Assessing Long-Covid Symptoms

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November 2024 Webinar

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THINK
HAPPY
THOUGHTS

Agenda

- Identify the signs and symptoms of long-COVID in residents and staff.
- Understand the clinical exacerbations of chronic diseases such as heart disease, diabetes, and neurological diseases due to long COVID.
- Assess long-COVID symptoms.
- Treat long-COVID symptoms in long-term care.

No Matter What You Call It…

- "Long COVID"
- "Long-haulers"
- "Infection-associated chronic condition"
- "Post-COVID condition"

NOTE: There is no universal medical definition at this time (most research implies symptoms lasting at minimum 3-12 weeks but for many it is longer than that).

Per the Mayo Clinic, more than **200** symptoms have been linked to long COVID. Symptoms may stay the same over time, get worse, or go away and come back.

Common symptoms of long COVID include:

- **Extreme tiredness, especially after activity.**
- Problems with memory, often called brain fog.
- A feeling of being lightheaded or dizzy.
- Problems with taste or smell.
- Neurocognitive impairment

Other symptoms of long COVID include:

- Sleep problems.
- Shortness of breath.
- Cough.
- Headache.
- Fast or irregular heartbeat.
- Digestion problems, such as loose stools, constipation or bloating.

Sources:

Long COVID: Lasting effects of COVID-19 - Mayo Clinic

Cohort profile: the Johns Hopkins COVID Long Study (JHCLS), a United States Nationwide Prospective Cohort Study - PMC

COVID TRIGGERS

Diseases caused or made worse by long COVID include:

migraine, lung disease, autoimmune disease and chronic kidney disease.

Diseases that people may be diagnosed with due to long COVID include:

- Heart disease.
- Mood disorders.
- Anxiety.
- Stroke or blood clots.
- Postural orthostatic tachycardia syndrome, also called POTS.
- Myalgic encephalomyelitis-chronic fatigue syndrome, also called ME-CFS.
- Mast cell activation syndrome.
- Fibromyalgia.
- Diabetes.
- Hyperlipidemia.

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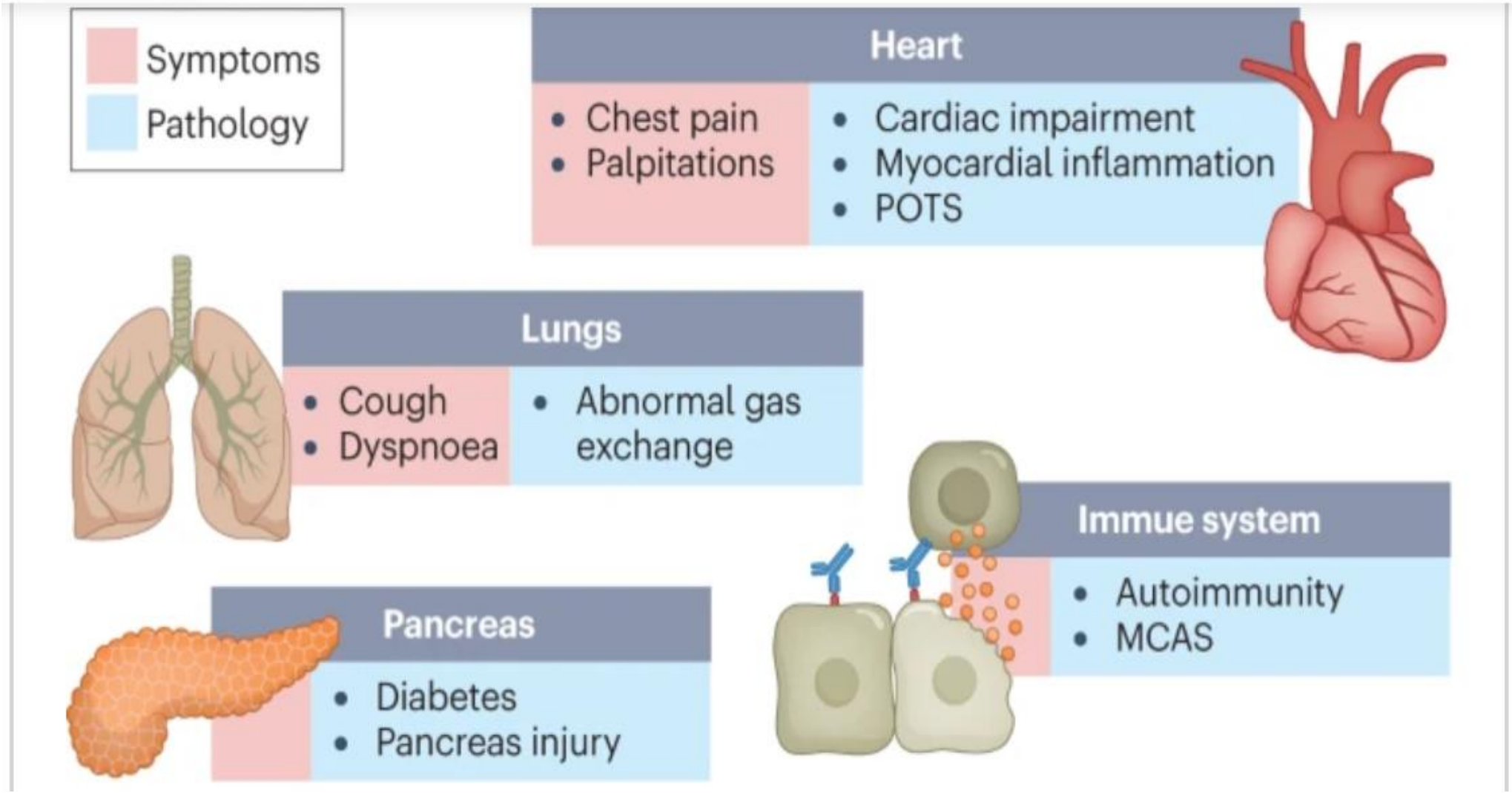
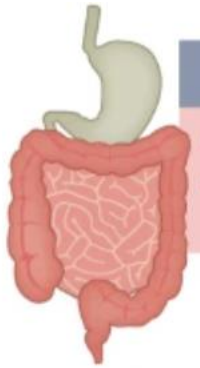

