



SCIENCE

## Cases of 'long COVID' frustrate patients, puzzle scientists



A year after he seemingly recovered from COVID-19, Larry Searight still contends with a puzzling array of symptoms that have come to be known as "long COVID." (Courtesy of Larry Searight)

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PUBLISHED MARCH 25, 2021 | UPDATED MARCH 28, 2021 4:39 PM PT

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# **Treating Long COVID: Clinician Experience with Post-Acute COVID-19 Care**

Clinician Outreach and Communication Activity (COCA) Webinar

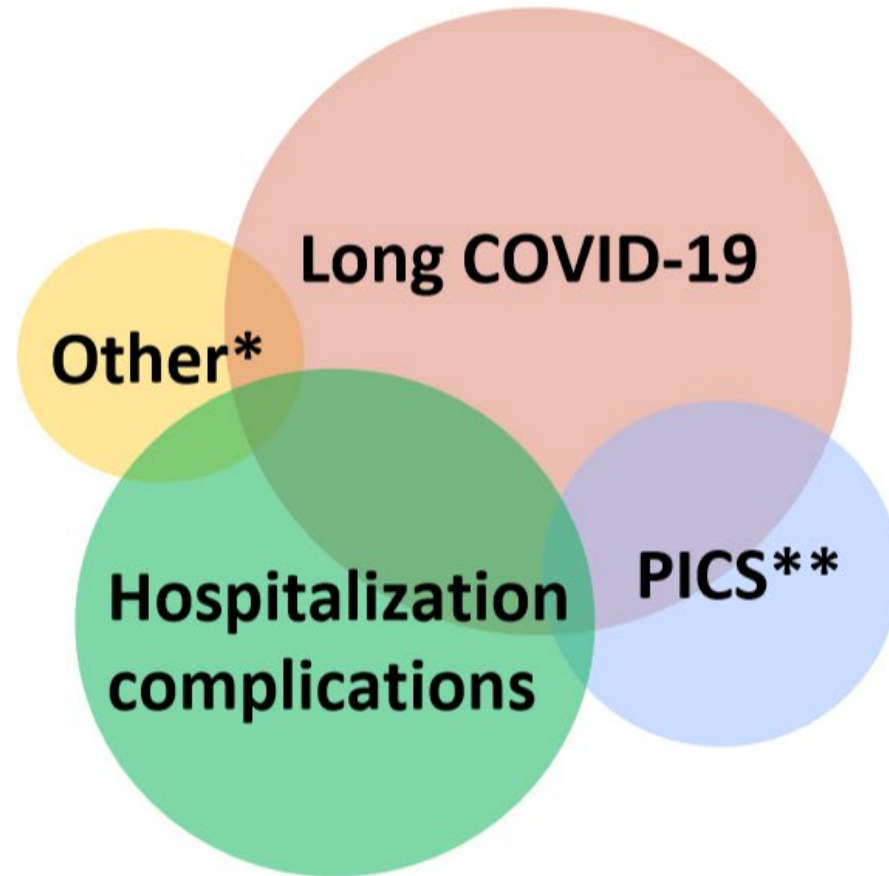
Thursday, January 28, 2021



## Objectives


- Identify signs and symptoms of long COVID which occur after the acute phase of SARS-CoV-2 infection.
- Identify potential multidisciplinary teams for patient care.
- Describe common challenges to post-acute COVID-19 care.
- Describe examples of patient-centered, interdisciplinary post-acute COVID-19 care.

Long COVID may overlap with other complications of acute COVID-19 illness making it **hard to define**.



