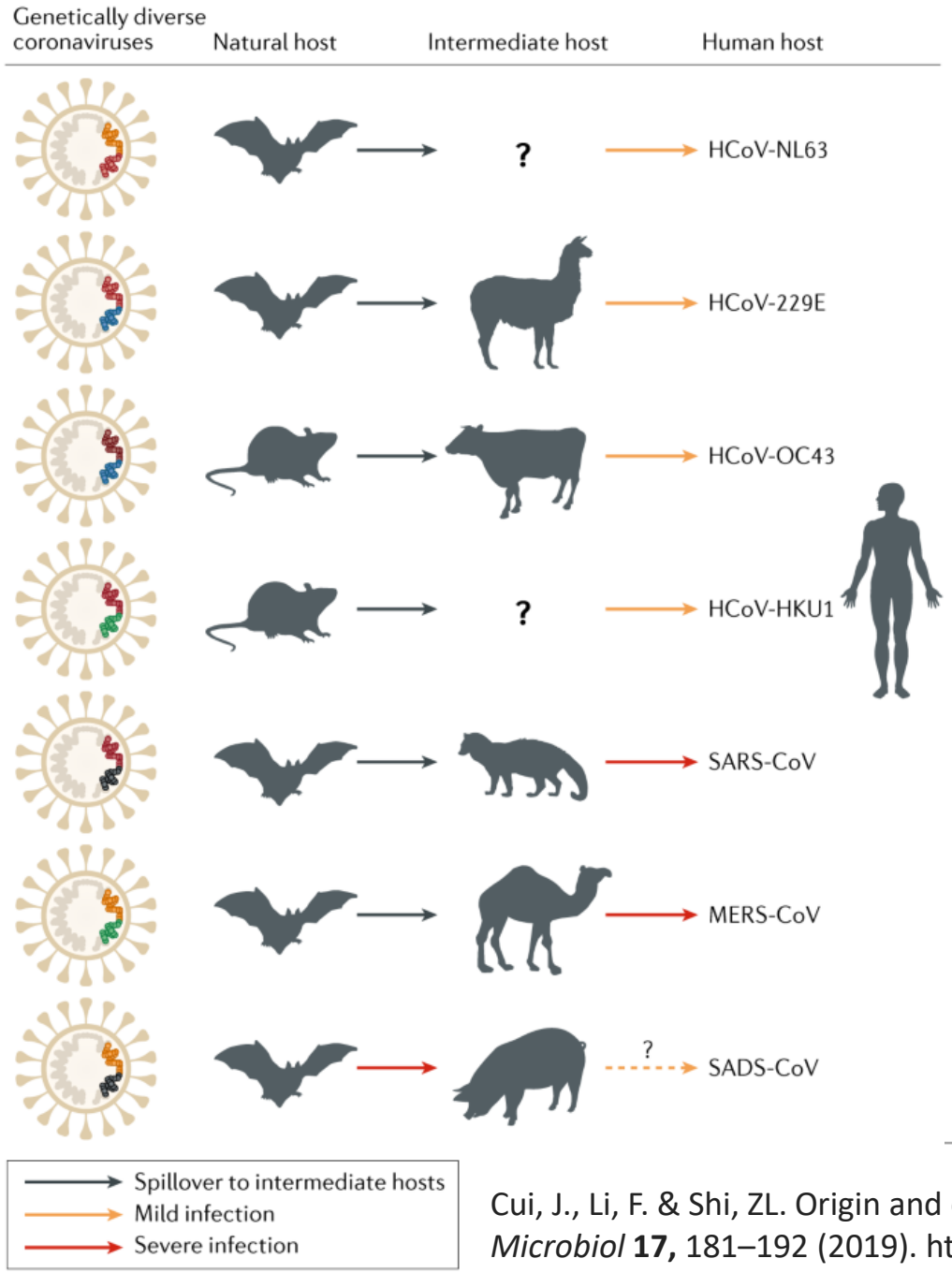
Příbuzní SARS-CoV-2

- Alfa koronaviry (229E, NL) a Beta koronaviry (OC, HK) – mírné infekce
- SARS 2002 - 2004
- MERS 2012 - dosud



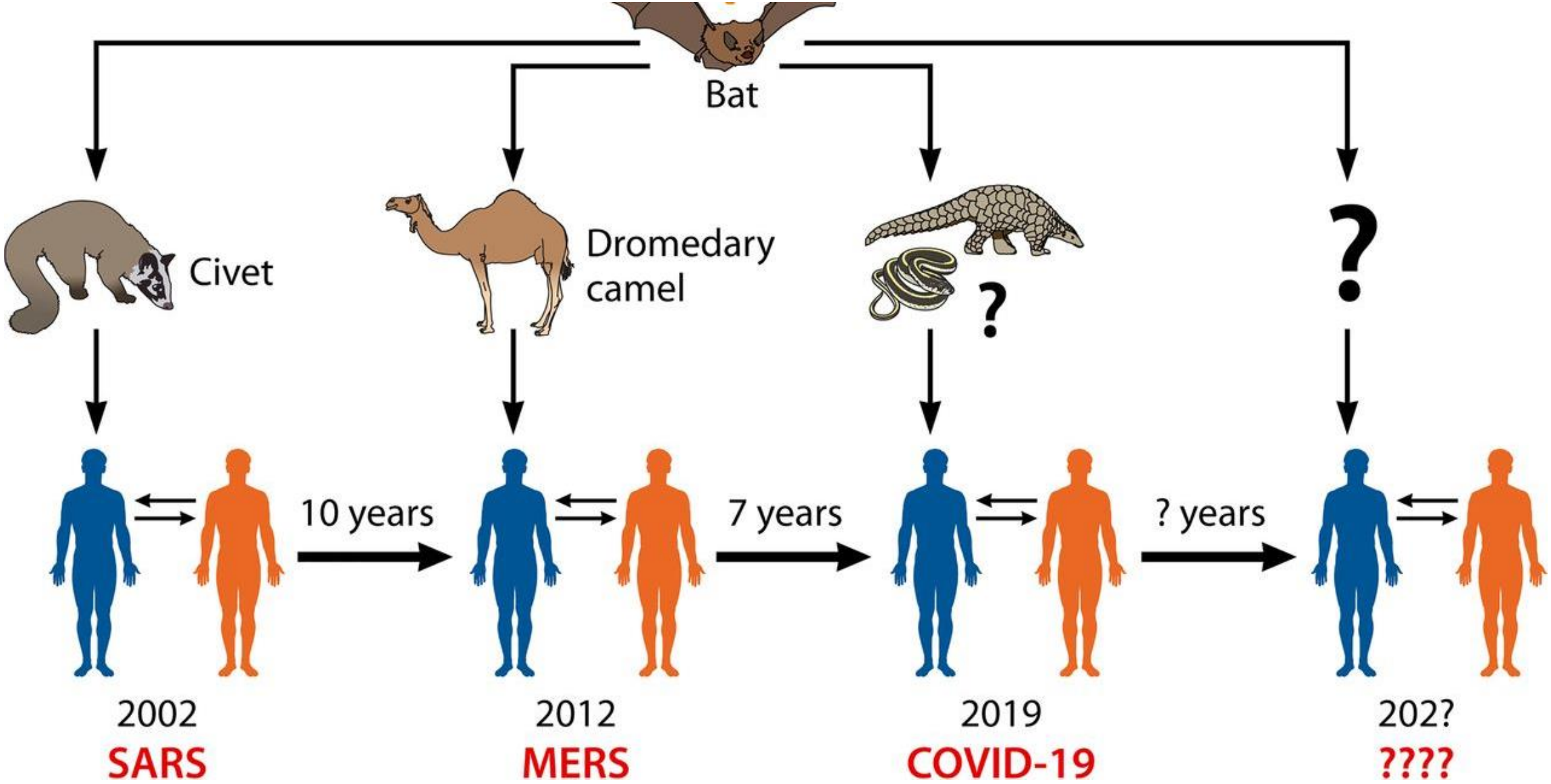
Cui, J., Li, F. & Shi, ZL. Origin and evolution of pathogenic coronaviruses. *Nat Rev Microbiol* **17,** 181–192 (2019). https://doi.org/10.1038/s41579-018-0118-9

Pohled na koronavirová onemocnění v roce 2018



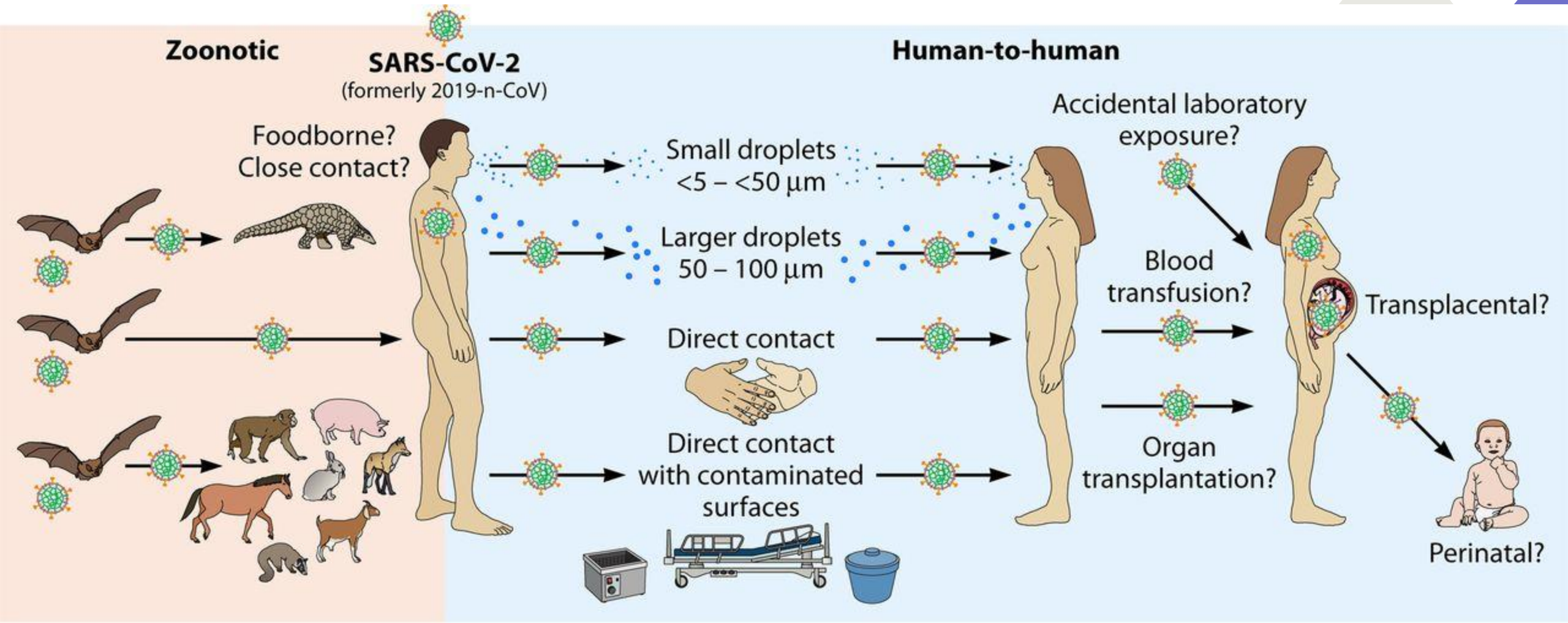
Cui, J., Li, F. & Shi, ZL. Origin and evolution of pathogenic coronaviruses. *Nat Rev Microbiol* **17,** 181–192 (2019). https://doi.org/10.1038/s41579-018-0118-9

Pohled na koronavirová onemocnění v 2020



https://doi.org/10.1128/CMR.00028-20

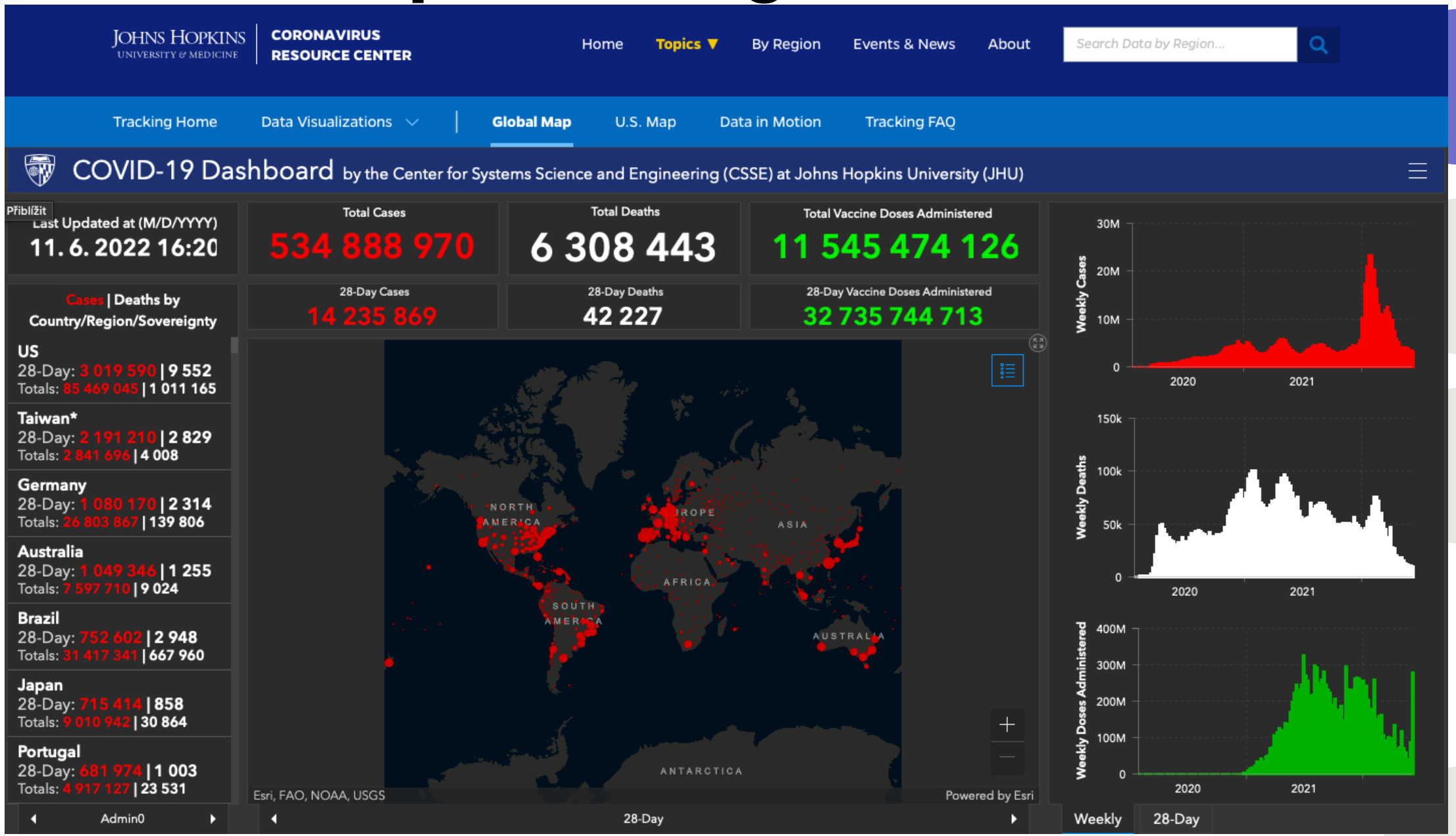
Potenciální cesty přenosu viru



https://doi.org/10.1128/CMR.00028-20

COVID-19 epidemiologie

https://coronavirus.jhu.edau/map.html



Virový přenos – rizikovější pro vznik pandémie

- Přesný původ viru – není dosud znám
- SARS-CoV-1 – vrchol infekčnosti 2.týden od vzniku onemocnění
- Sezonní chřipka – vrchol infekčnosti 1-2 dny po vzniku onemoc.
- **SARS-CoV-2 – vrchol infekčnosti 3 dny před až 5 dnů po** vzniku onem.
- SARS-CoV-2 – pacienti s lehčími formami onemocnění jsou infekční až 10 dnů a pacienti s **těžkými formami onemocnění jsou infekční až 20 dnů**