Symptoms
Pathology
Heart
Chest pain
Palpitations
Cardiac impairment
Myocardial inflammation
POTS
Lungs
Cough
Dyspnoea
Abnormal gas exchange
Immue system
Autoimmunity
MCAS
Pancreas
Diabetes
Pancreas injury

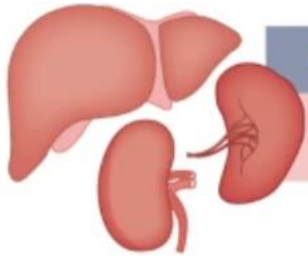


Gastrointestinal tract

- Abdominal pain
- Nausea
- Gut dysbiosis
- Viral persistence and viral reservoir

Neurological system

- Cognitive impairment
- Fatigue
- Disordered sleep
- Memory loss
- Tinnitus
- Dysautonomia
- ME/CFS
- Neuroinflammation
- Reduced cerebral blood flow
- Small fibre neuropathy

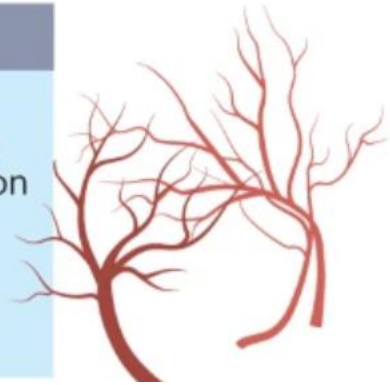


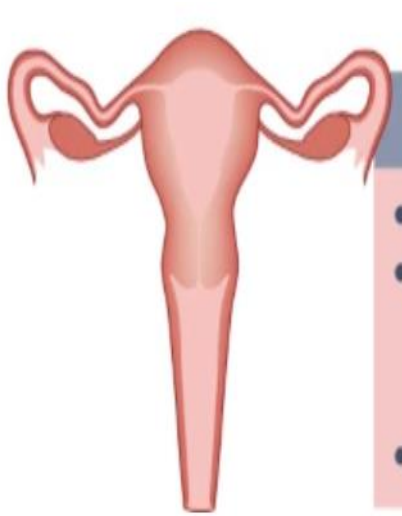
Kidneys, spleen and liver

- Organ injury

Blood vessels

- Fatigue
- Coagulopathy
- Deep vein thrombosis
- Endothelial dysfunction
- Microangiopathy
- Microclots
- Pulmonary embolism
- Stroke





Reproductive system

- Erectile dysfunction
- Increased severity and number of premenstrual symptoms
- Irregular menstruation
- Reduced sperm count

"**One year after** the initial infection, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) **infections increased the risk of cardiac arrest, death, diabetes, heart failure, pulmonary embolism and stroke**, as studied with use of US Department of Veterans Affairs databases. Additionally, there is clear increased risk of developing myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) and dysautonomia. Six months after breakthrough infection, increased risks were observed for cardiovascular conditions, coagulation and haematological conditions, death, fatigue, neurological conditions and pulmonary conditions in the same cohort."

https://www.nature.com/articles/s41579-022-00846-2--this is a great article, explaining in more layman's terms

Chronic Illnesses/Comorbidities + Covid= ☹

- "The risk of mortality from COVID-19 increased for patients admitted to intensive care with hypertension, diabetes, respiratory diseases, cardiovascular diseases, and other chronic diseases (e.g., cancer), compared with the risk in patients without these conditions. This risk rose significantly with an increasing number of chronic comorbid conditions."
- Post-COVID hospitalization (or long infection with COVID) saw a higher risk of diabetes, cardiovascular disease, and respiratory disease. **Note that rheumatic diseases and neurological diseases also increased though not as prevalently as the others mentioned prior.

https://www.thelancet.com/journals/lanhl/article/PIIS2666-7568(22)00245-8/fulltext

