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The Long Arm of COVID: Post Acute Sequelae of Sars Covid 19

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Objectives

- Be able to describe and screen for Post COVID residual symptoms
- Understand similarities and pathogenesis of other fatiguing medical conditions
- Increase awareness of Bidirectional relationships between COVID and other mental health conditions

COVID is Complicated

We don’t know what we don’t know

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There are a lot of dots in a lot of places to connect

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COVID Impact as of July 2022

Kentucky over 1.44 million cases, averaging 1,800 cases/week and over 16,244 deaths

In the US over 90 million cases and over 1.02 million deaths

Worldwide: 560 million cases over 6 million deaths

Cases/Deaths in Southern states by mid July

State	Cases	Deaths
Alabama	1.38 M	19.812
Arkansas	881 K	11,620
Florida	6.61 M	76,489
Georgia	2.62 M	37,298
Louisiana	1.34 M	17,462
Maryland	1.15 M	14,862
Mississippi	852 K	12,560
Texas	7.25 M	89.097
Virginia	1.91 M	20,772

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The Long Arm of Covid: Morbidity and Mortality just the tip

CDC EMR study of 63.4 million cases estimated that 1 in 5 survivors ages 18-64

and 1 in 4 > 65 have a health condition related to their previous COVID infection

Census Bureau June 2022 study self reported data 35.1% long COVID and 18.9% currently symptomatic

COVID IMPACT

Pandemic

- Increased social isolation
- Alcohol sales went up and 2019-2020 saw almost a 25% increase in alcohol related deaths
- Opioid deaths increased 38%
- From 1 in 5 to 2 in 5 (Increased mood and anxiety disorders)

Infection

- Thought initially to be a respiratory infection now known to impact multiple organ symptoms
- Acute, long and chronic

Maybe Philosopher Friedrich Nietzsche got it wrong?

"What doesn't kill you makes you stronger"

Lorna Breen MD

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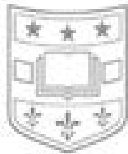
- Medical Director Manhattan NY Presbyterian Hospital
- 49 yo contracted COVID mid March 2020, returned to work after 10 days experiencing persistent exhaustion and confusion
- Lorna Breen Healthcare Providers Protection Act

COVID-19: Lasting impact

Even those survivors with mild initial cases can have wide-ranging health issues for six months or more.

WashU researchers link many diseases with COVID-19, signaling long-term complications for patients and a massive health burden for years to come.



Cardiovascular
acute coronary disease, heart failure, palpitations, arrythmias

Respiratory system
cough, shortness of breath, low blood oxygen

Kidney
acute kidney injury, chronic kidney disease

Musculoskeletal
joint pain, muscle weakness

General
malaise, fatigue, anemia

Mental health
anxiety, depression, sleep problems, substance abuse

Nervous system
stroke, headaches, memory problems, smell problems

Metabolic/ endocrine
obesity, diabetes, high cholesterol

Gastrointestinal
constipation, diarrhea, acid reflux

Skin disorders
hair loss, rash

Coagulation disorders
blood clots

Early Covid Research

- Up to 75% of hospitalized patients had at least one symptom after six months (Lancet 2021) Current research suggests that 50% of hospitalized pts have at least one symptom after 2 years
- 30% of pts even with mild illness reported persistent symptoms as long as 9 months
- A third of COVID survivors reported persistent neurological or psychiatric consequences

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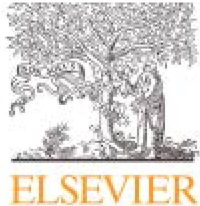
COVID- 19 and Insomnia



Contents lists available at ScienceDirect

EClinicalMedicine

journal homepage: https://www.journals.elsevier.com/eclinicalmedicine

Research paper

Sleep problems during COVID-19 pandemic and its' association to psychological distress: A systematic review and meta-analysis

Zainab Alimoradi[a], Anders Broström[b,h], Hector W.H. Tsang[c], Mark D. Griffiths[d], Shahab Haghayegh[e], Maurice M. Ohayon[f], Chung-Ying Lin[g,i,j,*], Amir H. Pakpour[a,b,*]