COVID-19 ERS monograph 2021

WORLD COUNTRIES

CZECHIA

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OVERVIEW

All Time | Past Day | Past Week | Past Month

Confirmed Cases
3 922 878

Deaths
40 301

VACCINE TRACKER

Learn more about vaccines ›

Doses Administered
17,649,062

People Fully Vaccinated
6,876,767

% of Population Fully Vaccinated
64.21%

https://coronavirus.jhu.edau.html

WORLD COUNTRIES

PORTUGAL

SHARE THIS PAGE:

OVERVIEW

All Time | Past Day | Past Week | Past Month

Confirmed Cases
4 917 127

Deaths
23 531

VACCINE TRACKER

Learn more about vaccines ›

Doses Administered
24,105,499

People Fully Vaccinated
8,866,046

% of Population Fully Vaccinated
86.95%

https://coronavirus.jhu.edau.html

Variants of concern

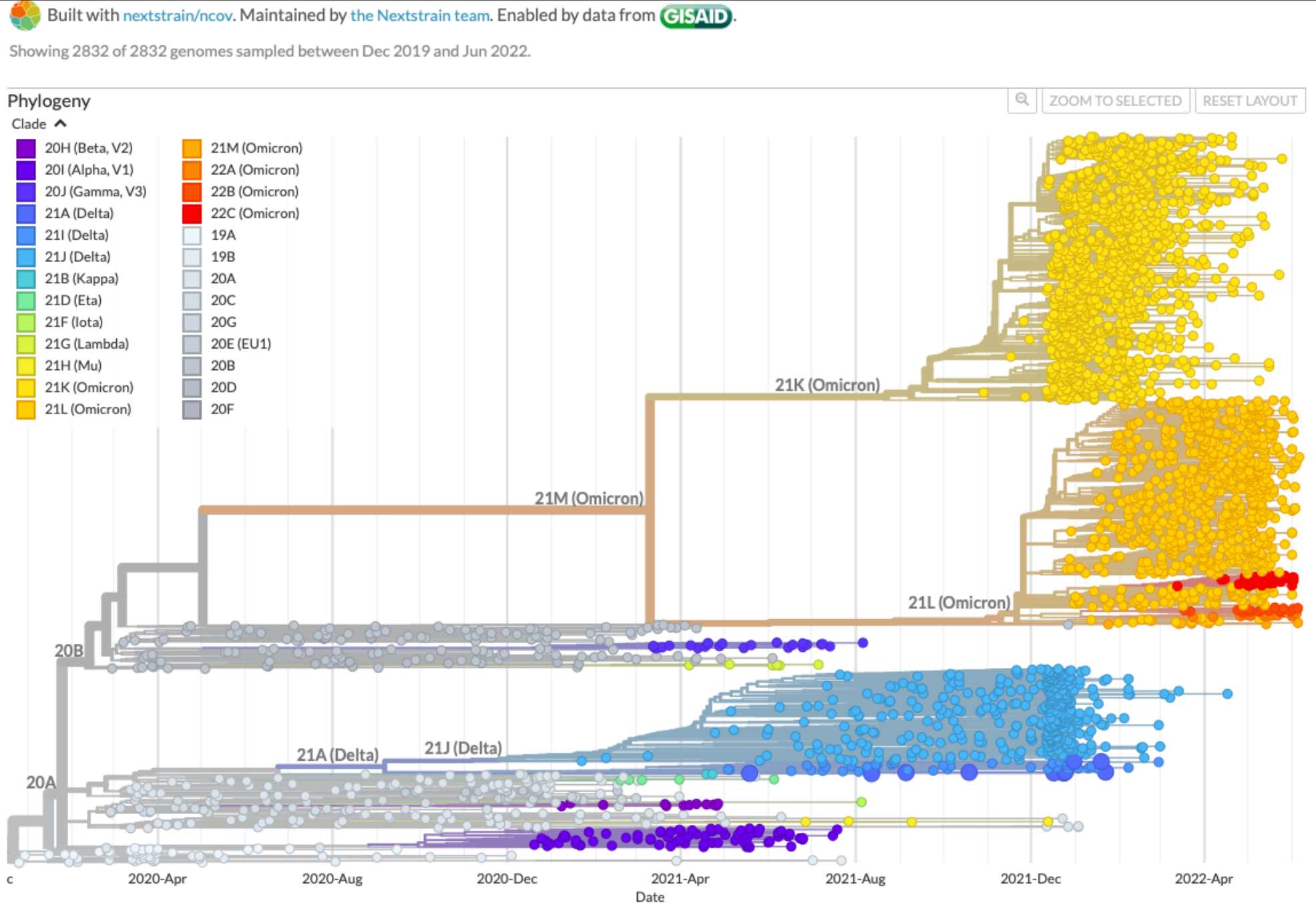
				
May 2020 UK	**August 2020** South Africa	**November 2020** Brazil	**October 2020** India	**November 2021** Multiple countries
Spreads more easily	Spreads more easily and some vaccines may be less effective against it	Spreads more easily and some vaccines may be less effective against it	Spreads more easily Symptoms may present differently May reduce vaccine efficacy Still protects against severe disease	Early studies show that it spreads more easily

Source: www.who.int/en/activities/tracking-SARS-CoV-2-variants/

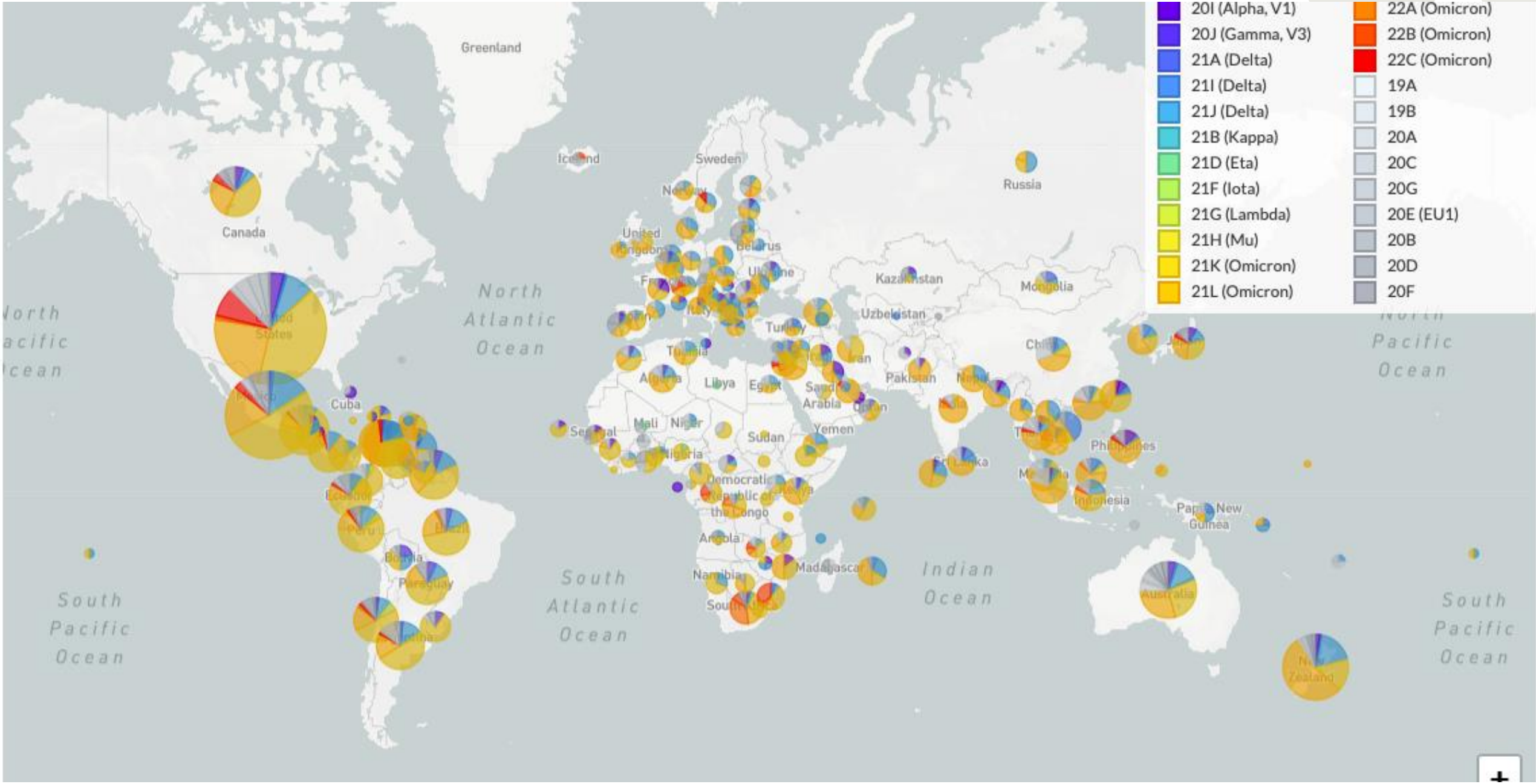
wellcome

Varianty

SARS – CoV-2



https://nextstrain.org/ncov/gisaid/global/6m



https://nextstrain.org/ncov/gisaid/global/6m

Diagnóza COVID-19

- **Suspektní**: klinická + epidemiol.kritéria nebo SARI (severe acute respiratory illness) nebo asympt. s + Ag testem
- **Pravděpodobná**: klinická + kontakt s nemocným nebo podezřelé RTG/CT nebo anosmie nebo smrt po kontatu s nemocným
- **Jistá**: PCR test

COVID-19 ERS monograph 2021

Klinický obraz velmi pestrý = výzva pro časnou detekci a léčbu

Staging COVID-19

- *Asymptomatic*
- *Mild* – “minor” symptom = bez limitace ADL
- *Moderate* – “moderate” symptomy = limitace ADL
- *Severe* – hypoxémie (SpO_2 < 90%; DF > 30; neřekne celou větu; zapojení pomocných nádechových svalů), hypotenze, TF<40 či > 130
- *Critical* – těžká hypoxémie (SpO2 < 80% nebo SpO2 < 90% s 10 L O2; dialýza, NIV/UPV, vasopresory)

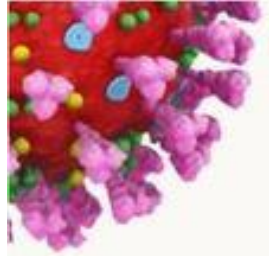
COVID-19 ERS monograph 2021

Respirační selhávání u akutního COVID-19

- **Šťastná hypoxémie** + potenciálně rychlé zhoršení SpO2
- Oživení metody **pronační polohy** (*hlavně u pts s dobrou plicní compliance = "non ARDS or 1 phenotype"*)
- Popularizace oxygenoterapie pomocí **HFNO**
- Renesance podávání **systémových steroidů** u pneumonie (*hlavně u těch s "hyperinflammatory phenotype", nefunguje u "humoral immunodeficiency" or "complement-dependent phenotypes"*)
- Někdy vede k rozvoji pneumomediastina, pneumotoraxu, **plicní fibrózy** (5%)

COVID-19 ERS monograph 2021

Není varianta jako varianta



Frequency of COVID-19 symptoms by variants

PACE HOSPITALS
State-of-the-art Liver and Kidney Transplant Centre

SYMPTOMS	OMICRON	DELTA	OTHERS
Fatigue	Common	Common	Common
Headache	Common	Common	Common
Runny Nose	Common	Common	Sometimes
Sore Throat	Common	Common	Sometimes
Sneezing	Common	Sometimes	Rare
Chills or shivers	Sometimes	Sometimes	Sometimes
Persistent cough	Sometimes	Common	Common
Fever	Sometimes	Sometimes	Common
Loss of smell	Rare	Sometimes	Common
Shortness of breath	Rare	Sometimes	Sometimes
Chest pain	Rare	Rare	Rare

https://www.pacehospital.com/

Terapie COVID-19

- MAB
- Antivirotika
- KS
- Anti-IL6
- LMWH
- O2 (brýle/maska/HFNO/NIV/UPV/ECMO)
- Terapie komplikací/komorbidit

COVID-19 Treatment Algorithm

Shanthi Kappagoda, MD,
David Ha, PharmD, and Anne Liu, MD
January 6, 2022

Stanford MEDICINE

Adult Admitted with COVID-19

Evaluate Respiratory Status

Consider ID consult for:

- Remdesivir for MV or ECMO or extension of therapy beyond 5 days
- Remdesivir for symptoms > 7 days
- Tocilizumab or Baricitinib approval
- Pregnant women (also OB consult)
- Renal failure (CrCl < 30 ml/min)
- Other ID issue in addition to COVID
- Severe immunocompromise

Respiratory Status	Dexamethasone[1]	Remdesivir[2]	Tocilizumab[3] or Baricitinib[4] (ID approval required)	Monoclonal Antibodies[5] and Convalescent Plasma
No O2 requirement	Not indicated	START if high-risk*, symptomatic within 7 days of onset (3-day course)	Not indicated	Consider ID consultation for immunocompromised or other high-risk patients (see above and footnote)
2L NC, stable resp status		START (5-day course)		
2L NC and worsening (↑O2 req, ↑RR, resp distress) to 4L+ NC	START			
HFNC or NIMV[6] (within first 24h of this level of O2 support)		CONSIDER	START	
HFNC or NIMV[6] (after first 24h of this level of O2 support)			CONSIDER (up to 72 hours from admission)	
MV (within 24 hours)		CONSIDER (ID approval only)	START (Tocilizumab Preferred)	
MV (after 24 hours)			Not indicated	
ECMO				

1. **Dexamethasone:** 6 mg PO or IV daily for up to 10 days. Check Strongyloides IgG for people who were born or have resided in a developing country or an endemic area of the US. In case of dexamethasone shortage can substitute prednisone 40 mg, methylprednisolone 32 mg or hydrocortisone 160 mg.
2. **Remdesivir:** 200 mg IV x 1 dose f/b 100 mg IV q24H (for up to 3 or 5 days total). For patients on mechanical ventilation or therapy extension beyond 5 days, page ID team for approval (first dose may be given per primary team prior to approval to avoid delay). ***High-risk criteria** = Any ONE of: Age >=60 years, hypertension, cardiovascular or cerebrovascular disease, diabetes, BMI >= 30, immune compromise, chronic kidney disease, chronic liver disease, chronic lung disease, current cancer, or sickle cell disease
3. **Tocilizumab:** 8 mg/kg (max 800 mg) IV x 1 dose. **Required:** Elevated CRP > 7.5 required if used for HFNC or NIMV after first 24h of this level of O2 support. **Avoid in:** Pregnancy, Immunosuppression, AST/ALT > 5xULN, Platelets < 50, Active/Suspected concurrent bacterial/fungal infection. **Use caution** in age 70 or older. Baricitinib is less expensive than tocilizumab.
4. **Baricitinib:** 4 mg PO daily for up to 14 days. **Required:** Elevated CRP, LDH, ferritin, or D-dimer >ULN required. **Avoid in:** Pregnancy, Immunosuppression, History of VTE in past 3 months, AST/ALT > 5xULN, Platelets < 50, eGFR<30 ml/min, ANC<1000, Active/Suspected concurrent bacterial/fungal infection, LTBI treated for <4 weeks.
5. **Monoclonal antibodies:** The only monoclonal antibody with emergency use authorization for treatment is sotrovimab, but the supply is extremely limited with no availability for inpatients; consider alternatives (i.e. remdesivir). Compassionate use monoclonal antibodies may be available for patients with infection due to non-omicron variants – consult ID for high-risk patients.
6. Assumes patients on HFNC or NIMV are admitted to ICU level of care

Hospital Discharge Prior to Completion of Therapy

Respiratory Status	Dexamethasone	Remdesivir	Other
No O2 requirement	If started inpatient, **DO NOT CONTINUE** on discharge		If **baricitinib** started inpatient, **DO NOT CONTINUE** on discharge
O2 requirement related to COVID-19	If started inpatient, there is insufficient evidence to recommend for or against continuing on discharge	If started inpatient, **DO NOT CONTINUE** on discharge	

https://med.stanford.edu/id/covid19.html

Summary of Outpatient COVID-19 Treatment Options for Adult Patients (18+)

Does not include pre- or post-exposure prophylaxis

Population	Preferred	Alternatives	Contraindicated
No high-risk criteria[1]	Supportive care		
1+ high-risk criteria[1]	Paxlovid[2]	2nd line: Remdesivir[3] 3rd line: Bebtelovimab[4] 4th line: Molnupiravir[5]	
Pregnant	Remdesivir[3]	2nd line: Bebtelovimab[4] 3rd line: Paxlovid[2] if benefit outweighs risk	Molnupiravir[5]
ESRD with eGFR < 30 mL/min or Hemodialysis	Bebtelovimab[4]	2nd line: Remdesivir[3] 3rd line: Molnupiravir[5]	Paxlovid
Hepatic impairment (Child-Pugh Class C)	Bebtelovimab[4]	2nd line: Molnupiravir[5]	Remdesivir Paxlovid
Transplant on immunosuppression	Remdesivir[3]	2nd line: Bebtelovimab[4] 3rd line: Paxlovid[2] with appropriate management of DDI with immunosuppressives 4th line: Molnupiravir[5]	

https://med.stanford.edu/id/covid19.html

[1]**High-risk criteria**: Age 65+, BMI 25+, Pregnancy, CKD, Diabetes, Immunosuppressive disease/treatment, cardiovascular disease (including congenital heart disease), hypertension, chronic lung disease, sickle cell disease, neurodevelopmental disorder, medical-related technological dependance.