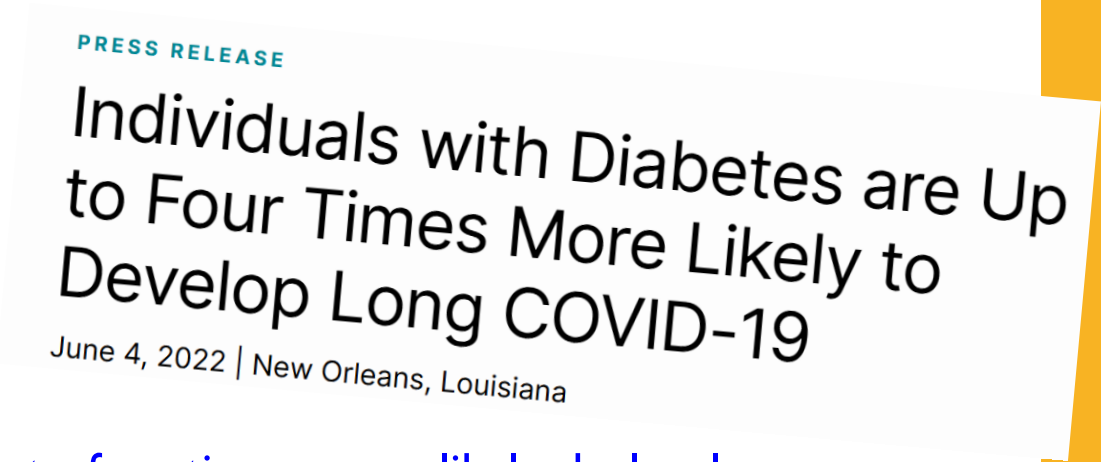
Cardiac Specific Long-Covid Symptoms

- Cerebrovascular disorders
- dysrhythmias,
- inflammatory heart disease,
- ischemic heart disease,
- heart failure,
- thromboembolic disease,
- and other cardiac disorders.

DIABETES + COVID

Does COVID cause diabetes?... Maybe?

"…the evidence that SARS-CoV-2 could induce diabetes is growing. However, it is not yet clear whether this might be a fulminant-type diabetes, autoimmune diabetes, or a new-onset transient hyperglycemia [17] . In patients that were hospitalized due to COVID-19, glycemic abnormalities were observed up to 2 months later [7] . However, other long-term studies reported that the prevalence of dysglycemia reverted to pre-admission frequencies in most recovered patients [9] ." (Steenblock, 2022).


PRESS RELEASE

Individuals with Diabetes are Up to Four Times More Likely to Develop Long COVID-19

June 4, 2022 | New Orleans, Louisiana

https://pmc.ncbi.nlm.nih.gov/articles/PMC9363150/

https://diabetes.org/newsroom/individuals-with-diabetes-are-up-to-four-times-more-likely-devlop-long-COVID-19

Respiratory Issues + Covid

Most common respiratory symptoms of long-Covid:

- Breathlessness
- Chest pain
- Persistent cough

"Abnormalities on lung function testing or chest imaging have been reported in several cohorts of individuals who required hospitalisation for COVID-19, but many studies are limited in that there was selective use of further investigation, in part due to pandemic limitations."

Rule out something serious (like a pulmonary embolism), then treat the symptoms!

[Pulmonary rehabilitation should include the involvement of an occupational therapist, physiotherapist or psychologist and is invaluable where post-viral fatigue syndrome, dysfunctional breathing, deconditioning or post-traumatic stress disorder are present. It is important to recognize that there is a significant overlap in the experience of fatigue and breathlessness, with some patients finding it difficult to distinguish between the two symptoms. Rehabilitation programs for patients with fatigue should be aware of the risk of developing post-exertional malaise in patients with long-COVID, and the importance of carefully pacing patients.]

https://pmc.ncbi.nlm.nih.gov/articles/PMC7612723/

Respiratory Recovery + Covid

Most common long-Covid respiratory symptoms:

Breathlessness, cough, chest pain

- https://pmc.ncbi.nlm.nih.gov/articles/PMC7612723/

Mental Health Concerns + COVID

Everyone Is Included

"The presentation of those with long COVID is often marked with multiple diverse symptoms affecting multiple organs; each individual may have their own unique clinical presentation. Though age is a major risk factor in COVID-19 related mortality, and despite a preponderance of long COVID among those aged 40 – 60 years, long COVID is reported across the age spectrum. Similarly, long COVID is reported by persons of all genders, race/ethnicities, and those with and without pre-existing comorbidities."

Cohort profile: the Johns Hopkins COVID Long Study (JHCLS), a United States Nationwide Prospective Cohort Study – PMC

Studies Have Shown…

While anyone who gets COVID-19 can develop Long COVID, studies have shown that some groups of people are more likely to develop Long COVID than others, including (not a comprehensive list):

- Women
- Hispanic and Latino people
- People who have experienced more severe COVID-19 illness, especially those who were hospitalized or needed intensive care
- People with underlying health conditions and adults who are 65 or older
- People who did not get a COVID-19 vaccine

Long COVID Basics | COVID-19 | CDC

Assessing for Long Covid

- Endurance and mobility
- General fatigue
- Anxiety
- Cognition


This Issue Views 5,365 | Citations 0 | Altmetric 184

Medical News in Brief

December 13, 2023

Long COVID in Nursing Home Residents Manifests as Functional Decline

Emily Harris

JAMA. 2024;331(1):15. doi:10.1001/jama.2023.24682

DISCLAIMER!