COVID- 19 and Insomnia

-168 cross-sectional, four case-control, and five longitudinal design

-345,270 participants from 39 countries

-Estimated prevalence of sleep problems

a)31% among healthcare professionals
b)18% among the general population
c)57% among COVID-19 patients

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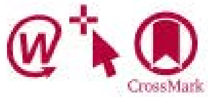
COVID-19 PsychiatricSequelae



6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records

Maxime Taquet, John R Geddes, Masud Husain, Sierra Luciano, Paul J Harrison

Lancet Psychiatry 2021; 8: 416–27

Published Online April 6, 2021

Summary

Background Neurological and psychiatric sequelae of COVID-19 have been reported, but more data are needed to adequately assess the effects of COVID-19 on brain health. We aimed to provide robust estimates of incidence rates and relative risks of neurological and psychiatric diagnoses in patients in the 6 months following a COVID-19 diagnosis.

COVID-19 and Psychiatric outcomes

- 236,379 patients diagnosed with COVID-19
- the estimated incidence of a neurological or psychiatric diagnosis in the following 6 months was 33·62% (95% CI 33·17–34·07), with 12·84% (12·36–13·33) receiving their first such diagnosis
- Increased prevalence of insomnia, SUD and psychotic disorders

What determines COVID Aftermath?

Variant	Vaccination Status	Viral Load
Preexisting medical Conditions	Symptom severity	Hospitalized or Ambulatory
Gender	Geographical Location	Healthcare disparities

Post COVID understanding the terminology

Acute COVID: signs and symptom lasting up to 4 weeks

Ongoing symptomatic: 4-12 weeks

Post COVID19 syndrome: symptoms that develop during or after an acute infection and persist > 12 weeks

Long COVID includes ongoing symptomatic and Post COVID syndrome

PASC

Post-Acute Sequelae of SARS-CoV-2 infection

Term proposed by National Institute of Health and Prevention

Looking at 3 possible subtypes:

Pulmonary

Neurological and Psychiatric

Immunological

Trajectory of long COVID

- Most reported gradual slow recovery
- Subset of post CoVid that experiences symptom fluctuation
- Less commonly reported is progressive worsening

How common are symptoms after an infection?

Prevalence varies reports from 5-80%

2020 Carfi: 12.6% symptom free

32% had 1 or 2 symptoms

55% had 3 or more

2021 Logue: 33% with symptoms

31% reported worsened QOL

8% with impact on ADLs

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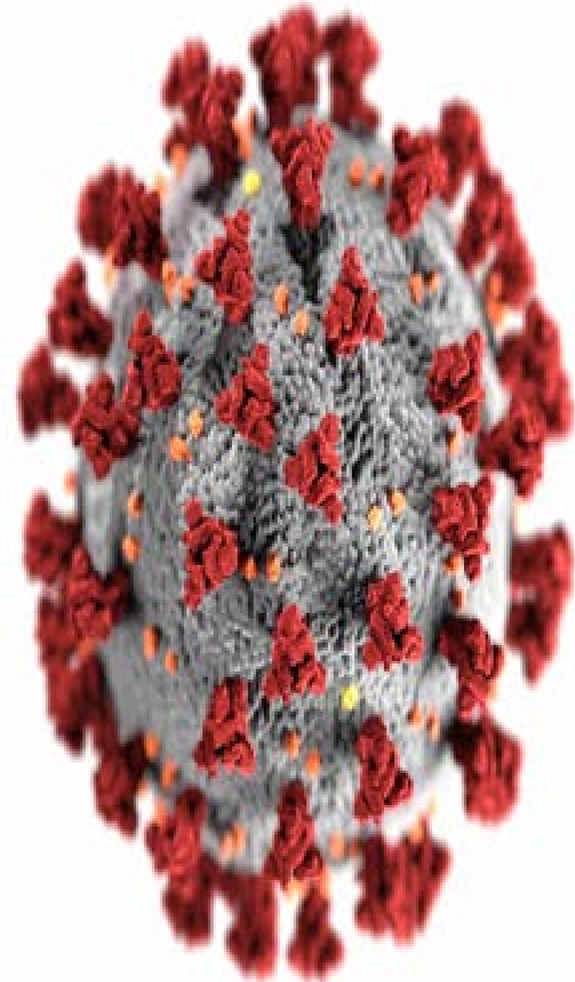
How common are symptoms after an infection?