[2]**Nirmatrelvir/ritonavir (Paxlovid)**: within 5 days of symptom onset; potential for clinically significant drug-drug interactions; renal dose adjustment required for eGFR 30-60 mL/min; although there is no human data, "SMFM supports the use of Paxlovid for treatment of pregnant patients with COVID-19 who meet clinical qualifications. Any therapy that would otherwise be given should not be withheld specifically due to pregnancy or lactation."

[3]**Remdesivir**: Within 7 days of symptom onset in unvaccinated or immunocompromised patients; 200 mg x1 on day 1, then 100 mg daily on days 2 and 3

[4]**Bebtelovimab:** Within 7 days of symptom onset

[5]**Molnupiravir**: within 5 days of symptom onset; embryo-fetal toxicity, bone and cartilage toxicity

Nirmatrelvir/Ritonavir (Paxlovid™) - Tip Sheet for Drug-Interactions

*****Tables are NOT Exhaustive and Represent SHC/National Most Commonly Prescribed Drugs*****

For drugs not listed, check DDIs using resources below, particularly the Liverpool tool, for more information. Consider consulting specialist and/or clinical pharmacist.

Background and Basis for Potential Drug Interactions

Paxlovid™ received an emergency use authorization (EUA) from the US Food and Drug Administration (FDA) on December 22, 2021.[1] This medication is comprised of nirmatrelvir, a SARS-CoV-2 protease inhibitor and CYP3A4 substrate, and ritonavir, a strong CYP3A4 and P-gp inhibitor, weak CYP2D6 inhibitor, moderate CYP2B6 inducer, and weak CYP1A2, CYP2C19, and CYP2C9 inducer. The EUA allows Paxlovid™ to be used in adults and pediatric patients (12 years and older weighing at least 40 kg) with positive SARS-CoV-2 viral testing and a high risk of progression to severe COVID-19 infection.[2]

Paxlovid™ is an oral medication and is dosed 300 mg of nirmatrelvir (two 150 mg tablets) and 100 mg of ritonavir (one 100 mg tablet). For patients without kidney dysfunction (eGFR ≥ 60) all three tablets are taken together twice daily for 5 days.[2]

While ritonavir has no activity against SARS-CoV-2, it is used to boost nirmatrelvir levels.[2] Because of ritonavir's potent CYP3A and P-gp inhibition, it carries significant drug-drug interactions (DDIs) with many other medications. The anticipated onset of CYP3A inhibition by ritonavir is approximately 48 hours with an offset of 2 to 5 days after discontinuation.[3-5] Because of the short course of Paxlovid™, the induction properties of ritonavir are less likely to be clinically relevant. Read more on metabolism and DDIs here (link).[6]

Table 1. Commonly Prescribed Drugs Contraindicated with Nirmaltrelvir/Ritonavir

Tables are NOT Exhaustive and Represent SHC/National Most Commonly Prescribed Drugs

Prescribe Alternative COVID-19 Therapy	Withhold or Use Alternative Therapy† or Use Alternative COVID-19 Therapy
Amiodarone (X)	Alprazolam (†)
Apixaban (X)	Antineoplastics (X†)
Carbamazepine (X)	Atorvastatin (†)
Clopidogrel (X)	Everolimus (X)
Colchicine (X)	Fentanyl (†)
Phenobarbital (X)	Isavuconazole (†)
Phenytoin (X)	Oral contraceptives (†)
Rifampin (X)	Quetiapine (†)
Rivaroxaban (X)	Rosuvastatin (†)
Sildenafil (X†)*	Simvastatin (X)
Tadalafil (X†)*	Sirolimus (X)
Ticagrelor (X)	Voriconazole (X)

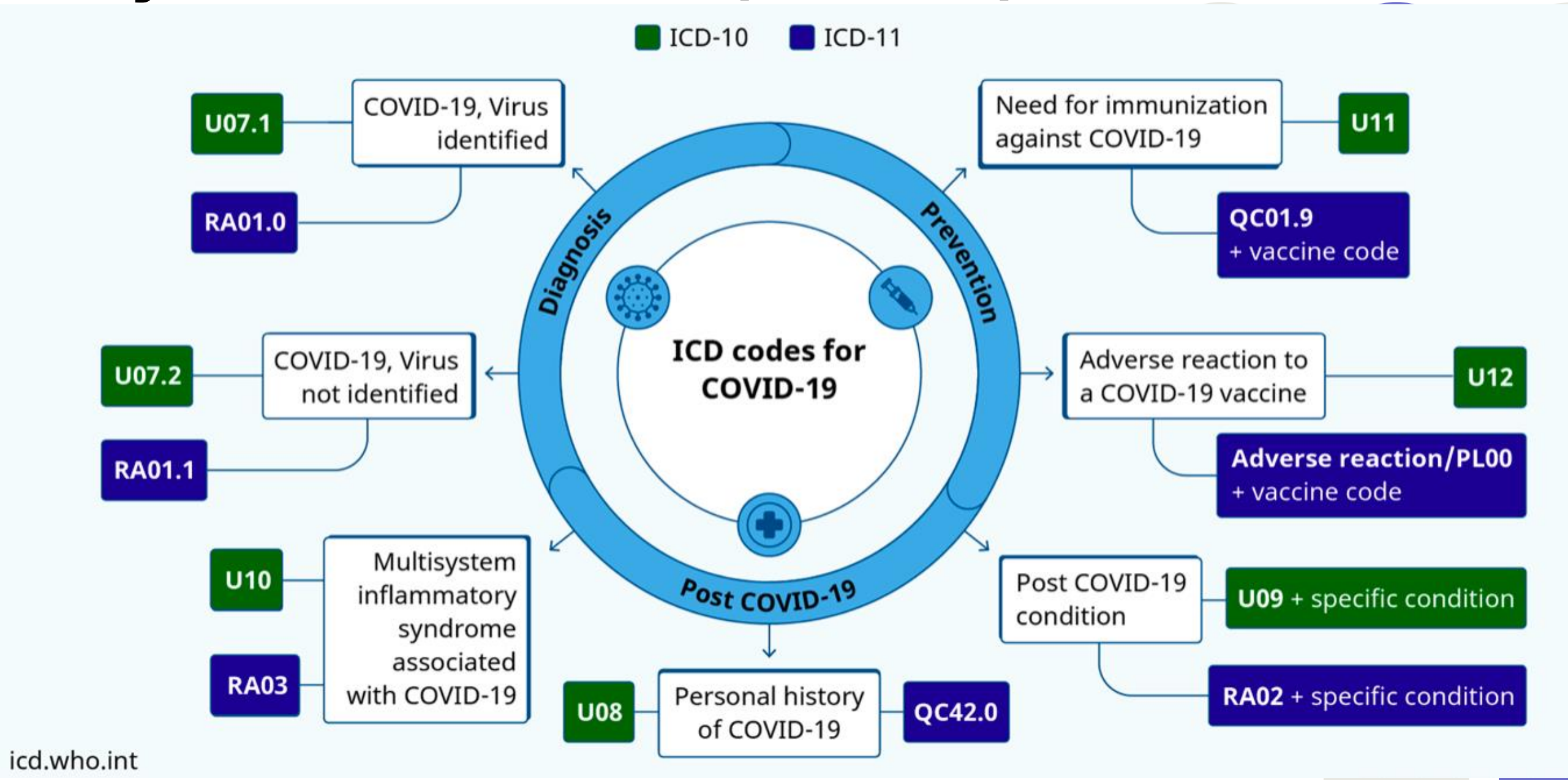
https://med.stanford.edu/id/covid19.html

Horší prognóza

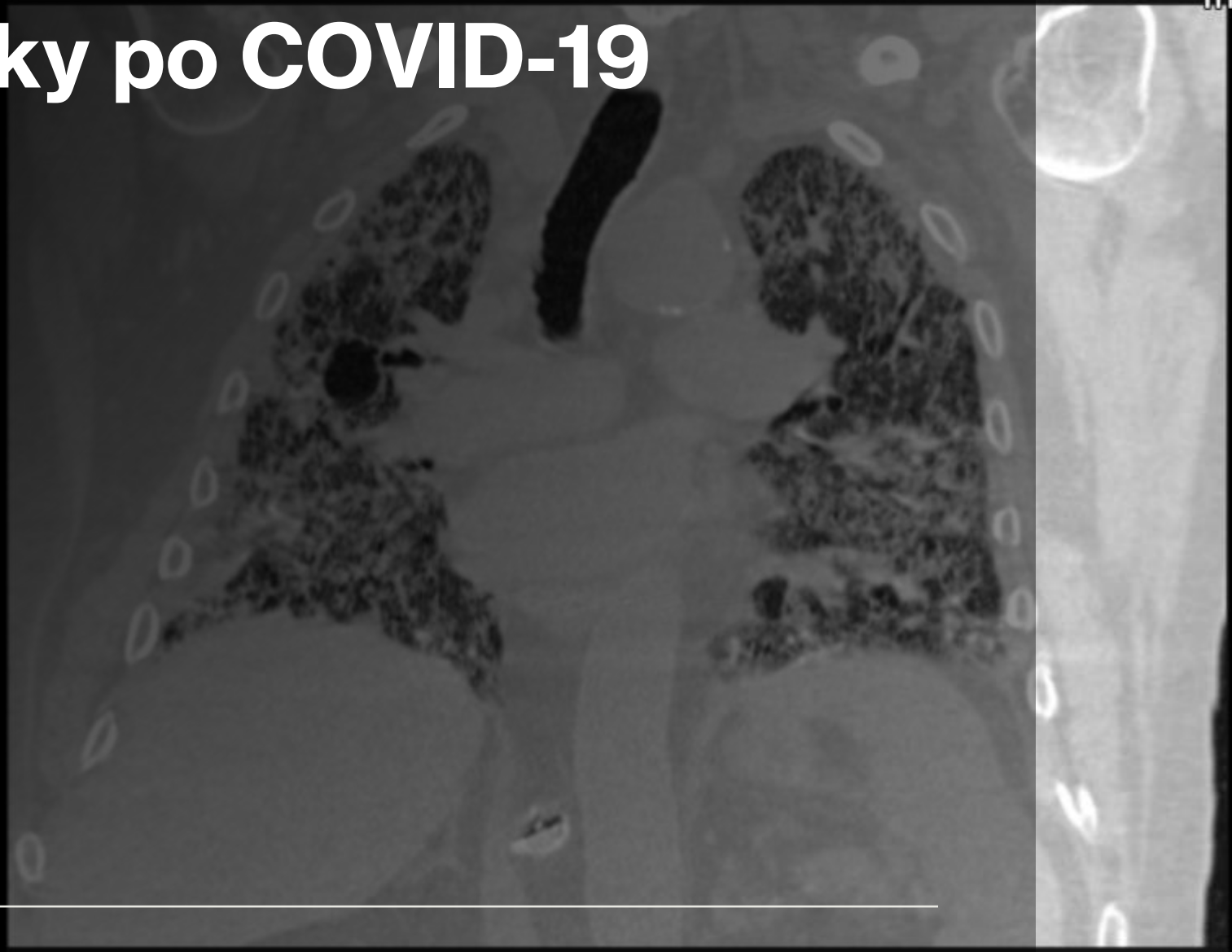
- Věk
- Muži
- Komorbidity: *KV, CMP, CHOPN, CKD, DM, TU/Tx/AIDS*
- Kouření
- Obezita
- Afro-Američané a Latino-Američané (v USA)
- Krevní skupina *A*
- CRP ↑, LDH ↑, D-dimery ↑, INR ↑, Leu ↑, Neu ↑, ALT/AST ↑, PCT ↑, Troponin ↑, kreatinin ↑, bili ↑
- Ly ↓, trombo ↓, ALB ↓

COVID-19 ERS monograph 2021

Vykazování MKN 10 (verze 11)



Následky po COVID-19



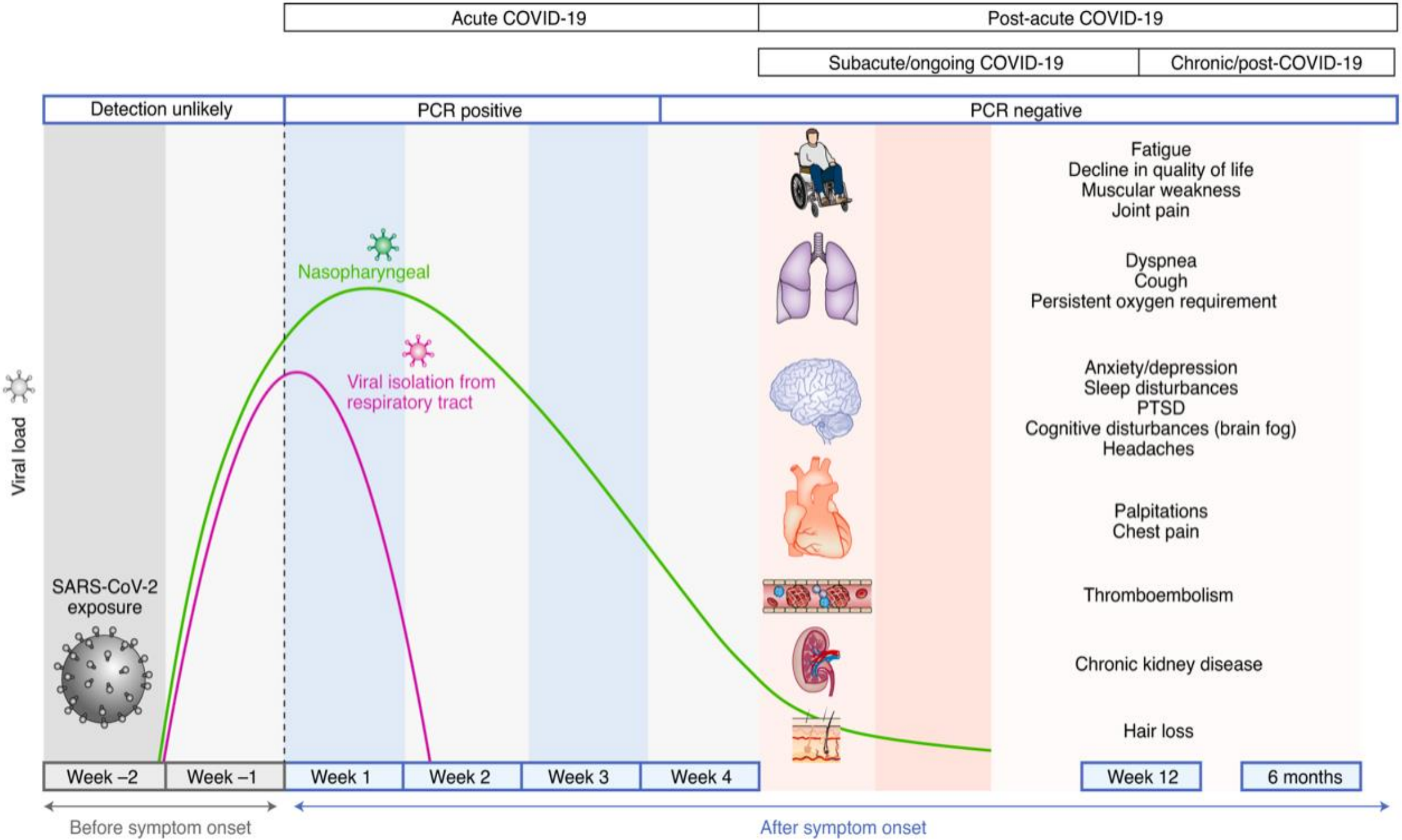
POST COVID - DEFINICE

NICE National Institute for Health and Care Excellence

... as signs and symptoms that develop during or following an infection consistent with COVID-19 which continue for more than 12 weeks and are not explained by an alternative diagnosis.