The following assessments should be done under the advisement of a physician and any treatment regimen forthgoing under direction of the same.

Assessing Endurance & Mobility

The Baltimore Longitudinal Study of Aging (BLSA) is a longitudinal study of healthy adults with the aim of understanding how adults adjust to the aging process, including adjustments in physical activity.

- mobility (walking a quarter mile/one mile and going up 10 steps/20 steps)
- instrumental activities of daily living (IADL) (light and heavy housework).

If a participant reports experiencing difficulty, they are asked to report the level of difficulty (a little, some, a lot, or unable to do) and if they had this difficulty before acquiring COVID

conversely, if they do not report difficulty, they are asked to report the level of ease (very easy, somewhat easy, or not so easy).

For mobility, if a participant reports any level of difficulty walking a quarter of a mile, they are considered to have a mobility disability. For IADL, if a participant reports any level of difficulty with light housework, they are considered to have an IADL disability.

- Cohort profile: the Johns Hopkins COVID Long Study (JHCLS), a United States Nationwide Prospective Cohort Study – PMC
- https://www.blsa.nih.gov/

Assessing Fatigue—DePaul Symptom Questionnaire

For the following questions (13-66), we would like to know **how often you have had each symptom** and **how much each symptom has bothered you over the last 6 months**. For each symptom please circle **one number for frequency and one number for severity**. Please fill the chart out from left to right.

Symptoms	*Frequency:* Throughout the **past 6 months**, **how often** have you had this symptom? For each symptom listed below, circle a number from: **0 = none of the time** **1 = a little of the time** **2 = about half the time** **3 = most of the time** **4 = all of the time**					*Severity:* Throughout the **past 6 months**, **how much** has this symptom bothered you? For each symptom listed below, circle a number from: **0 = symptom not present** **1 = mild** **2 = moderate** **3 = severe** **4 = very severe**				
13) Fatigue/extreme tiredness	0	1	2	3	4	0	1	2	3	4
14) Dead, heavy feeling after starting to exercise	0	1	2	3	4	0	1	2	3	4
15) Next day soreness or fatigue after non-strenuous, everyday activities	0	1	2	3	4	0	1	2	3	4
16) Mentally tired after the slightest effort	0	1	2	3	4	0	1	2	3	4
17) Minimum exercise makes you physically tired	0	1	2	3	4	0	1	2	3	4
18) Physically drained or sick after mild activity	0	1	2	3	4	0	1	2	3	4

Sources:
https://condor.depaul.edu/ljason/cfs/

https://www.ncbi.nlm.nih.gov/sites/books/NBK284903/

Assessing Fatigue—Chalder Fatigue Scale

chalder fatigue scale

name: _____ date: _____

We would like to know more about any problems you have had with feeling tired, weak or lacking in energy in the last month. Please answer ALL the questions by ticking the answer which applies to you most closely. If you have been feeling tired for a long while, then compare yourself to how you felt when you were last well. Please tick only one box per line.

	less than usual	no more than usual	more than usual	much more than usual
do you have problems with tiredness?				
do you need to rest more?				
do you feel sleepy or drowsy?				
do you have problems starting things?				
do you lack energy?				
do you have less strength in your muscles?				
do you feel weak?				
do you have difficulties concentrating?				
do you make slips of the tongue when speaking?				
do you find it more difficult to find the right word?				
	better than usual	**no worse than usual**	**worse than usual**	**much worse than usual**
how is your memory?				

https://www.goodmedicine.org.uk/files/assessment,%20chalder%20fatigue%20scale.pdf

Assessing Anxiety—GAD 7 Scale

GAD-7 Anxiety

Over the last two weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid, as if something awful might happen	0	1	2	3

Column totals _____ + _____ + _____ + _____ =

Total score _____

If you checked any problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Source: Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD-PHQ). The PHQ was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues. For research information, contact Dr. Spitzer at ris8@columbia.edu. PRIME-MD® is a trademark of Pfizer Inc. Copyright© 1999 Pfizer Inc. All rights reserved. Reproduced with permission

Scoring GAD-7 Anxiety Severity

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of "not at all," "several days," "more than half the days," and "nearly every day."
GAD-7 total score for the seven items ranges from 0 to 21.