2022 CDC: 1 in 10 have symptom duration > 1 month

Oxford University: 1 in 3 people

Conservative estimate up to 7 million Americans may have PASC some investigators believe this number may be 3x as high

Long COVID symptoms and signs



Systemic: fatigue, weakness, malaise, fever, dizziness

Neurocognitive: memory impairment, concentration, confusion, frontal release signs

Psychological and social: anxiety, depression, sleep disturbance, PTSD, reduced QOL, and care dependency

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Risk Factors

Gender: More common in females

Thompson (2021) Female 1.5 > males

Penn Post COVID clinic 66.3% female

Age: linear increases up to age 70, ages 50-69 39.4%

Health: comorbid conditions, HTN, obesity, asthma, poor overall health or immunosuppressed

Severity of initial illness

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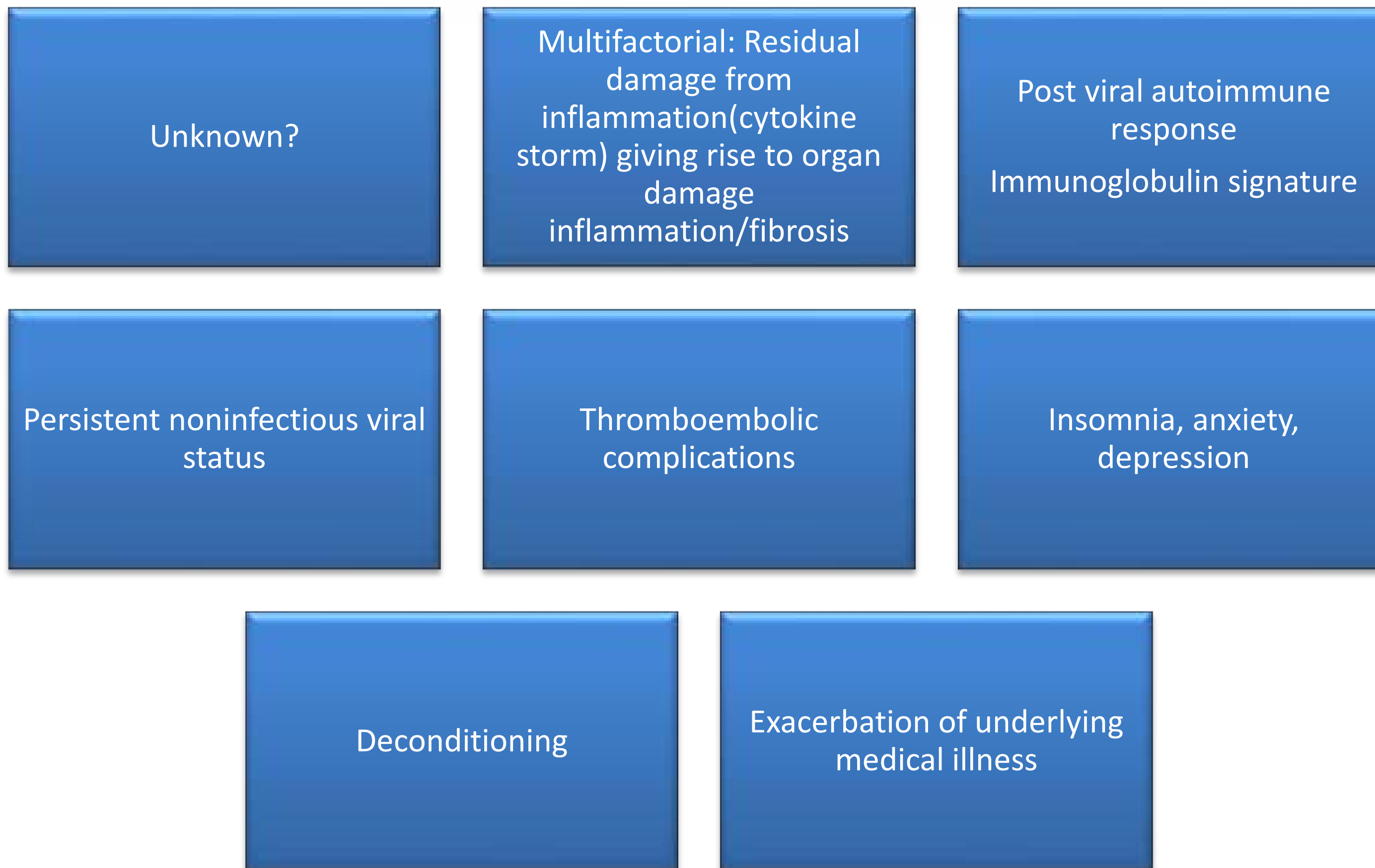
What causes this?