\*Multisystem inflammatory disorder, Guillain-Barre, among others

\*\*Post-Intensive Care Syndrome

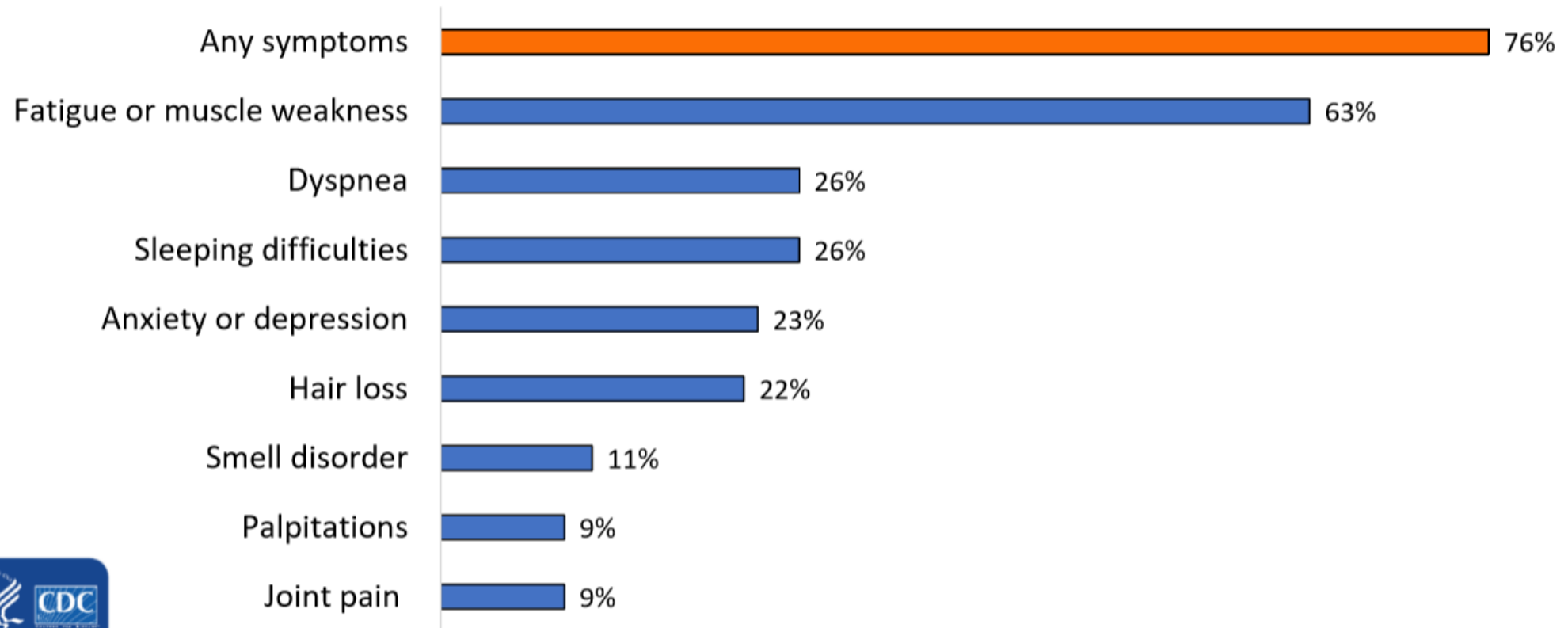


Long COVID often presents as reported **persistent severe fatigue, headaches, and brain fog (mild subjective cognitive impairment) >4 weeks** after acute illness and may be **independent of acute illness severity.**



# Three quarters of patients hospitalized with COVID-19 had **at least one ongoing symptom** 6 months after their acute illness.

Symptoms among 1,733 patients after hospitalization for COVID-19, China



# Prolonged symptoms are common among patients with mild COVID-19 disease **not requiring hospitalization.**

- Survey of patients in a post-COVID 19 clinic in France<sup>1</sup> and telephone surveys in the Faroe islands<sup>2</sup> and Switzerland<sup>3</sup>
  - 35-54% of patients with mild acute COVID-19 had **persistent symptoms after 2-4 months**
  - 50-76% of patients **reported new symptoms** not present in their acute COVID-19 illness **or symptoms that resolved and reappeared**<sup>1</sup>
  - 9% reported prolonged symptoms as **severe**<sup>2</sup>