0–4: minimal anxiety

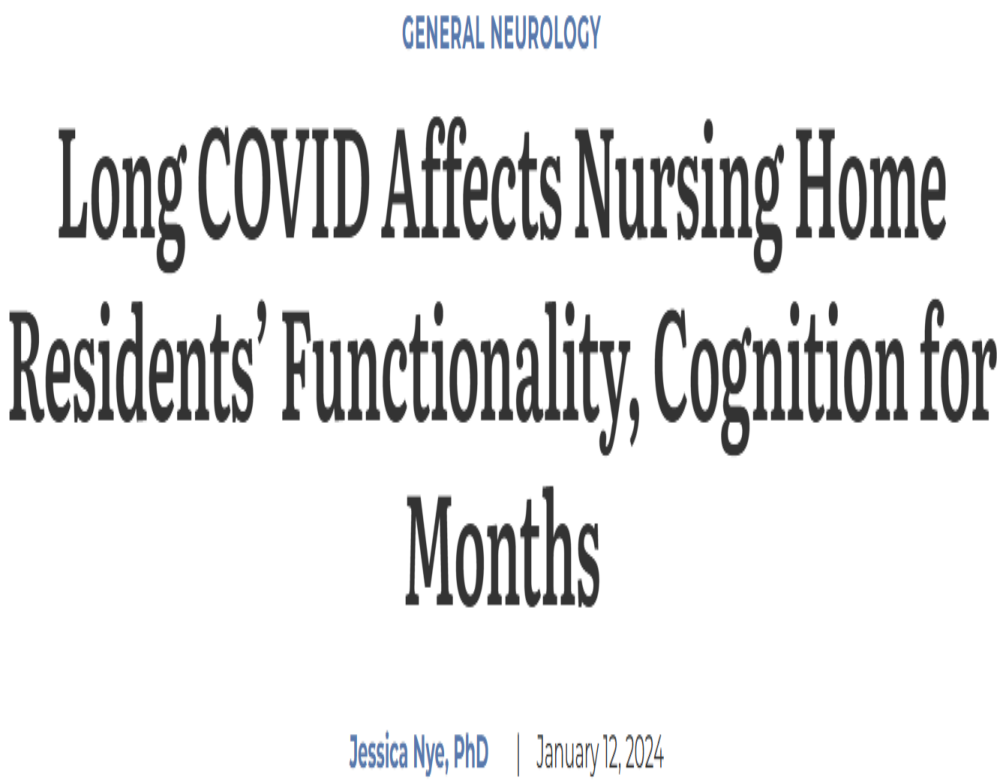
5–9: mild anxiety

10–14: moderate anxiety

15–21: severe anxiety

https://adaa.org/sites/default/files/GAD-7_Anxiety-updated_0.pdf

Assessing Cognition


GENERAL NEUROLOGY

Long COVID Affects Nursing Home Residents' Functionality, Cognition for Months

Jessica Nye, PhD | January 12, 2024

Study done in Michigan using data from the MDS.

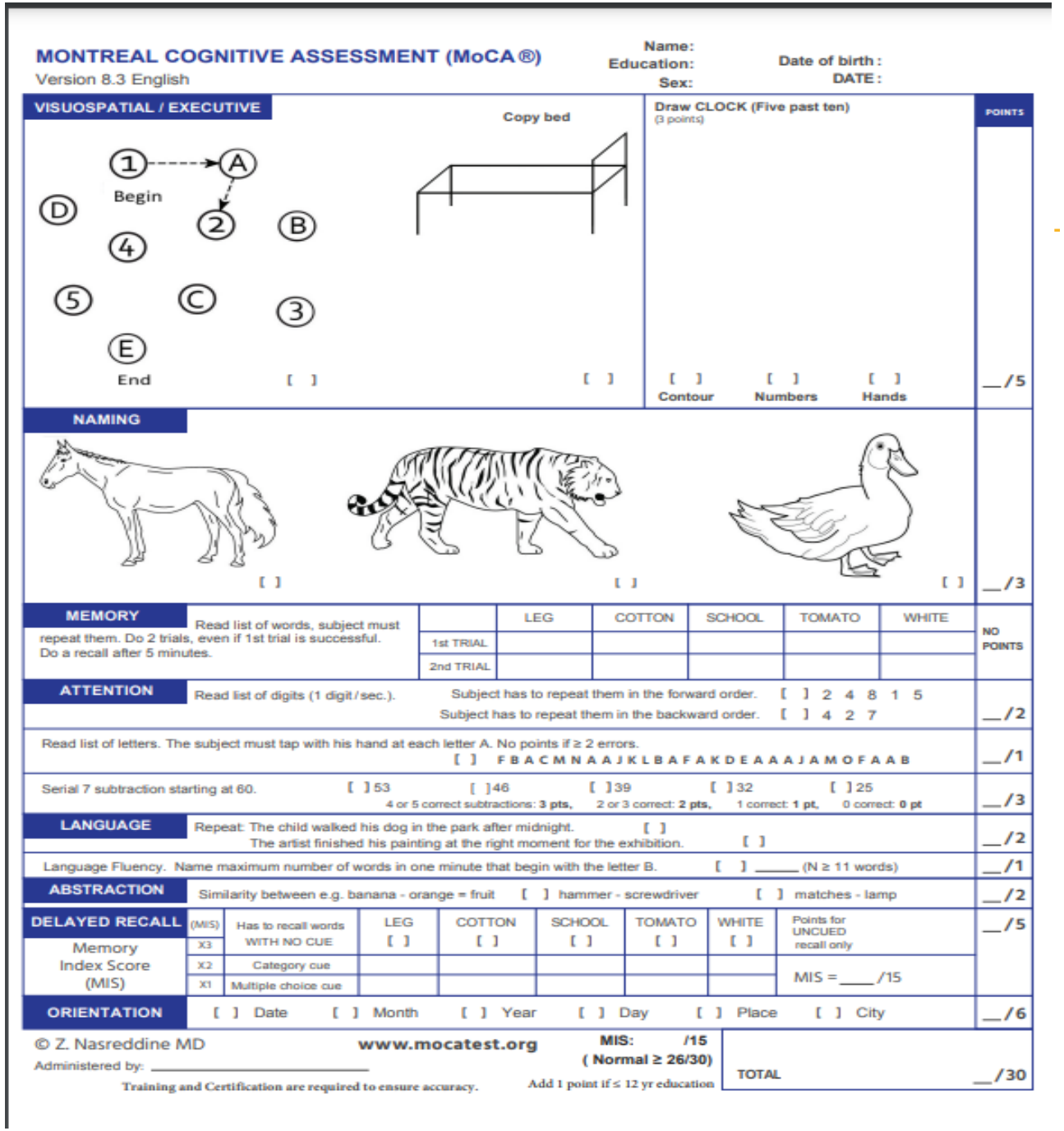
ADLS: After COVID-19 infection, composite ADL scores were affected for 9 months post-infection…post-COVID ADL composite scores **decreased** by 0.60 points. After this 9-month period, scores **increased every month back towards baseline level** by 0.05.