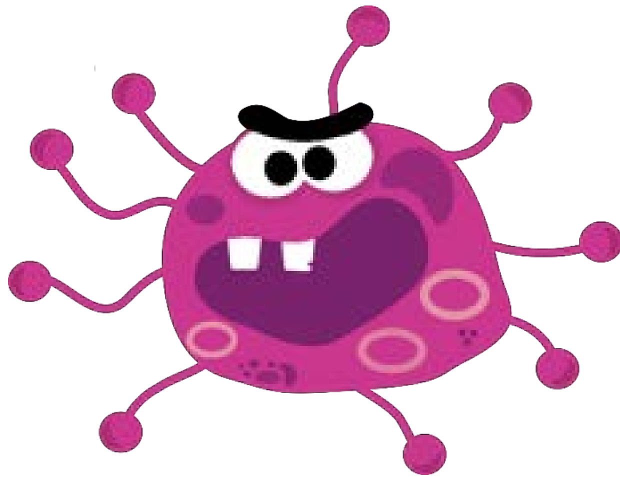
Neurological/Psychiatric Sequelae

- Spectrum of symptoms from headache to encephalopathy
- “Brain fog” has been described in delirium, dementia and chemo brain may include symptoms such as memory gaps, word finding difficulty, inability to problem solve, inability to calculate and manage math

Reinfection VAH preliminary study

- Lung and Cardiac risk most acute 30 days post infection and remain elevated for 6 months and increase with subsequent infection
- Reinfection tends to be milder, but risk is additive

Viral related fatigue is old and common news



Many viral infections linked with acute and chronic fatigue including HIV, Coxsackie, EBV, CMV, influenza, herpes among others

Bacterial infections including Lymes disease, malaria, toxoplasmosis, Q fever

Other fatigue related disorders

- CRF Cancer Related Fatigue
- Fibromyalgia
- Chronic Fatigue Syndrome Myalgic Encephalomyelitis
- POTS: Postural Orthostatic Tachycardia Syndrome
- MCAS: Mast Cell Activation Syndrome
- PICS: Post Intensive Care Syndrome

Assessment

- Quantify your symptoms: Rating scales PHQ 9, GAD 7, Epworth Sleepiness Scale, Fatigue Severity Scale
- Understand impact on functional parameters, work ADLs
- Baseline to new normal
- Sleep Hygiene
- Exercise or not
- COVID informed treatment team

Protect your Brain

- Monitor sleep and rest
- Review medication and avoid, when possible, those that can be sedating or anticholinergic medications
- Avoid Alcohol
- Graded Activity and Pacing

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Pacing Strategies

- Time based pacing
- Goal Based pacing, CBT concept of graded task activity
- Activity scheduling log/ self monitoring
- Pacing Benefits: sustain engagement in meaningful and pleasurable activities, avoid extreme fatigue, reduce fatigue flairs, improve productivity

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Pacing Log

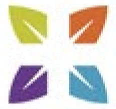
Date	Task	Active Time(min)	Rest Time(min)	# of cycles	Fatigue level	observations