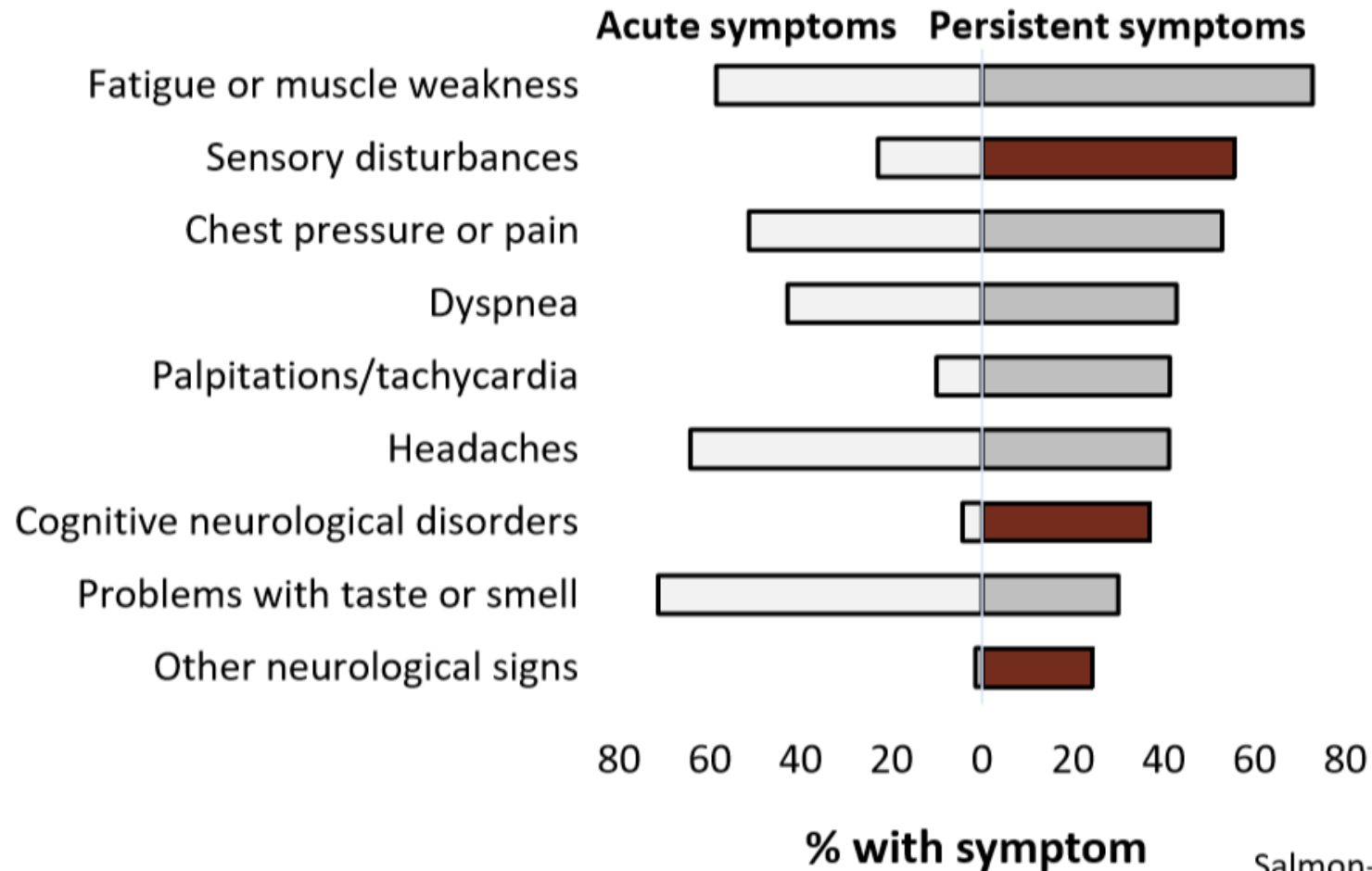
1. Salmon-Ceron et al., J Infect. 2020

2. Petersen et al., Clin Infect Dis. 2020

3. Nehme et al., Ann Intern Med. 2020

# More than one quarter of patients **developed new neurological symptoms** after their acute COVID-19 illness.

COVID-19 symptoms among 70 non-hospitalized patients, France

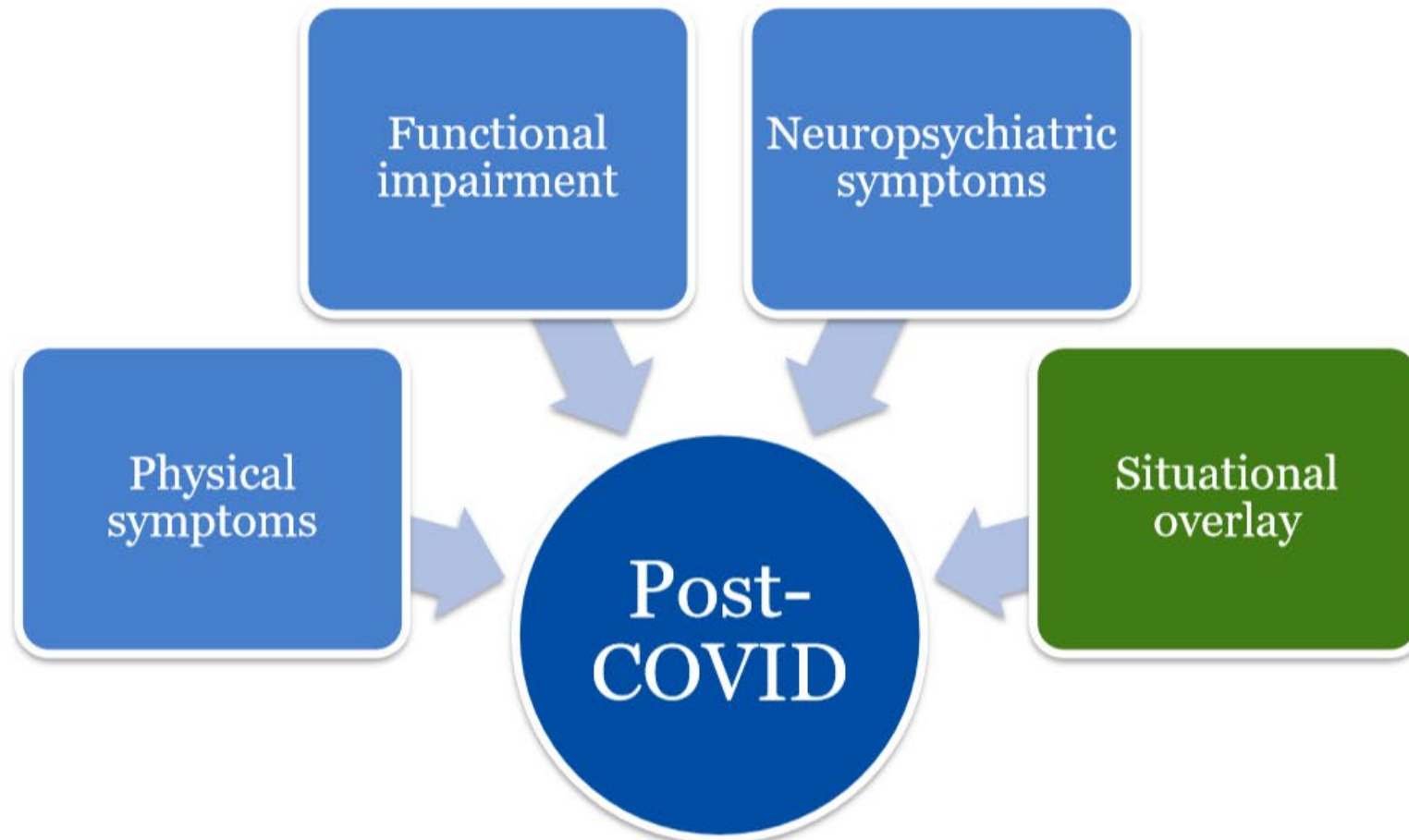




## Key points

- New or persistent symptoms (lasting >4-6 months) may occur among patients with COVID-19 **regardless of acute episode severity.**
- In addition to respiratory symptoms, **patients may present with fatigue, sleeping difficulties, depression, anxiety, and neurological dysfunction.**
- Baseline and serial **comprehensive reviews of systems and physical exams** may better document possible long COVID manifestations and improve management.
- There is still **a lot we do not understand**, and **empathy toward patients** experiencing long COVID is fundamental.