BIMS: All patients exhibited a decline in BIMS after COVID-19. This decline was more apparent among those aged 80 and older. Among patients with dementia only, COVID-19 infection did not have a significant effect on the change in ADL or BIMS.

Assessing Cognition

- Most common problems: attention-span, memory, brain fog, depression, anxiety, muscle aches/myalgia
- Symptoms may be due to an association between biological and psychological factors. Some research showing that SARS-CoV-2 could remain in brain tissue long-term, affecting neuronal loss over time, in association with systemic inflammation and cerebrovascular changes. Inflammation can use neuron injury or damage by releasing cytotoxins.
- Montreal Cognitive Assessment
- Post-COVID-19 Functional Status (PCFS) scale.

https://pmc.ncbi.nlm.nih.gov/articles/PMC9653636/#:~:text=measured%20the%20cognitive%20abilities%20of,and%20language%20skills%20%5B45%5D.



MONTREAL COGNITIVE ASSESSMENT (MoCA®)
Version 8.3 English

Name:
Education:
Sex:
Date of birth :
DATE :

VISUOSPATIAL / EXECUTIVE

Copy bed

Draw CLOCK (Five past ten)
(3 points)

POINTS

Begin
End
[ ] [ ]
[ ] Contour [ ] Numbers [ ] Hands
__/5

NAMING

[ ] [ ] [ ]
__/3

MEMORY
Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	LEG	COTTON	SCHOOL	TOMATO	WHITE
1st TRIAL					
2nd TRIAL					

NO POINTS

ATTENTION
Read list of digits (1 digit/sec.).
Subject has to repeat them in the forward order. [ ] 2 4 8 1 5
Subject has to repeat them in the backward order. [ ] 4 2 7
__/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors.
[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B
__/1

Serial 7 subtraction starting at 60. [ ] 53 [ ] 46 [ ] 39 [ ] 32 [ ] 25
4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**
__/3

LANGUAGE
Repeat: The child walked his dog in the park after midnight. [ ]
The artist finished his painting at the right moment for the exhibition. [ ]
__/2

Language Fluency. Name maximum number of words in one minute that begin with the letter B. [ ] _____ (N ≥ 11 words)
__/1

ABSTRACTION
Similarity between e.g. banana - orange = fruit [ ] hammer - screwdriver [ ] matches - lamp
__/2

DELAYED RECALL

	(MIS)	Has to recall words	LEG	COTTON	SCHOOL	TOMATO	WHITE	Points for UNCUED recall only
Memory Index Score (MIS)	X3	WITH NO CUE	[ ]	[ ]	[ ]	[ ]	[ ]	
	X2	Category cue						MIS = ____ /15
	X1	Multiple choice cue						

__/5

ORIENTATION
[ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City
__/6

© Z. Nasreddine MD
www.mocatest.org
MIS: /15
(Normal ≥ 26/30)
Add 1 point if ≤ 12 yr education
TOTAL __/30

Administered by: _____
Training and Certification are required to ensure accuracy.