5 %

(30%)


Acute COVID-19
Post-acute COVID-19
Subacute/ongoing COVID-19
Chronic/post-COVID-19
Detection unlikely
PCR positive
PCR negative
Viral load
Nasopharyngeal
Viral isolation from respiratory tract
SARS-CoV-2 exposure
Fatigue
Decline in quality of life
Muscular weakness
Joint pain
Dyspnea
Cough
Persistent oxygen requirement
Anxiety/depression
Sleep disturbances
PTSD
Cognitive disturbances (brain fog)
Headaches
Palpitations
Chest pain
Thromboembolism
Chronic kidney disease
Hair loss
Week –2
Week –1
Week 1
Week 2
Week 3
Week 4
Week 12
6 months
Before symptom onset
After symptom onset

Dopady COVID-19 mohou být patrné dokonce v řádu mnoha měsíců

JAMA Network | Open

Original Investigation | Infectious Diseases

Respiratory and Psychophysical Sequelae Among Patients With COVID-19 Four Months After Hospital Discharge

Mattia Bellan, MD, PhD; Daniele Soddu, MD; Piero Emilio Balbo, MD; Alessio Baricich, MD, PhD; Patrizia Zeppegno
Giuseppe Bartolomei, MD; Marco Battaglia, MD; Sofia Battistini, MD; Valeria Binda, MD; Margherita Borg, MD; Vin
Elisa Clivati, MD; Carlo Cisari, MD; Martina Costanzo, MD; Alessandro Croce, MD; Daria Cuneo, MD; Carla De Benec
Martina Gai, MD; Eleonora Gambaro, MD; Eleonora Gattoni, MD; Carla Gramaglia, MD, PhD; Leonardo Grisafi, MD
Amalia Jona, MD; Marco Invernizzi, MD, PhD; Luca Lorenzini, MD; Lucia Loreti, MD; Maria Martelli, MD; Paolo Mar
Elena Parachini, MD; Filippo Patrucco, MD; Giuseppe Patti, MD; Alice Pirovano, MD; Pierluigi Prosperini, MD; Ricc
Pier Paolo Sainaghi, MD, PhD; Camilla Vecchi, MD; Erika Zecca, MD; Mario Pirisi, MD

Long COVID: An overview

A.V. Raveendran [a, b, *], Rajeev Jayadevan [c], S. Sashidharan

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Keywords:
Long COVID"
"Long haulers"
"Post COVID syndrome"

ABSTRACT

Background and aims: Long COVID is the collective term to denote persistence of symptoms in those who have recovered from SARS-CoV-2 infection.
Methods: WE searched the pubmed and scopus databases for original articles and reviews. Based on the search result, in this review article we are analyzing various aspects of Long COVID.
Results: Fatigue, cough, chest tightness, breathlessness, palpitations, myalgia and difficulty to focus are symptoms reported in long COVID. It could be related to organ damage, post viral syndrome, post-critical care syndrome and others. Clinical evaluation should focus on identifying the pathophysiology, followed by appropriate remedial measures. In people with symptoms suggestive of long COVID but without known history of previous SARS-CoV-2 infection, serology may help confirm the diagnosis.
Conclusions: This review will helps the clinicians to manage various aspects of Long COVID.

6-month consequences of COVID-19 in patients discharged from hospital: a cohort study

Chaolin Huang*, Lixue Huang*, Yeming Wang*, Xia Li*, Lili Ren*, Xiaoying Gu*, Liang Kang*, Li Guo*, Min Liu*, Xing Zhou, Jianfeng Luo, Zhenghui Huang, Shengjin Tu, Yue Zhao, Li Chen, Decui Xu, Yanping Li, Caihong Li, Lu Peng, Yong Li, Wuxiang Xie, Dan Cui, Lianhan Shang, Guohui Fan, Jiuyang Xu, Geng Wang, Ying Wang, Jingchuan Zhong, Chen Wang, Jianwei Wang†, Dingyu Zhang†, Bin Cao†

Lancet 2021; 397: 220–32
Published Online
January 8, 2021
https://doi.org/10.1016/

Summary

Background The long-term health consequences of COVID-19 remain largely unclear. The aim of this study was to describe the long-term health consequences of patients with COVID-19 who have been discharged from hospital and investigate the associated risk factors, in particular disease severity.

nature medicine | FOCUS

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], Tejasav S. Sehrawat[12], Neha Ahluwalia[13], Behnood Bikdeli[4,5,6,14], Donald Dietz[15], Caroline Der-Nigoghossian[16], Nadia Liyanage-Don[17], Gregg F. Rosner[1], Elana J. Bernstein[18], Sumit Mohan[8], Akinpelumi A. Beckley[19], David S. Seres[20], Toni K. Choueiri[2,3,4], Nir Uriel[1], John C. Ausiello[9], Domenico Accili[9], Daniel E. Freedberg[21], Matthew Baldwin[7], Allan Schwartz[1], Daniel Brodie[7], Christine Kim Garcia[7], Mitchell S. V. Elkind[10,22], Jean M. Connors[4,23], John P. Bilezikian[9], Donald W. Landry[8] and Elaine Y. Wan[1] ✉

ERJ open research

ORIGINAL ARTICLE
COVID-19

Chest radiography is a poor predictor of respiratory symptoms and functional impairment in survivors of severe COVID-19 pneumonia

Rebecca F. D'Cruz[1], Michael D. Waller[1,2], Felicity Perrin[2], Jimstan Periselneris[2], Sam Norton[3], Laura-Jane Smith[2], Tanya Patrick[2], David Walder[2], Amadea Heitmann[2], Kai Lee[2], Rajiv Madula[2], William McNulty[2], Patricia Macedo[2], Rebecca Lyall[2], Geoffrey Warwick[2], James B. Galloway[3], Surinder S. Birring[1,2], Amit Patel[2], Irem Patel[1,2] and Caroline J. Jolley[1,2]

JAMA Network | Open

Research Letter | Infectious Diseases

Sequelae in Adults at 6 Months After COVID-19 Infection

Jennifer K. Logue, BS; Nicholas M. Franko, BS; Denise J. McCulloch, MD, MPH; Dylan McDonald, BA; Ariana Magedson, BS; Caitlin R. Wolf, BS; Helen Y. Chu, MD, MPH

Pts bez symptomů mohou 3 M po COVID-19 trpět ↓funkcí a poruchou struktury plic

Skala et al. Virol J (2021) 18:73
https://doi.org/10.1186/s12985-021-01546-8

Virology Journal

SHORT REPORT Open Access

Heterogeneity of post-COVID impairment: interim analysis of a prospective study from Czechia

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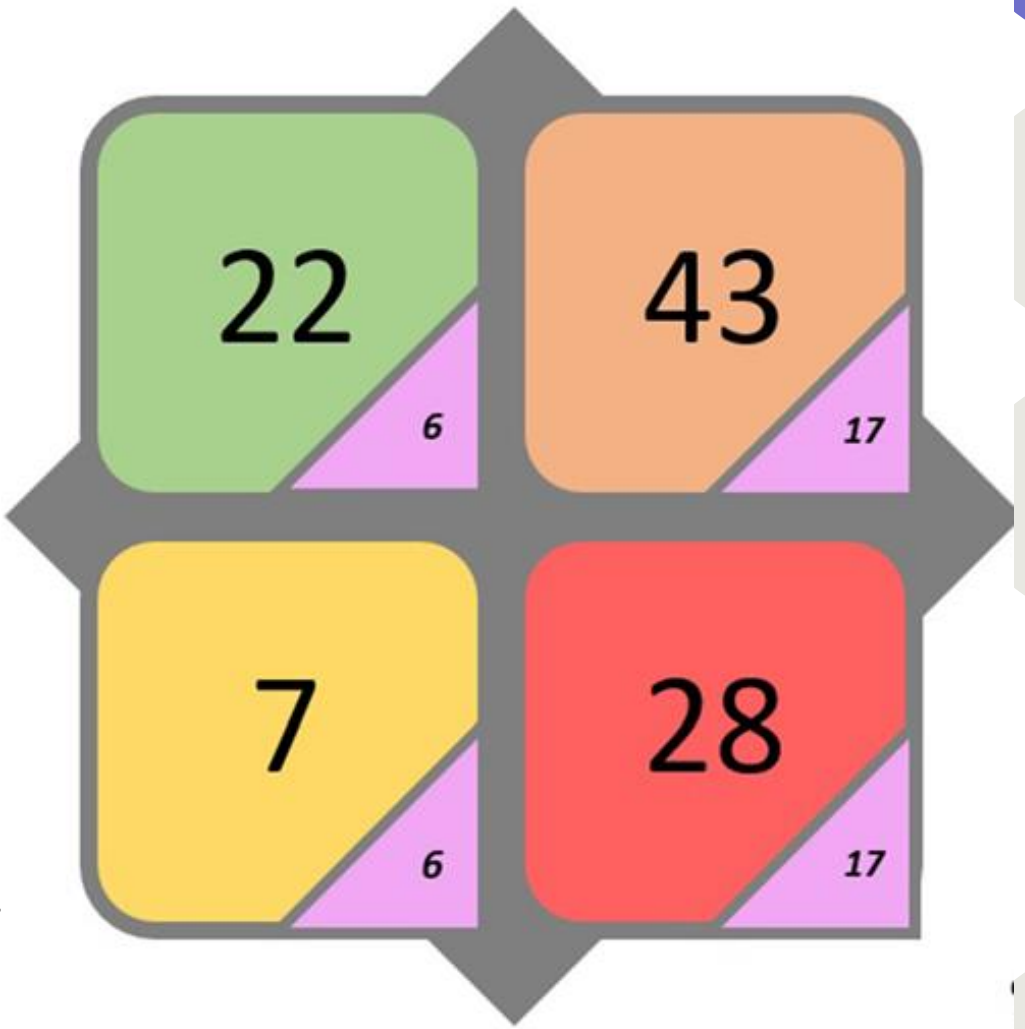
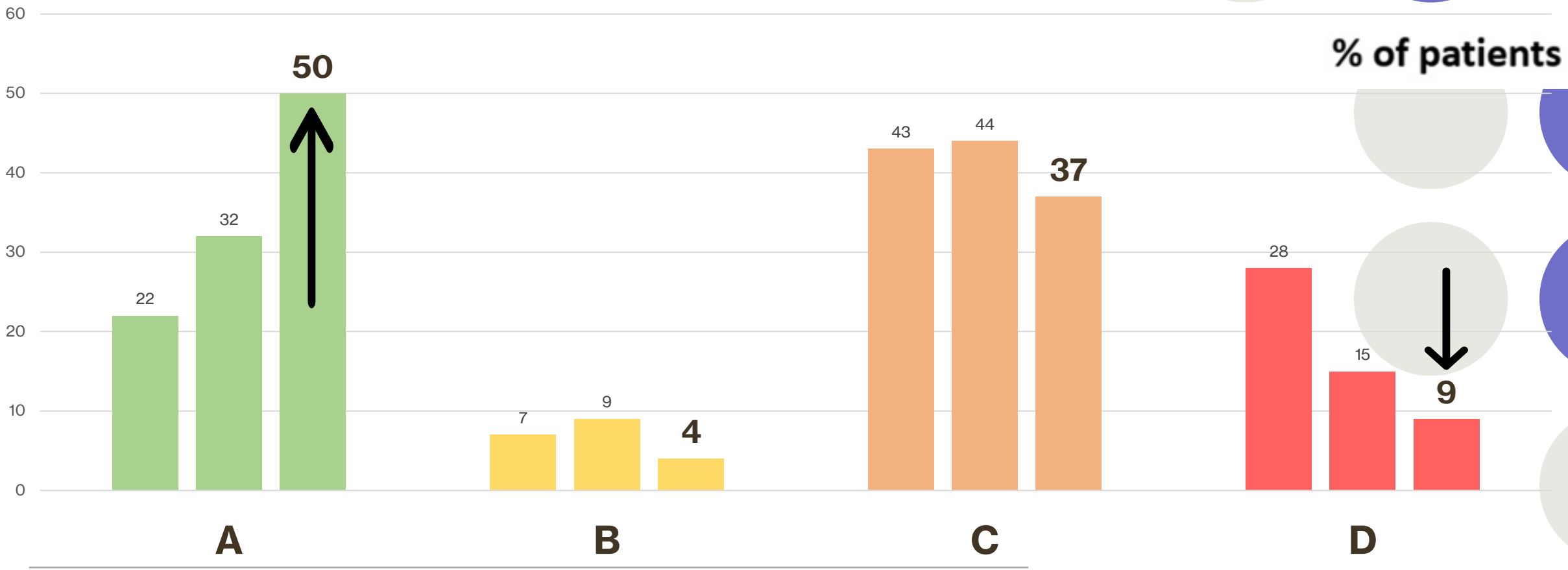