## A familiar constellation of challenges in a COVID-19 context:



## Observations for our next iteration:

- Imaging most helpful in those with abnormal PFTs or previously extensive abnormalities
- Partnership with PT has been essential, but what is the ideal rehab structure for this population?
- Social work heavily utilized and very effective
- Neurocognitive sequelae have been common
- “Subjective/objective mismatch” is common, optimal diagnostic pathway uncertain
- Most people slowly improving – therefore supportive interventions may be more high value than serial diagnostics

## Neurological Symptoms--Brain Fog

- ▶ Most common neurological symptom
- ▶ Issues with short-term memory, concentration and word-finding/speech difficulty
- ▶ No clear correlation with severity of COVID infection, age or comorbidities
- ▶ Symptoms often fluctuate, “good and bad days”
  - Fluctuations often correlate with other symptoms like fatigue and dysautonomia
- ▶ Impact on life varies: some able to still work, others on disability
- ▶ Sleep: many patients with poor sleep
- ▶ Mood: many patients experiencing depression, anxiety and/or PTSD

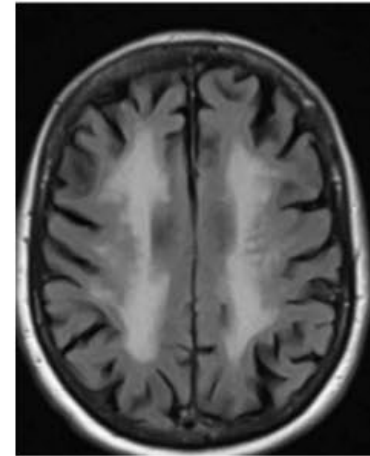
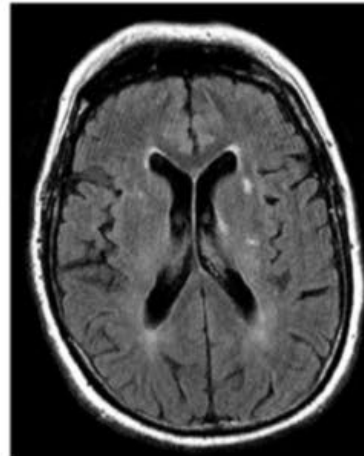
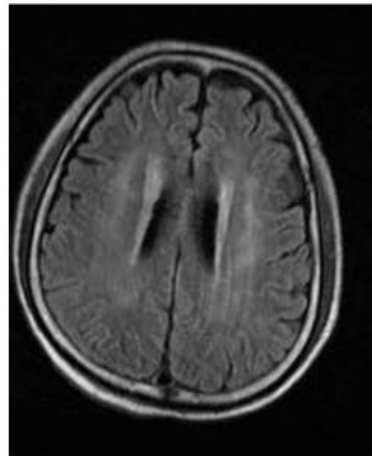
# Neurological Symptoms--Headaches, Paresthesias and Dysautonomia

- ▶ Headaches
  - Often describes as constant pressure that can fluctuate in severity
  - May have migraine symptoms or not
  - Many don't have a history of headaches
- ▶ Paresthesias
  - Tingling, numbness and/or burning sensation
  - May be focal, diffuse, alternating in locations
  - Sometimes more in distal extremities (stocking-glove distribution)
- ▶ Dysautonomia
  - Fluctuating blood pressure and heart rate
  - Lightheadedness, palpitations, GI disturbances

**Most patients have multiple chief complaints. Rare to have someone coming in for only one issue**

## Neuroimaging: typical findings

- ▶ Not seeing large inflammatory/infectious appearing lesions
- ▶ Not seeing many strokes, including lacunar strokes
- ▶ White matter changes (i.e., microvascular ischemic changes)
  - Very common imaging finding regardless of COVID
  - Occurs with age, vascular risk factors, migraines
  - Unless severe, often not considered clinically relevant
  - Caution in attributing to COVID without comparison imaging, or, if more severe than expected for age



## Cognitive test: typical findings

- ▶ Younger patients: results more often within normal limits
  - May be some decrease from presumed prior level of function
  - May show more issues with attention
- ▶ Older adults: deficits in varying domains
  - No clear pattern, or "post-COVID cognitive profile"
  - COVID unmasking underlying cognitive impairment versus causing
- ▶ Reports often comment on mood (depression, anxiety, PTSD), sleep and fatigue as potential contributing factors
- ▶ **Brain Fog ≠ Dementia** for most people
  - Does not mean cognitive changes are not present and interfering with life

## History

- ▶ Symptoms and their correlation
  - If multiple symptoms, do they fit with a larger diagnosis?
- ▶ Severity of COVID
  - Associated complications, cytokine storm, hypoxia
- ▶ Age and medical comorbidities of patient
- ▶ Impact of symptoms on ability to work and/or activities of daily living
- ▶ FOCAL neurological deficits or symptoms
- ▶ Sleep
- ▶ Mood