MONTREAL COGNITIVE ASSESSMENT

https://geriatrictoolkit.missouri.edu/cog/MoCA-8.3-English-Test-2018-04.pdf

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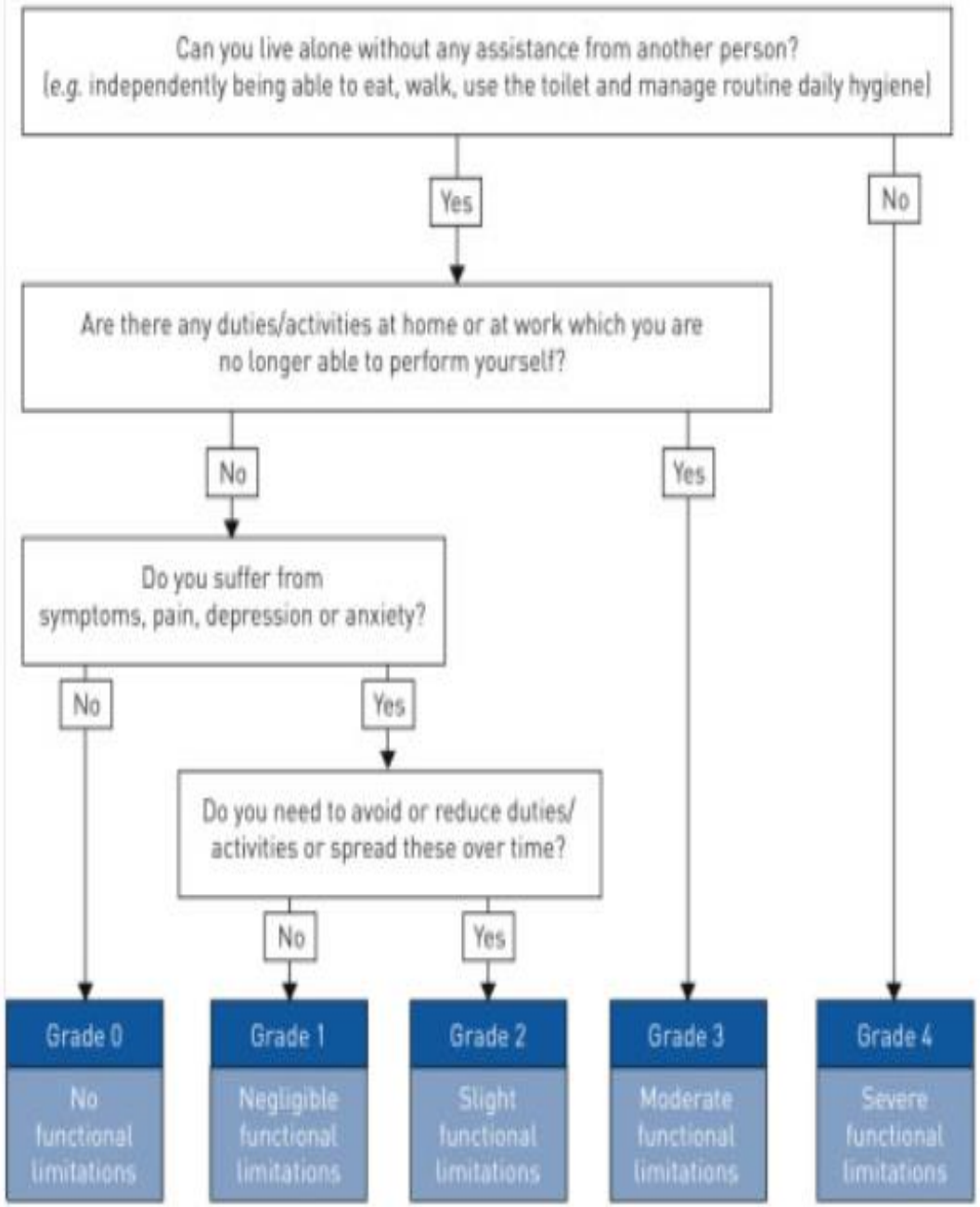
Post-COVID-19 Functional Status (PCFS) scale

a)



b)

How much are you currently affected in your everyday life by COVID-19? (Please indicate which one of the following statements applies to you most)	Corresponding PCFS scale grade
I have no limitations in my everyday life and no symptoms, pain, depression or anxiety related to the infection.	0
I have negligible limitations in my everyday life as I can perform all usual duties/ activities, although I still have persistent symptoms, pain, depression or anxiety.	1
I suffer from limitations in my everyday life as I occasionally need to avoid or reduce usual duties/activities or need to spread these over time due to symptoms, pain, depression or anxiety. I am, however, able to perform all activities without any assistance.	2
I suffer from limitations in my everyday life as I am not able to perform all usual duties/ activities due to symptoms, pain, depression or anxiety. I am, however, able to take care of myself without any assistance.	3
I suffer from severe limitations in my everyday life: I am not able to take care of myself and therefore I am dependent on nursing care and/or assistance from another person due to symptoms, pain, depression or anxiety.	4

https://pmc.ncbi.nlm.nih.gov/articles/PMC7236834/figure/F1/

Hang in There! ☺

Sinclair School of Nursing

Treating Long-COVID: Where Do We Start?

1. Full-body assessment—literally from head to toe. Ask all the questions. (Refer to the admission assessment head-to-toe presentation by QIPMO—available on our website under Educational Resources).
2. Have a holistic mental health discussion—how are they doing? Anything upsetting them? How's their memory? Do they have nightmares? Do they get sad more easily?
3. Consider using the GAD-7 and a cognitive assessment form.
4. Talk to the staff, therapy, family—get a scope on their ADLs—what *was* their baseline pre-COVID infection? Where are they at now? Utilize an assessment scale (see prior slides) or better yet, have therapy do an eval.
5. Talk to the resident about the outcomes. Be their understanding advocate. Ask about their medical goals. Talk to their physician.