Perspektiva ročního sledování souboru bez většího bias během výběru



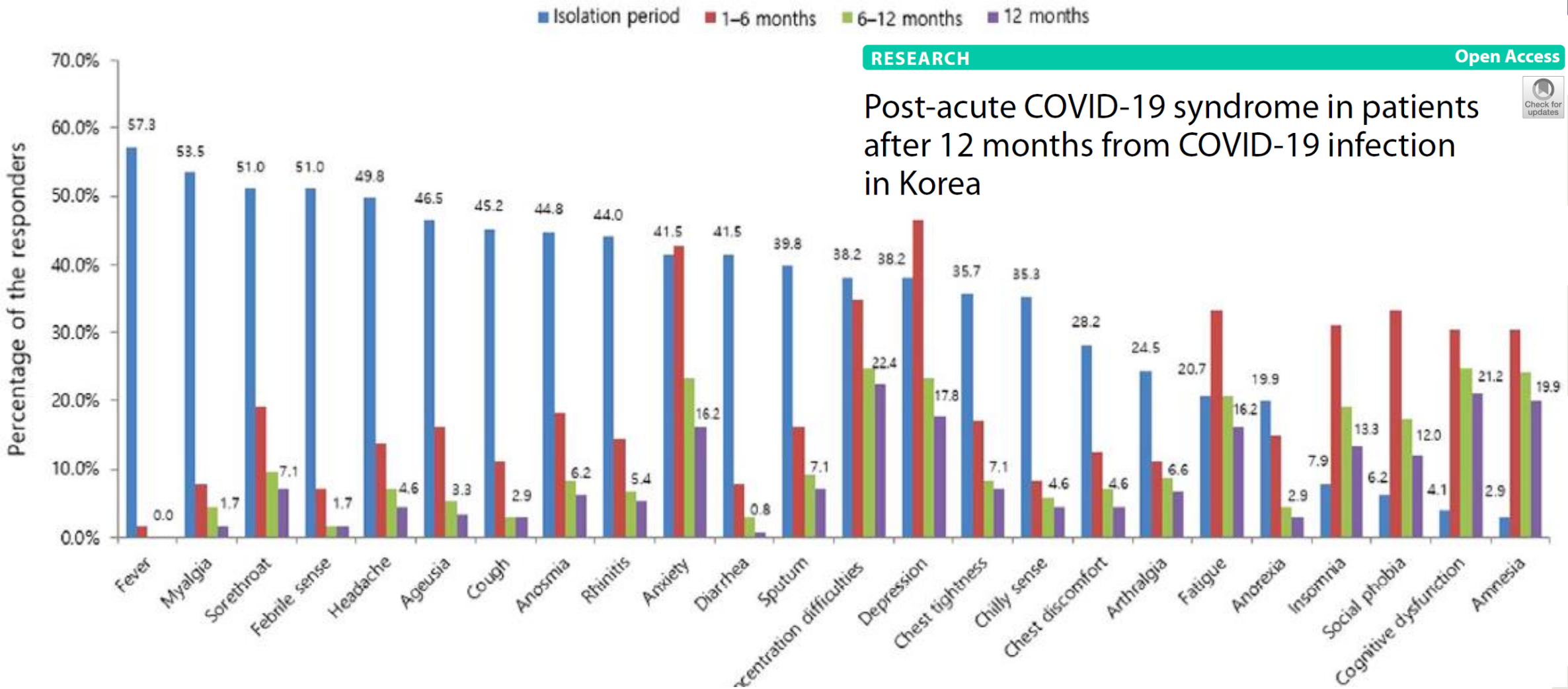
Pacienti bez funkčního nálezu a bez patologie struktury plíce

- Po mírném stadiu akutního COVID-19
- Mohou trpět poruchami centrálního řízení ventilace (hyperventilace při běžné ADL)
- Změny mohou být dobře vratné při rehabilitační péči
- Pozor na moc rychlý návrat k před COVIDové zátěži

Pacienti s extrapulmonálním postižením

Extra-pulmonary symptoms	n (%)
Fatigue	22 (21.6%)
Loss of smell	21 (20.6%)
Loss of taste	7 (6.9%)
Cephalea	6 (5.9%)
Memory impairment	5 (4.9%)
Arthragia/myalgia	4 (3.9%)
Conjunctivitis	2 (2.0%)
Dyspepsia	2 (2.0%)
Subfebrile	1 (1.0%)
Others	14 (13.7%)
At least one non-pulmonary symptom	47 (46.1%)

Po roce převládají psychické △ při ročním sledování nemocných



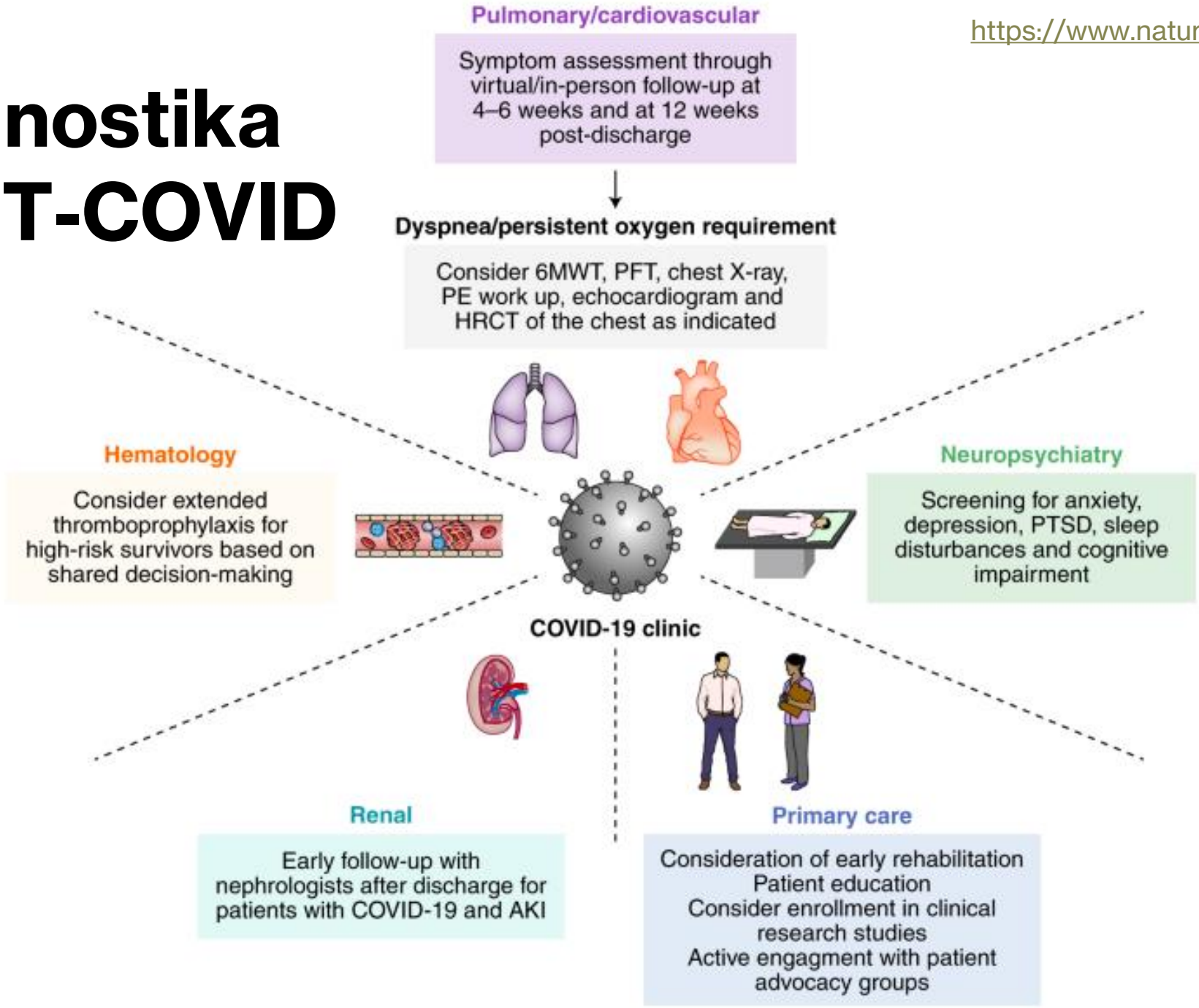
RESEARCH Open Access

Post-acute COVID-19 syndrome in patients after 12 months from COVID-19 infection in Korea

KIM, Yoonjung, et al. Post-acute COVID-19 syndrome in patients after 12 months from COVID-19 infection in Korea, 2022

Diagnostika POST-COVID

https://www.nature.com/articles/ s41591-021-01283



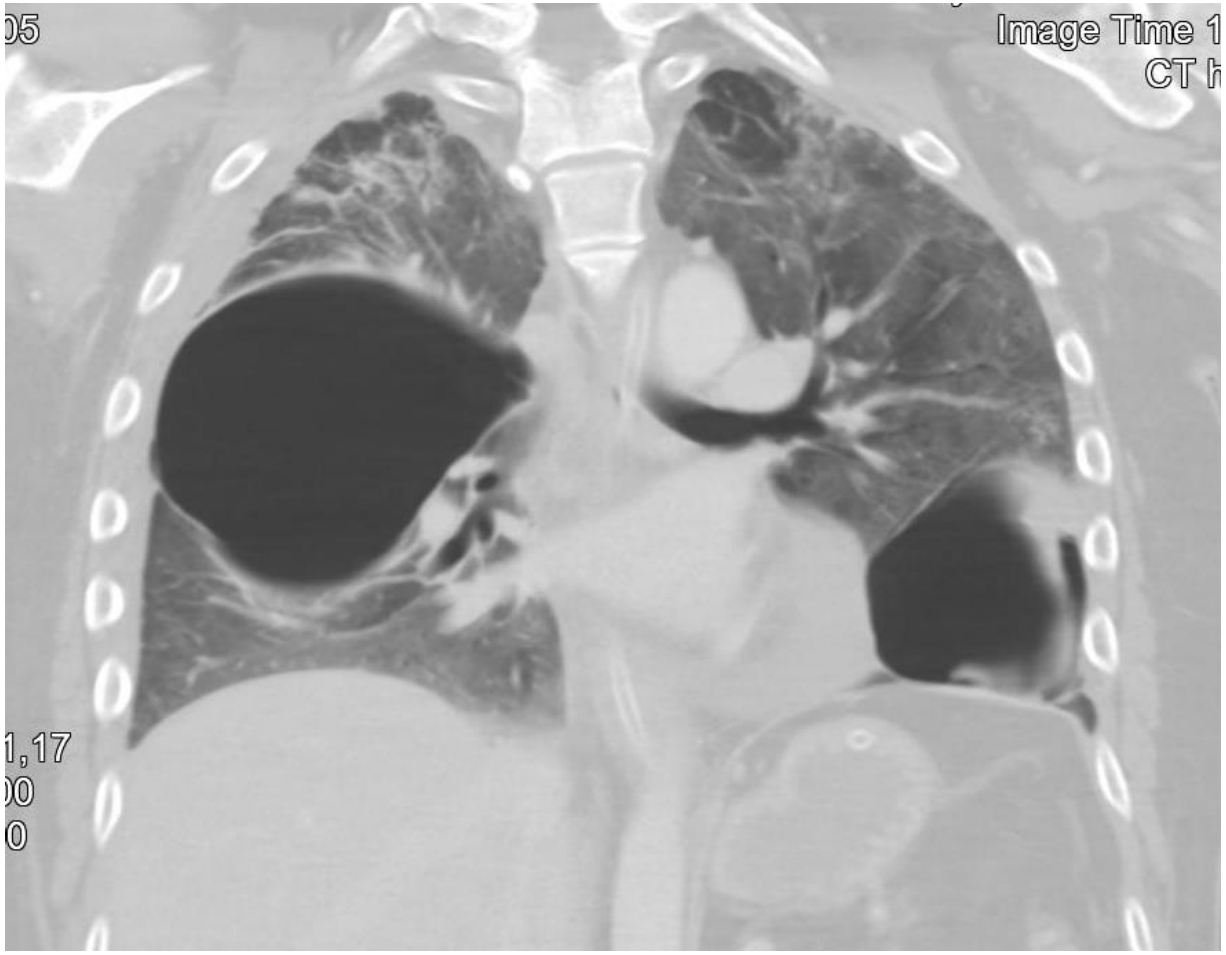
Terapie POST-COVID

- Komplexní plicní rehabilitace
- FZT + aerobní zátěž + silový trénink
- Pomalu a vytrvale
- Metody pro domácí rehabilitaci
- KS, ATB, inhalační léky, mukoaktivní medikace
- Vyloučení komorbidit a jiných příčin obtíží v post-COVID období
- Nově zkoumané preparáty

https://telovychova.fnol.cz/uploads/composer/rwggdty458-FNOL_Mo%C5%BEnosti%20rehabilitace%20u%20pacient%C5%AF%20po%20prod%C4%9Blan%C3%A9m%20COVID-19.pdf

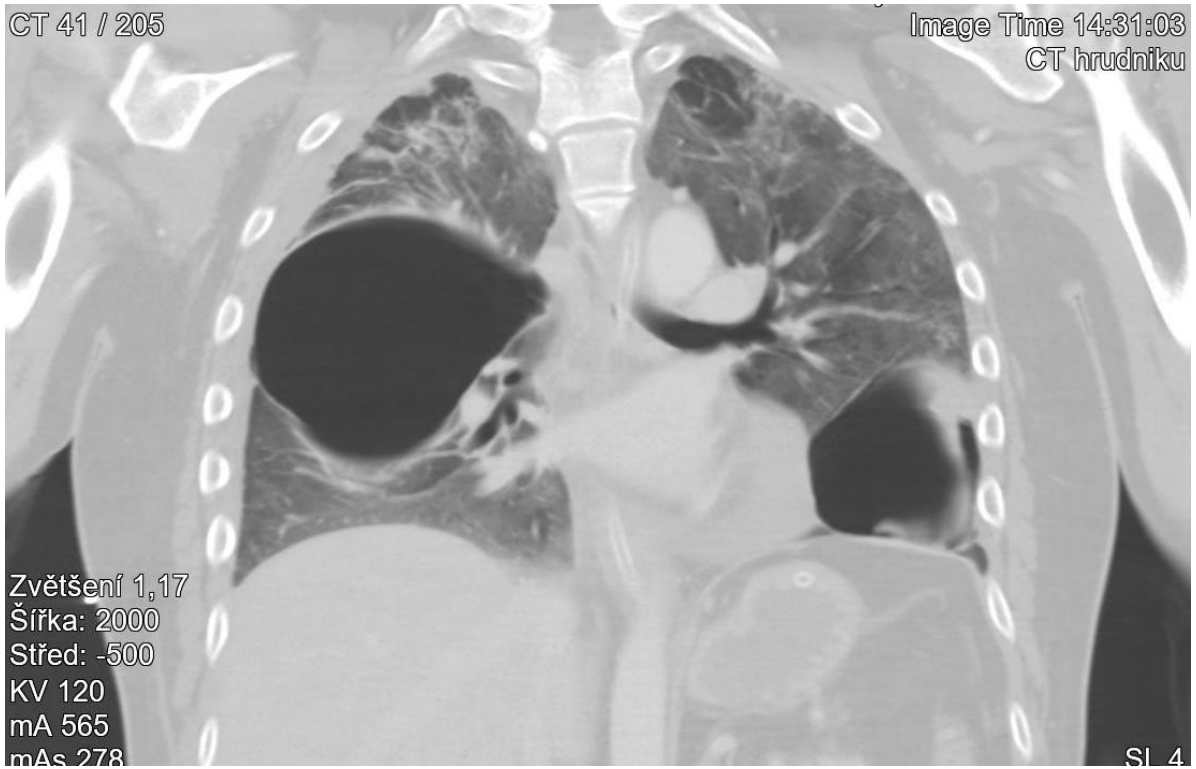
1

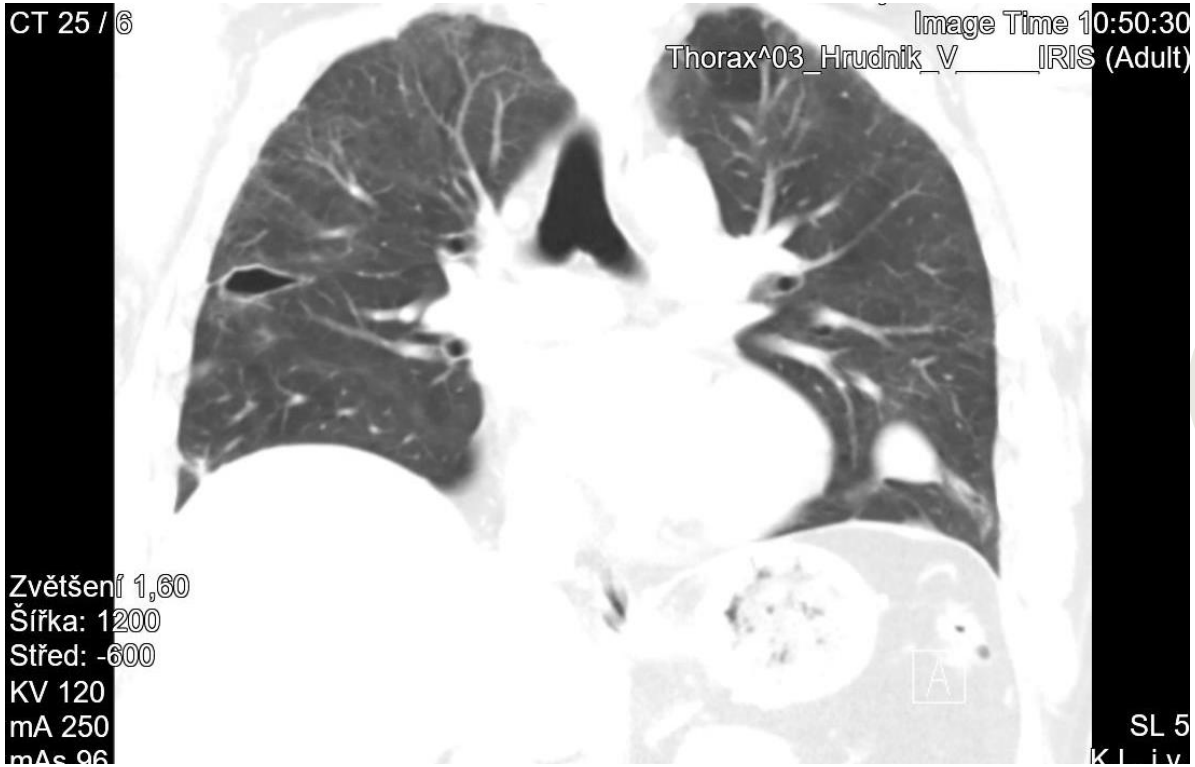
Muž 45 let
Plicní postižení po 3M od COVID-19