## Workup--often aimed to look for contributing factors

- ▶ Bloodwork
  - TSH, Vitamin B12 and Vitamin D
  - HIV, RPR, thiamine, folate (if severe cognitive deterioration)
  - Hemoglobin A1c if neuropathy
- ▶ Imaging- MRI Brain (or CT Head)

Consider Imaging:	Can Consider Holding Imaging:
<ul style="list-style-type: none"><li>• Moderate-Severe COVID</li><li>• Over 50 years of age</li><li>• Medical comorbidities/risk factors</li><li>• Impact on job or iADLs</li><li>• Focal neurological deficits or symptoms</li></ul>	<ul style="list-style-type: none"><li>• Not hospitalized/no complications with COVID</li><li>• Less than 50 years of age</li><li>• Otherwise healthy</li><li>• Correlation with other symptoms, has “good days”</li></ul>

- ▶ Neuropsychological Testing
  - Can be helpful in highlighting if/what deficits present as well as potential contributing factors

## Workup

- ▶ EEG: if episodes of altered consciousness, seizure-like activity
- ▶ Lumbar puncture: only in cases of severe cognitive deterioration or other concerning neurological deficits.
- ▶ EMG: for neuropathy. Normal in small fiber neuropathy
- ▶ Skin biopsy for small fiber neuropathy- confirms diagnosis. Doesn't change management
- ▶ Autonomic function/tilt table testing- if concern for POTS

Likely okay to do a small, focused workup. Extensive testing has not been helpful in vast majority of patients.

## Treatment: mostly symptomatic and supportive

- ▶ Brain fog:
  - No specific treatment
  - Address any abnormalities in bloodwork
  - Address contributing factors
  - If attention is major issue: Atomoxetine, dextroamphetamine/amphetamine, methylphenidate, modafinil
- ▶ Dysautonomia:
  - Hydration, increase salt intake, compression stockings
  - Meditation, breathwork
  - POTS: consider adding in midodrine or fludrocortisone
  - Hyperadrenergic POTS: beta-blocker
- ▶ Small fiber neuropathy:
  - Address any abnormalities in bloodwork
  - Symptomatic treatment of paresthesias: gabapentin, pregabalin, tricyclics, duloxetine
  - Dysautonomia as above
- ▶ Fatigue:
  - Treat associated symptoms as above
  - Pacing of exercise: low-impact, short duration exercise with gradual increase. Do not push to recondition quickly

## Other critical factors

- ▶ Sleep:
  - Sleep hygiene
  - Assess for possible sleep apnea
  - Sleep aids: melatonin, mirtazapine, gabapentin or amitriptyline (if paresthesias or headaches also present)
- ▶ Mental Health:
  - Critical to address while not being dismissive
  - May be “the result of”, not the primary cause of symptoms.
  - Depression, anxiety and PTSD can affect cognition
  - Something we can act on
  - Anti-depressants like duloxetine or venlafaxine may be beneficial in also treating paresthesias and/or headaches

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# Los Angeles

## Cedars-Sinai COVID-19 Recovery Program

8635 W. 3rd St Ste 465W Los Angeles, CA 90048

8723 Alden Dr Ste 260 Los Angeles, CA 90048

### Multidisciplinary Long-Term Recovery

This program was designed to connect patients who are experiencing persistent symptoms after COVID-19 to a network of specialists in order to provide the most comprehensive and best care available based on the latest developing understanding of the disease. Patients can also opt to participate in clinical trials and contribute to a deeper understanding of long-term effects of COVID-19.

Patients receive a comprehensive initial evaluation by infectious disease and pulmonary specialists and further evaluation as needed by a range of specialists, such as cardiology, neurology, and psychology experts.

Patients who meet the following requirements are currently being admitted to the COVID-19 Recovery Program by physician referral only. This includes patients who:

Have had COVID-19, confirmed by a positive test result and are experiencing persistent symptoms, including but not limited to the following:

- Decreased exercise tolerance, including shortness of breath
- Headaches, dizziness, prolonged loss of sense of taste or smell
- Cognitive conditions including memory loss, brain fog, or mental fatigue
- Mood disorders like anxiety, depression, or PTSD

### Post COVID Recovery Team Members

Phone number for both locations: 310-423-1528