Coping Strategies

- Radical Acceptance
- Problem Focused strategies
- Emotion Focused strategies

Treatment: No One Size Fits All

- Prevention
- Time
- Rest
- Exercise
- Rehabilitation
- Integrative Strategies CAM
- Pharmacological Interventions



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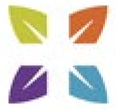

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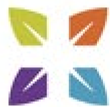

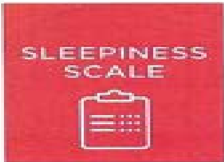

EPWORTH SLEEPINESS SCALE

Name: ______________________ **DOB:** ____________ **Date:** ______________

This questionnaire was developed to determine the level of daytime sleepiness in individuals. It has become one of the most frequently used methods for determining a person's average level of daytime sleepiness.

Please rate how likely you are to doze or fall asleep in the following situations by selecting the response that best applies. If you have not done some of these activities recently, select what would most likely happen if you were in that situation.

0 Would ***never*** doze   **1** ***Slight*** chance of dozing   **2** ***Moderate*** chance of dozing   **3** ***High*** chance of dozing

	Chance of Dozing			
Sitting and reading	0	1	2	3
Watching television	0	1	2	3
Sitting inactive in a public place (eg, a theater or a meeting)	0	1	2	3
As a passenger in a car for an hour without a break	0	1	2	3
Lying down to rest in the afternoon when circumstances permit	0	1	2	3
Sitting and talking to someone	0	1	2	3
Sitting quietly after a lunch without alcohol	0	1	2	3
In a car, while stopped for a few minutes in traffic	0	1	2	3
	Total Score:			

Interpreting Epworth Sleepiness Scale Scores[1,2]		
Normal	**EDS***	**High Levels of EDS***
0-10	>10	>16

Sources: **1.** Johns M, Hocking B. Excessive daytime sleepiness: daytime sleepiness and sleep habits of Australian workers. *Sleep.* 1997;20(10):844-849. **2.** Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. *Sleep.* 1991;14(6): 540-545. This copyrighted material is used with permission granted by the Associated Professional Sleep Societies—April 2018. Unauthorized copying, printing, or distribution of this material is strictly prohibited.

*Excessive daytime sleepiness.

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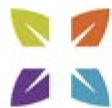

Fatigue Severity Scale

The Fatigue Severity Scale (FSS) is designed to differentiate fatigue from clinical depression, since both share some of the same symptoms. Essentially, the FSS consists of answering a short questionaire that requires the subject to rate his or her own level of fatigue. The obvious problem with this measure is its subjectivity.

Here is an example FSS questionaire containing nine statements that attempt to explore severity of fatigue symptoms. The subject is asked to read each statement and circle a number from 1 to 7, depending on how appropriate they felt the statement applied to them over the preceding week. A low value indicates that the statement is not very appropriate whereas a high value indicates agreement.

FSS Questionaire

During the past week, I have found that:	**Agreement Score**						
1. My motivation is lower when I am fatigued.	1	2	3	4	5	6	7
2. Exercise brings on my fatigue.	1	2	3	4	5	6	7
3. I am easily fatigued.	1	2	3	4	5	6	7
4. Fatigue interferes with my physical functioning.	1	2	3	4	5	6	7
5. Fatigue causes frequent problems for me.	1	2	3	4	5	6	7
6. My fatigue prevents sustained physical functioning.	1	2	3	4	5	6	7
7. Fatigue interferes with carrying out certain duties and responsibilities.	1	2	3	4	5	6	7
8. Fatigue is among my three most disabling symptoms.	1	2	3	4	5	6	7
9. Fatigue interferes with my work, family, or social life.	1	2	3	4	5	6	7

The scoring is done by calculating the average response to the questions (adding up all the answers and dividing by nine).

People with depression alone score about 4.5. But people with fatigue related to MS, SLE or CFIDS average about 6.5.

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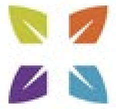
What are we learning?

- COVID is complicated and far reaching
- Research is plentiful and ongoing although of variable quality, outcome and results probably differ between the variants
- Patients are making a difference
- Mind Body Integration is essential
- Even with mild symptoms long covid may develop in as many as 10-30% of patients
- Stay informed



Resources