1

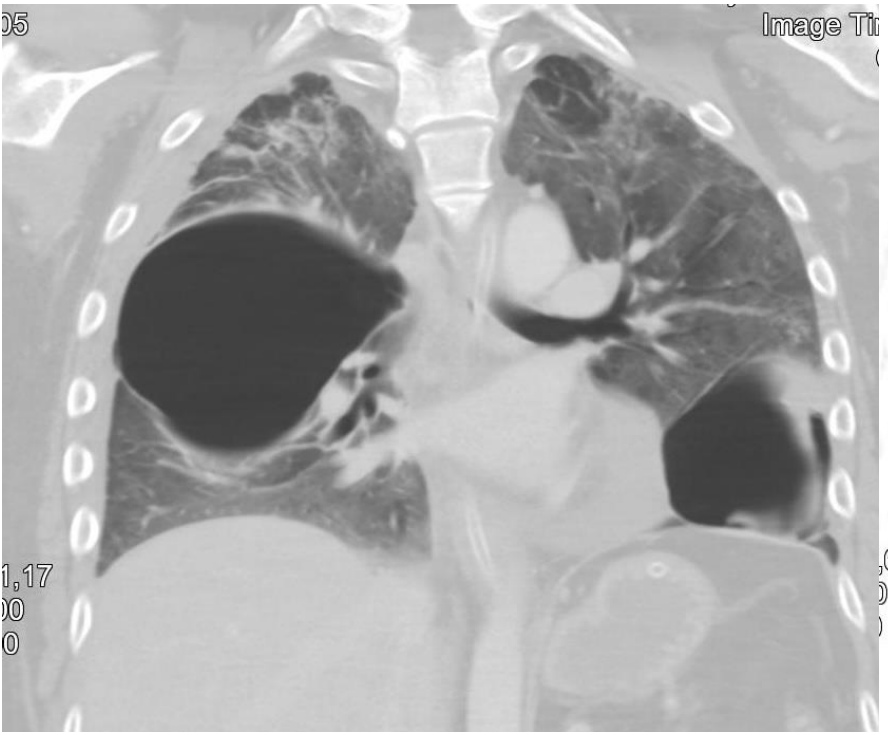
Nález po 7M od COVID-19

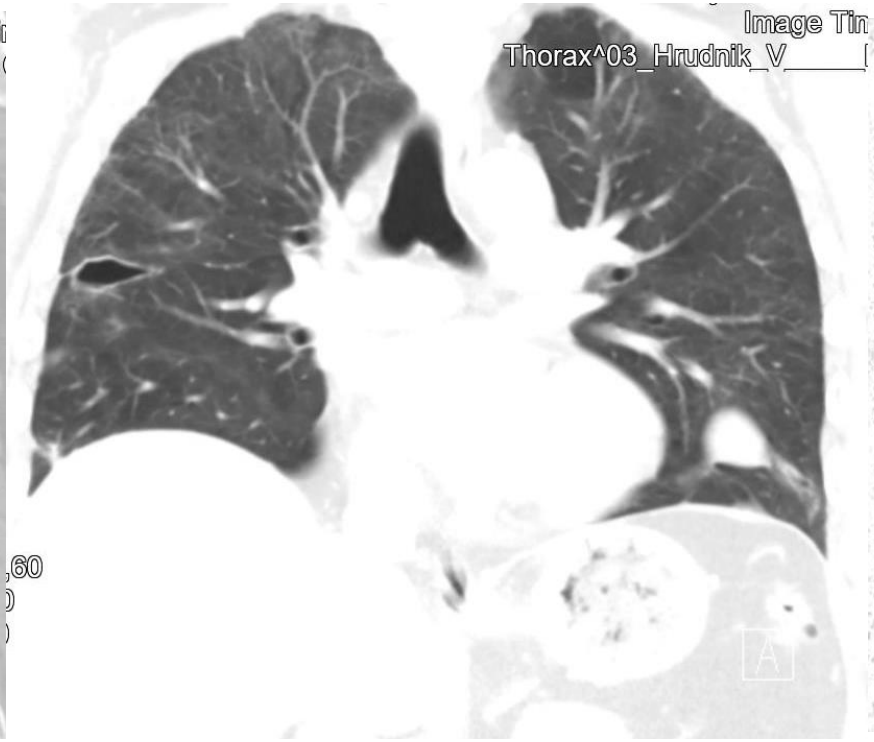


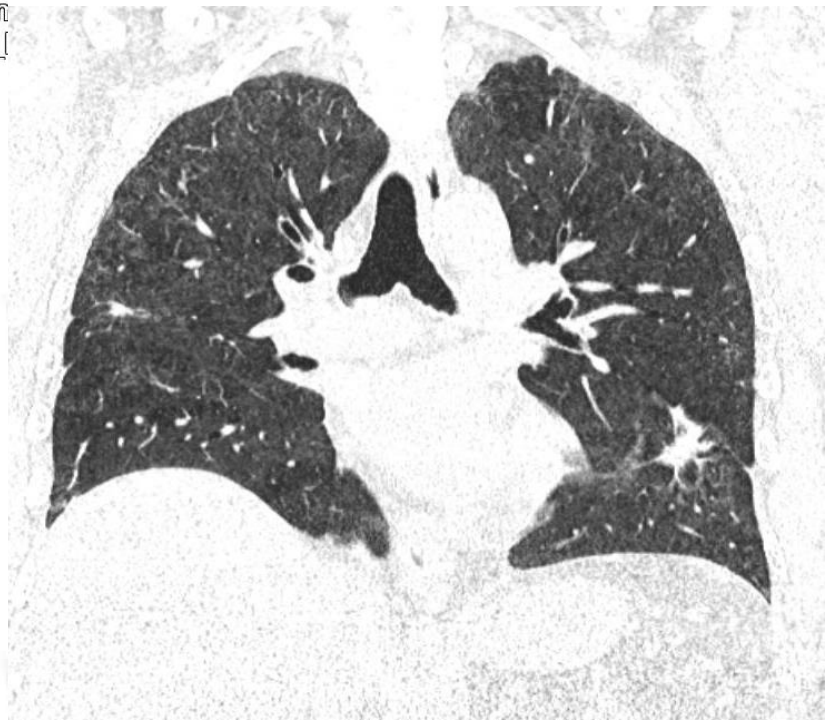


1

Stav po 14M

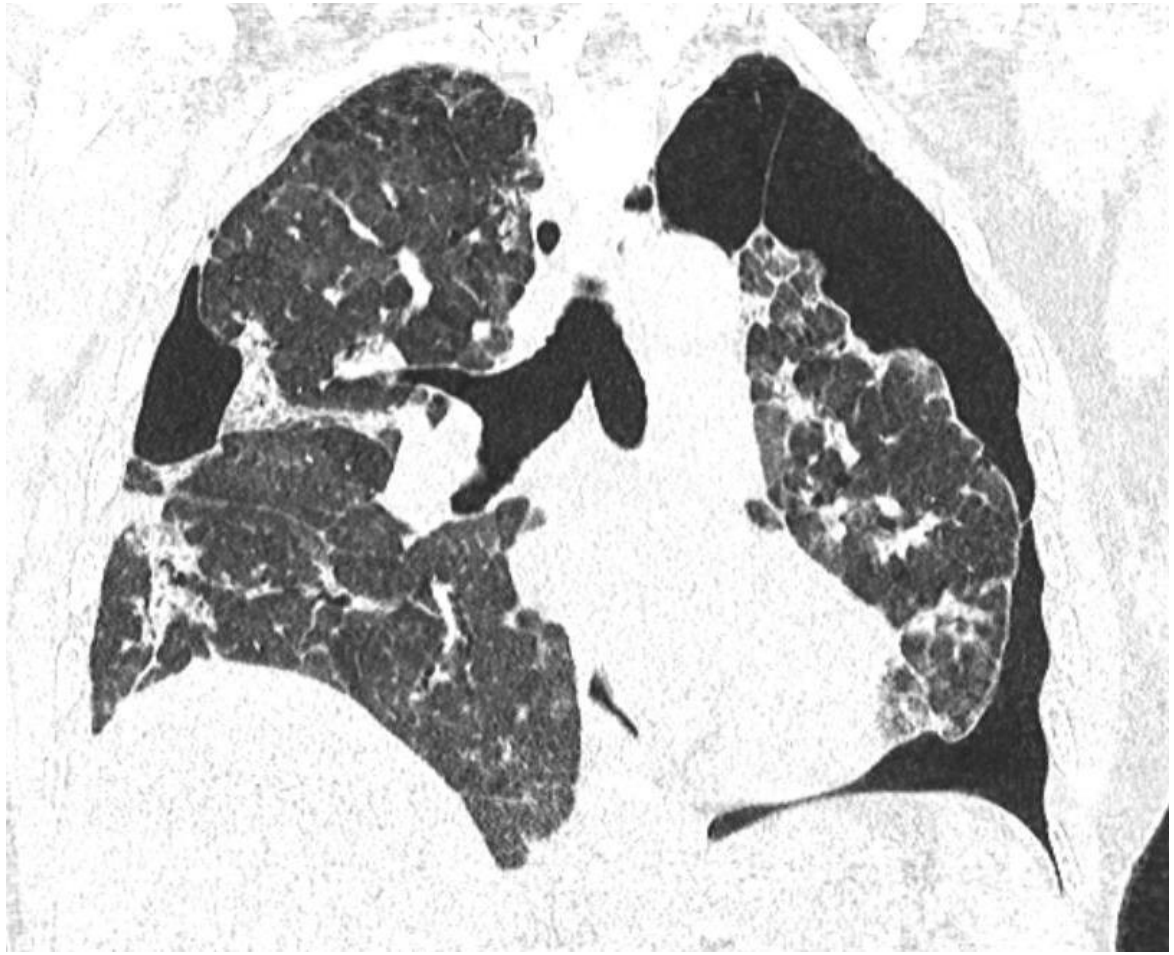






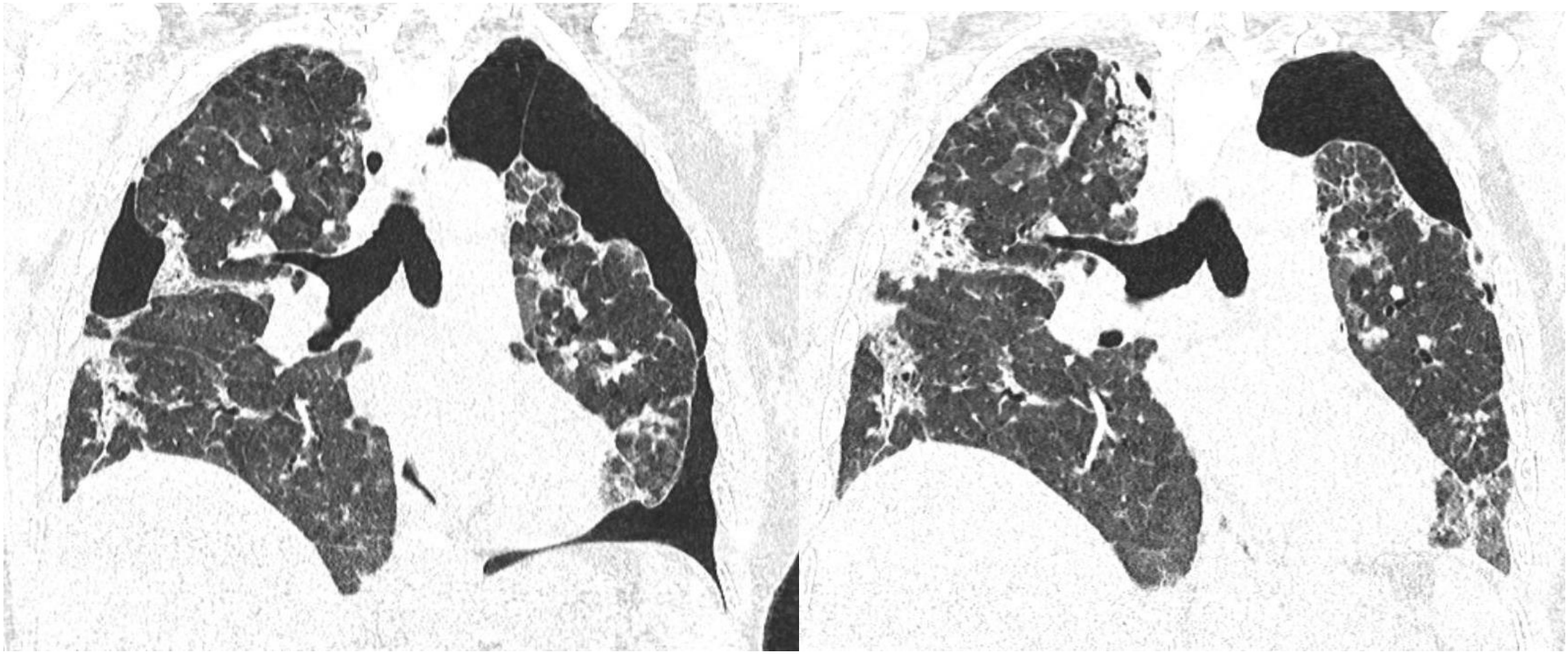
2

Žena 51 let
Plicní postižení po 4M od COVID-19



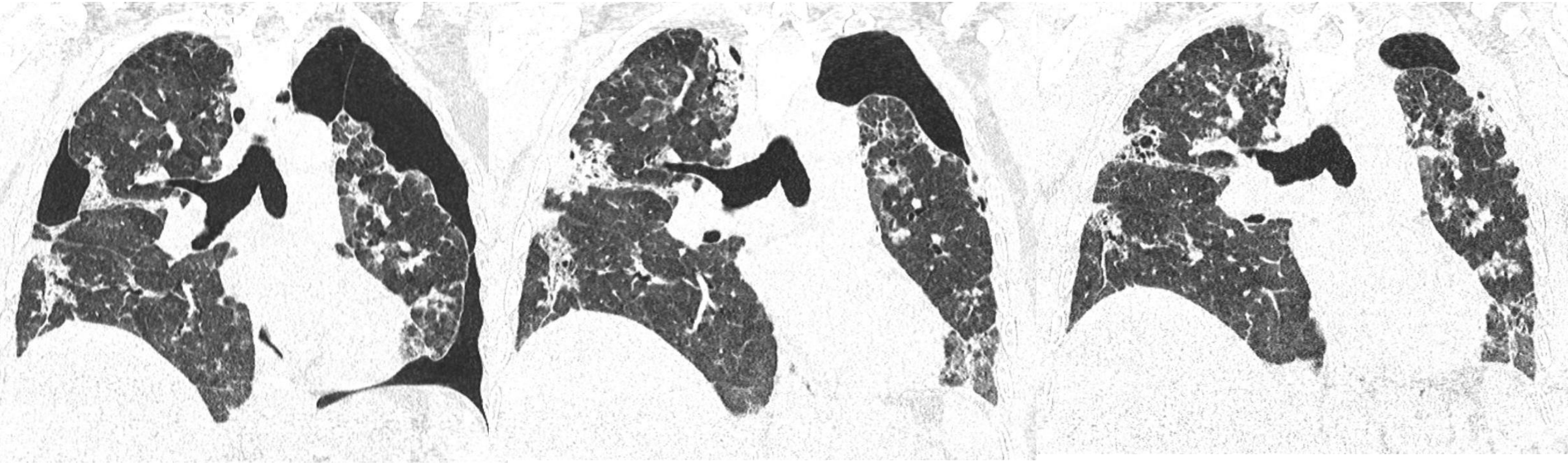
2

Po 8M od vzniku COVID-19



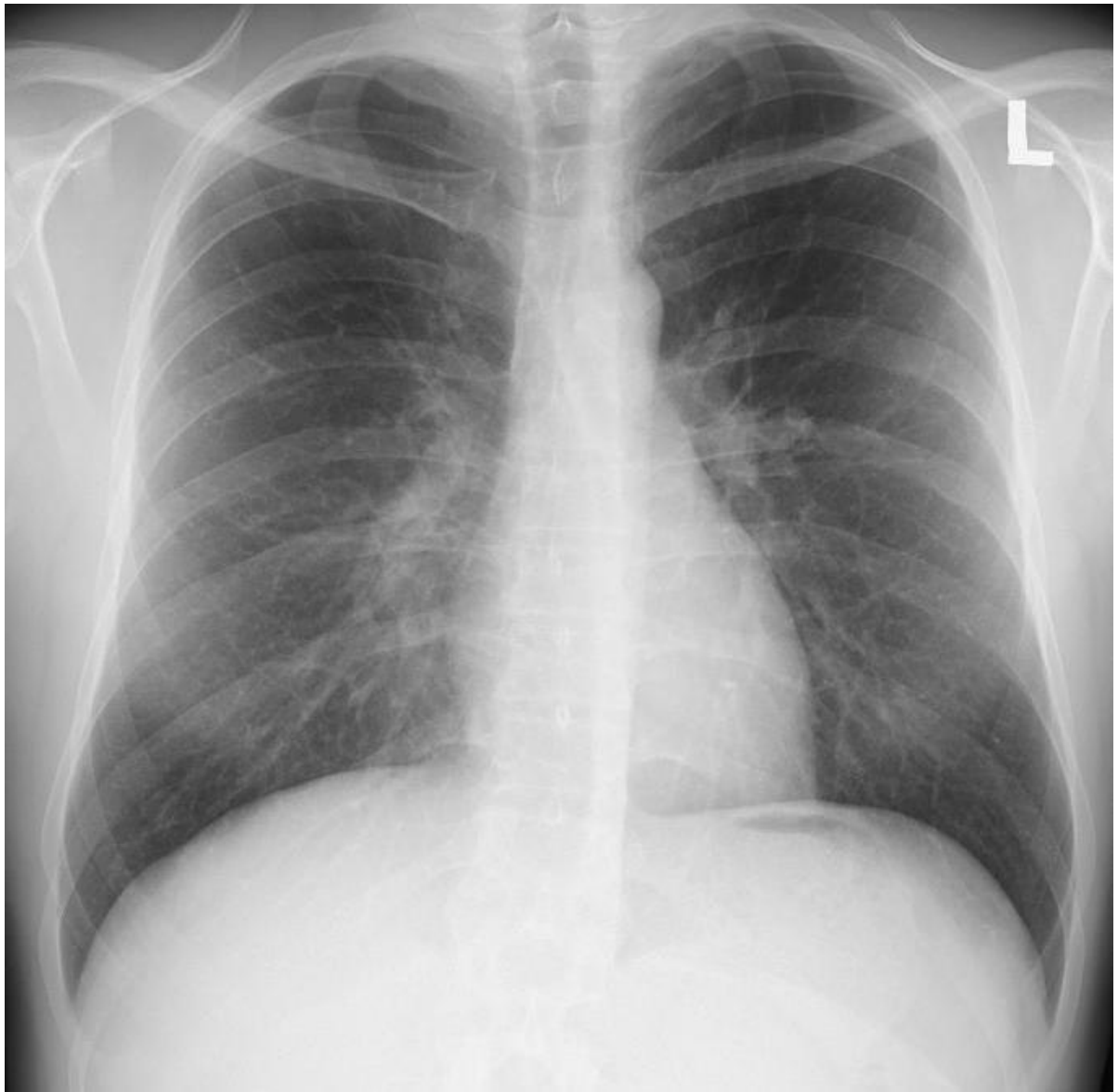
2

Postižení po 12M od COVID-19

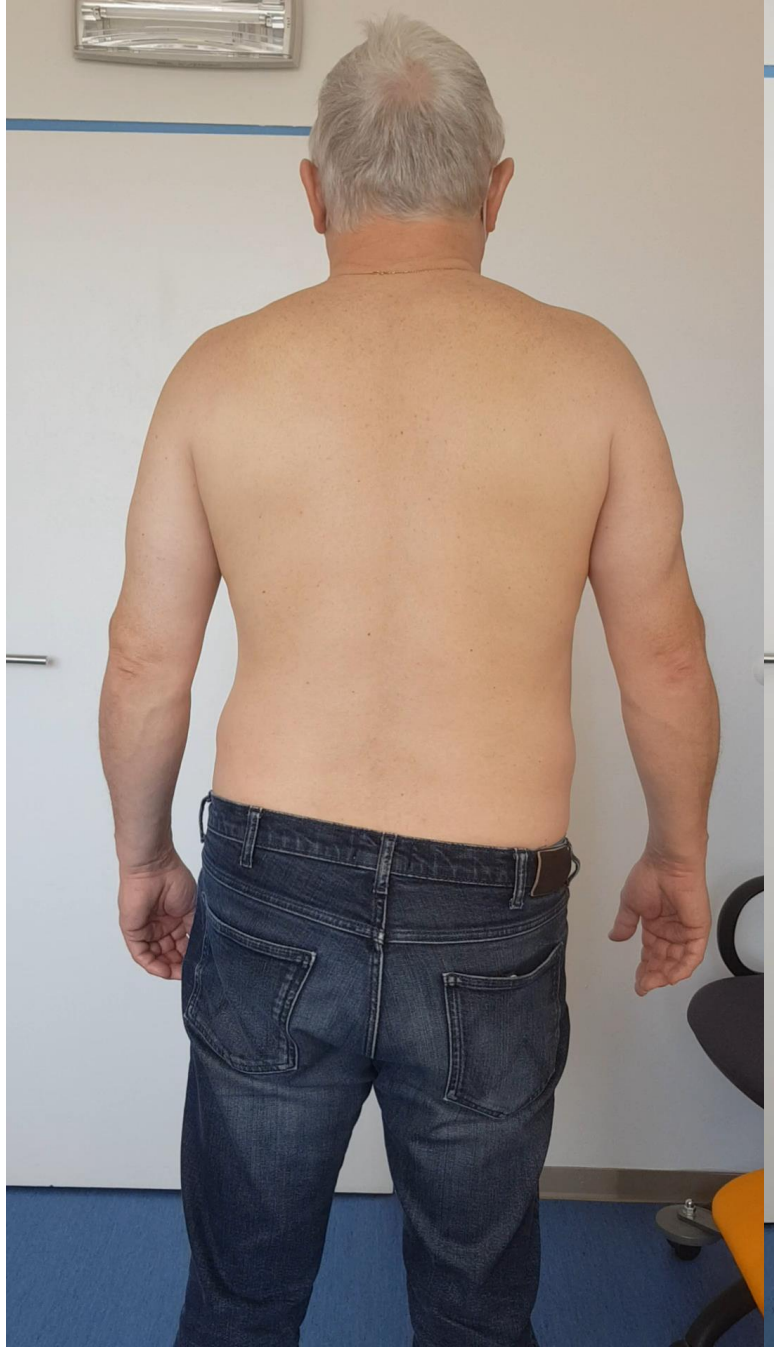


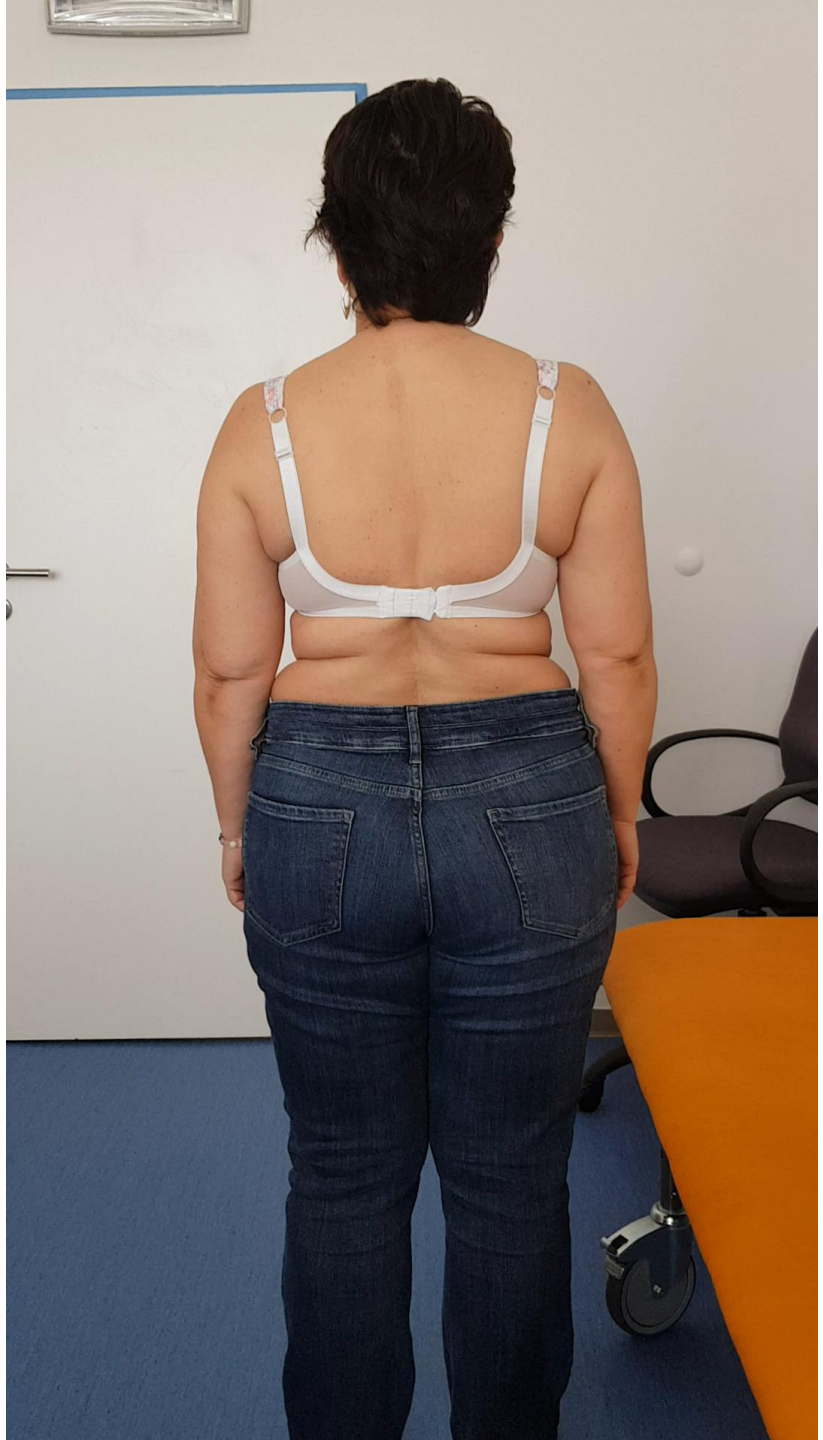
3

Dušnost bez postižení struktury a základních funkcí plic – 1M+3Ž



3






Plicní rehabilitace a respirační fyzioterapie
v domácím prostředí

4

Diskrétní dušnost rekreačního sportovce

- Muž 43 let, lehké astma, alergie, st.p. HŽT PDL 2017, sportovec (běhá 20-40km)
- Covid-19 10/2020
  - porucha čichu, únava, jednorázově 37,3°C, 4 dny bolesti hlavy, suchý kašel