Treating Long-Covid: Where Do We Start?

6. Individualize the treatment based on symptoms and comorbidities.
7. Understand it's going to take time!

Directory of Long-Covid Care Clinics

Missouri	Dignity Health COVID-19 and Chronic Illness Recovery and Reconditioning program	728 Sunset Drive Farmington, MO 63640	(573) 747-1144	https://www.dignityhealthpt.com/our-services/recovery-and-reconditioning/
	Dignity Health COVID-19 and Chronic Illness Recovery and Reconditioning program	1 Town And Country Marketplace Warrenton, MO 63383	(636) 235-3830	https://www.dignityhealthpt.com/our-services/recovery-and-reconditioning/
	Dignity Health COVID-19 and Chronic Illness Recovery and Reconditioning program	200 North Keene Street Columbia, MO 65201	(573) 874-0001	https://www.dignityhealthpt.com/our-services/recovery-and-reconditioning/
	North Kansas City Hospital Long COVID Rehab	2800 Clay Edwards Drive, North Kansas City, MO 64116	(816) 691-1795	https://www.nkch.org/find-a-service/rehabilitation-and-therapy/specialized-programs/long-covid-rehab
	University Health Center for COVID Recovery	2301 Holmes Street, Kansas City, MO 64108	(816) 631-3533	https://www.universityhealthkc.org/covid-19/center-for-covid-recovery/
	University of Missouri COVID Recovery Program	1100 Virginia Ave Columbia, MO 65201	(573) 884-4774	https://www.muhealth.org/conditions-treatments/therapy/covid-recovery-program
	Washington University Complete Care Care and Recovery After COVID-19 (CARE) Clinic	1040 N. Mason Rd, Suite 122, Creve Coeur, MO 63141	(314) 996-8103	https://completecare.wustl.edu/patient-information/care-and-recovery-after-covid-19/
	University of Missouri-St. Louis Community Psychological Service	One University Boulevard, St. Louis, MO 63122	314-516-5824	https://www.umsl.edu/services/cps/index.html

https://docs.google.com/spreadsheets/d/1ODmvKyCdMUNeKbn7UHmPVD6wuZMCJ87H9yh1yloMT8I/edit?gid=943772212#gid=943772212

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Long-Covid Online Support

- Mayo Clinic: https://connect.mayoclinic.org/blog/post-covid-recovery/newsfeed-post/post-covid-19-care-clinic-at-mayo-clinic/
- Washington University: https://www.ortho.wustl.edu/content/Patient-Care/8445/Services/Living-Well-Center/Living-Well-Center-Long-Covid-Program.aspx
- Mayo Clinic Online Support Group: https://connect.mayoclinic.org/group/post-covid-recovery-covid-19/
- Long Covid Alliance **multitude of social media platforms for online support

https://longcovidalliance.org/support-groups-and-mental-health-resources/

ECHO EDUCATION: LONG-COVID ECHO

Join us for upcoming sessions from iECHO!

12/12/24 - Overview and Introduction of VHA Long COVID Guides, presented by Pandora "Luke" Wander

For resources from past sessions, click here

Please contact LCecho@salud.unm.edu with any questions.

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Core Strategies to Lower Health Risks from Long Covid

- CDC emphasizes core strategies to lower health risks from COVID-19, including severe outcomes such as hospitalization and death. Preventing severe outcomes from COVID-19 illness helps prevent Long COVID. Steps you can take to protect yourself and others include:
- Staying up to date on COVID-19 vaccination.
- Practicing good hygiene (practices like handwashing that improve cleanliness)
- Taking steps for cleaner air
- When you may have a respiratory virus:
  - Use precautions to prevent spread
  - Seek healthcare promptly for testing and/or treatment if you have risk factors for severe illness; treatment may help lower your risk of severe illness

Interesting Articles/Sources

1. **The Adverse Effects of the COVID-19 Pandemic on Nursing Home Resident Well-Being**
   https://pmc.ncbi.nlm.nih.gov/articles/PMC7980137/
2. Long COVID Basics | COVID-19 | CDC
3. Long COVID: Lasting effects of COVID-19 - Mayo Clinic
4. the Johns Hopkins COVID Long Study (JHCLS), a United States Nationwide Prospective Cohort Study – PMC
5. **Long COVID: major findings, mechanisms and recommendations**
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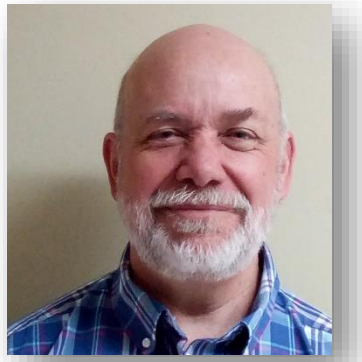

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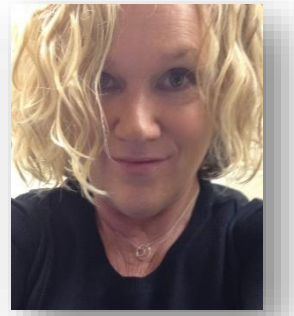

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