- Po 5 týdnech návrat ke sportu
  - **Pravidelný běh však pouze 5-10 km**
- Vyšetřen PL a alergologem
- **Po 5 měsících stále max 10km, více nezvládne + vyšší TF i při menší zátěži (chůze do schodů – 130 bpm)**

4

Klasifikace B (či A) dle toho jak podrobně se ptáme

- Klinicky – norma, SpO2 98%, TF 75/min, TK 130/80
- Funkční vyšetření vč. TLco – norma
- RTG plic – norma
- 6MWT: 630m

4

Klasifikace C pokud provádíme 6MWT s měřením SpO2

- Klinicky – norma, SpO2 98%, TF 75/min, TK 130/80
- Funkční vyšetření vč. TLco – norma
- RTG plic – norma
- 6MWT: 630m
  - ALE: **SpO2 97–95–94–91–92%**

4

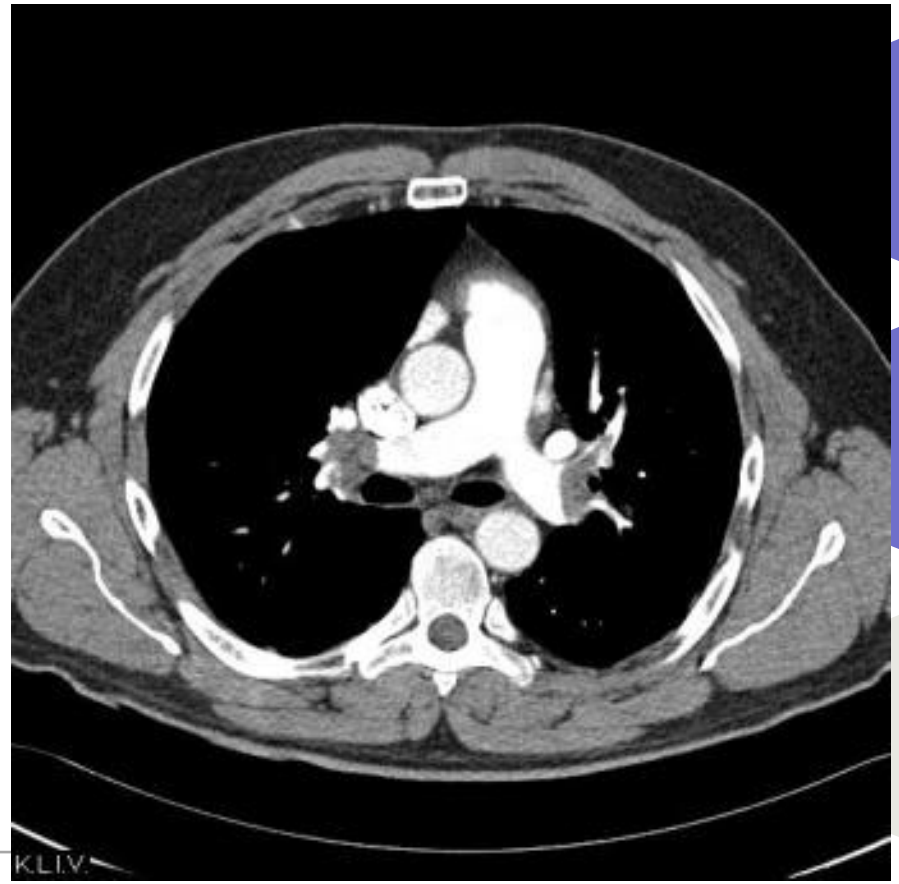
Časté komplikace jsou časté

- Klinicky – norma, SpO2 98%, TF 75/min, TK 130/80
- Funkční vyšetření vč. TLco – norma
- RTG plic – norma
- 6MWT: 630m
  - SpO2 97–95–94–91–92%
- D-dimery: **4,2 mg/l**
- CT Ag: **rozsáhlá oboustranná plicní embolizace**

4 Rychlá normalizace
PE má cenu hledat - pokud se průběh nezlepšuje

- Aplikován Fraxiparin
- Od druhého dne Xarelto, dispenzarizován angiologem

- Za 3 měsíce zcela bez obtíží, sportuje
- plicní funkce v normě
- **6MWT: 660m, SpO2 96–96–96–96–96%**



Stručné shrnutí pro praxi

Závěr 1
Akutní COVID-19

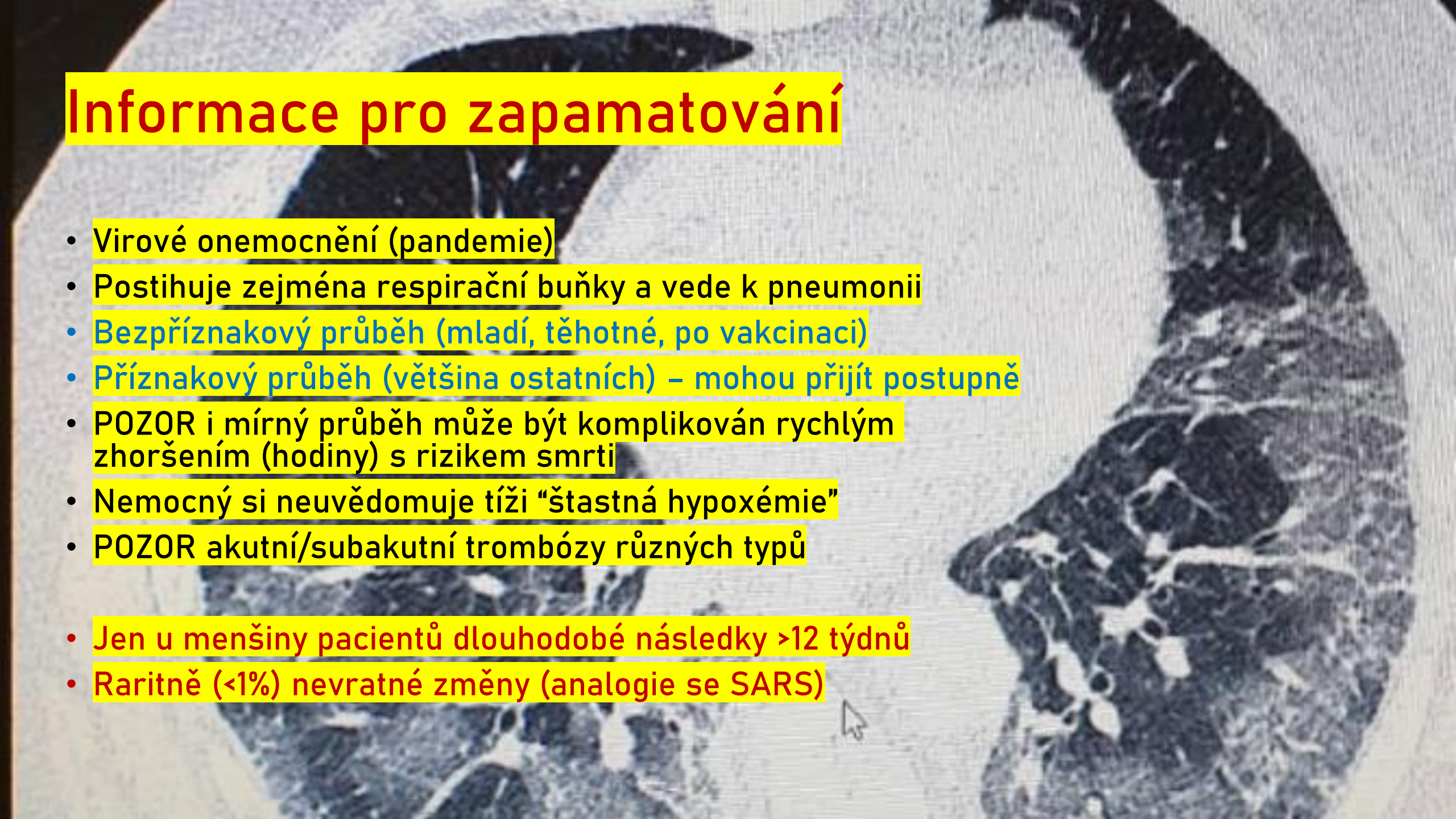
- U 20% pacientů s COVID-19 **došlo k rozvoji akutního respiračního selhání s projevy pneumonie → ARDS**
- **Monoklonální protilátky + antivirotika** co nejdříve
- Tyto pacienty bylo třeba léčit pomocí **kyslíkové terapie** pomocí HFNO, NIVP případně UPV
- Navíc **extrapulmonální komplikace**: kardiální, renální, neurologické, vaskulární a mentální
- **Čím těžší pacient, tím výraznější** následky v dlouhodobém horizontu (subakutní COVID → post COVID)
- **Vakcinace ↓ riziko těžké formy COVID-19**

COVID-19 ERS monograph 2021

Závěr 2
“POST-COVID sequalae”

- Syndrom či spíše dlouhodobé následky po onemocnění COVID-19
- Nejsou dosud zcela pochopeny
- Mohou postihovat různé orgány v lidském těle
- Obvykle mají lehký průběh a tendenci k postupnému zlepšování
- Nicméně mohou být i progresivní a mohou vést k nevratnému poškození organism
- Možnost persistence, fluktuace a relapsů POST-COVID následků
- Výzkum a sledování reálných pacientů v delším čase = nezbytné

COVID-19 ERS monograph 2021



Informace pro zapamatování

- Virové onemocnění (pandemie)
- Postihuje zejména respirační buňky a vede k pneumonii
- Bezpříznakový průběh (mladí, těhotné, po vakcinaci)
- Příznakový průběh (většina ostatních) – mohou přijít postupně
- POZOR i mírný průběh může být komplikován rychlým zhoršením (hodiny) s rizikem smrti
- Nemocný si neuvědomuje tíži "šťastná hypoxémie"
- POZOR akutní/subakutní trombózy různých typů

- Jen u menšiny pacientů dlouhodobé následky >12 týdnů
- Raritně (<1%) nevratné změny (analogie se SARS)

FORMY POST-COVID

Menší riziko post-COVID po vakcinaci

Těžká nemoc (hospitalizace, O2, HFNO, NIVP, UPV, ECMO) - plicní post-COVID s destrukcí plíce a s mnoha dopady dlouhé hospitalizace (neuropatie, myopatie, mykózy, opakovaná pozitivita PCR)

Lehká nemoc (ambulantně) – hyperventilace nasedající na post-COVID, psychické obtíže, nejasná vazba, rizika špatné dg., naopak škodlivé bagatelizace

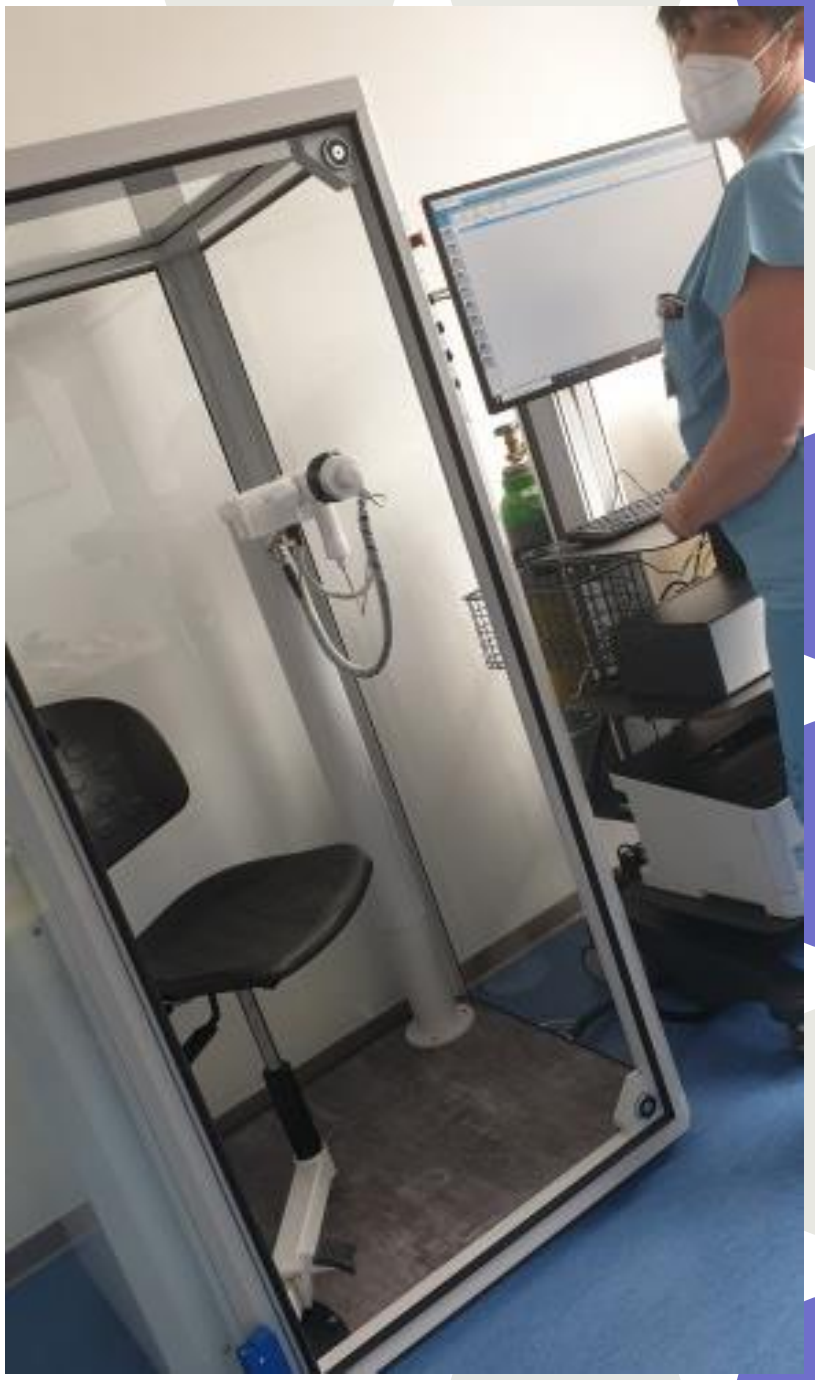
Již před COVID-19 chronická respiační nemoc a nyní sumace COVID-19 a plicní nemoci: IPP, CHOPN, karcinom, TRA, CF, non-CF BE

Jiná nemoc = ne vše po COVID je post-COVID

SYSTÉM ZDRAVOTNÍ PÉČE O POST-COVID CZ

VŽDY	NĚKDY	VYJÍMEČNĚ
• Praktický lékař (>5.000 ambulancí/ČR) • **vyloučení jiných onemocnění**	• Pneumolog (400 ambulancí vč. nemocničních/ČR) • **posouzení rozsahu postižení, dispenzarizace, léčba post-COVID**	• Mezioborové centrum (přibližně 10-14/ČR) • **diferencální diagnostika komplikovaných případů post-COVID**

FN HK od 1.3. 2020
>1.500 post-COVID pts
3.000 hospital. s akutním COVID



Original Investigation | Caring for the Critically Ill Patient FREE

May 15, 2022

Effect of Awake Prone Positioning on Endotracheal Intubation in Patients With COVID-19 and Acute Respiratory Failure

A Randomized Clinical Trial

Waleed Alhazzani, MD, MSc[1,2,3,4]; Ken Kuljit S. Parhar, MD[5,6,7]; Jason Weatherald, MD[6,7,8,9]; et al

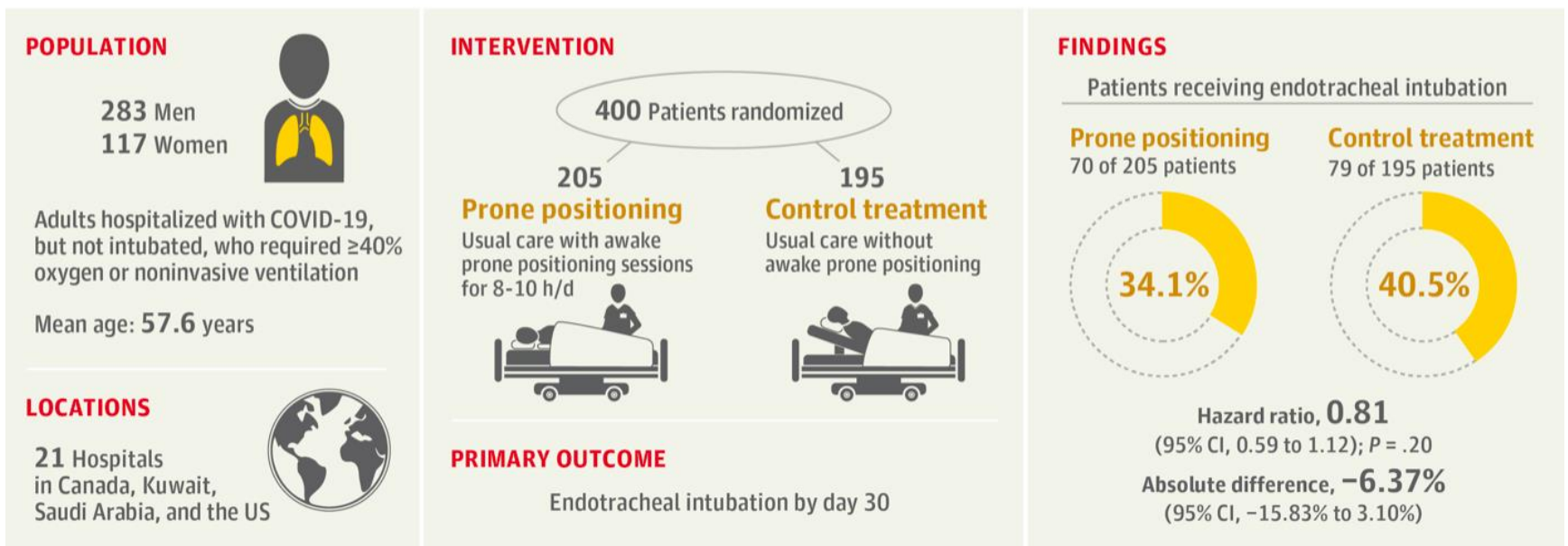
» Author Affiliations | Article Information

JAMA. 2022;327(21):2104-2113. doi:10.1001/jama.2022.7993

JAMA

QUESTION Does prone positioning reduce endotracheal intubation in adults who were awake and not intubated and who had hypoxemic respiratory failure from COVID-19?

CONCLUSION Although the findings do not support prone positioning in this setting, the effect size for the primary study outcome was imprecise and does not exclude a clinically important benefit.



Viewpoint

ONLINE FIRST FREE

May 27, 2022

COVID-19 in 2022—The Beginning of the End or the End of the Beginning?

Carlos del Rio, MD[1,2]; Preeti N. Malani, MD, MSJ[3,4]

» Author Affiliations | Article Information

JAMA. Published online May 27, 2022. doi:10.1001/jama.2022.9655

While many questions remain about the future of the pandemic, it is clear that SARS-CoV-2 will not be fully eradicated. This means continuing to adapt to life with COVID-19 and recognizing that during the next phase of the pandemic, there will be times when community transmission will be low and precautions can be "dialed down" and times when increased transmission will require mitigation efforts to be "dialed up."

If COVID-19 moves toward endemicity, then it should not disrupt everyday life. However, with ongoing transmission and with an estimated 10% to 30% of individuals experiencing long COVID symptoms after infection, this issue will require careful attention to further define the syndrome and possible intervention (such as the RECOVER cohort study at the National Institutes of Health). Data suggest that vaccination can decrease the risk of long COVID and thus continuing to focus on improving vaccination rates must remain the cornerstone of COVID-19 prevention and mitigation not only locally, but globally.