

A LONG JOURNEY: COVID-19 REHABILITATION & RECOVERY

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Disclosures

I have no disclosures to report

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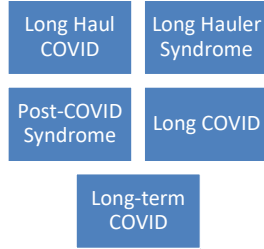
SESSION OBJECTIVES

1. Describe the sequelae of "Long COVID" (i.e., Post-Acute Sequelae of SARS-CoV-2 infection (PASC)) with an emphasis on physical, cognitive and mental health.
2. Review current concepts for the rehabilitation management of patients with "Long Covid".
3. Illustrate the importance of interprofessional teams in the holistic management of the varied sequelae of "Long Covid".

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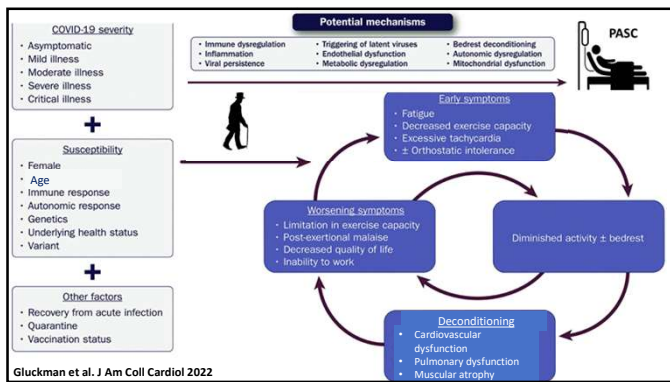
Post-Acute Sequelae of SARS-CoV-2 infection (PASC)

- “Post COVID Conditions”: an umbrella term for the wide range of physical and mental health consequences experienced by some patients that are present four or more weeks after SARS-CoV-2 infection, including by patients who had initial mild or asymptomatic acute infection.

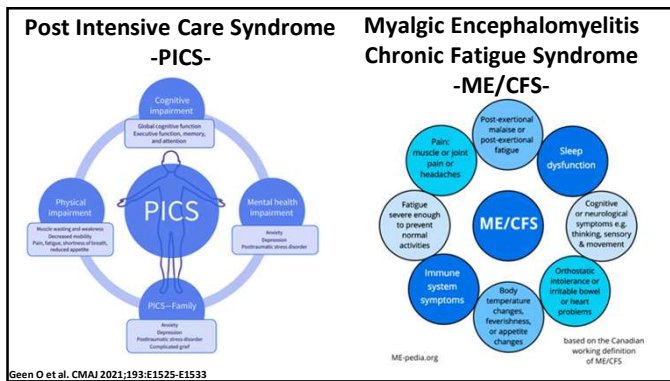


CDC Centers for Disease Control and Prevention
CDC 24.0: Saving Lives. Protecting People™

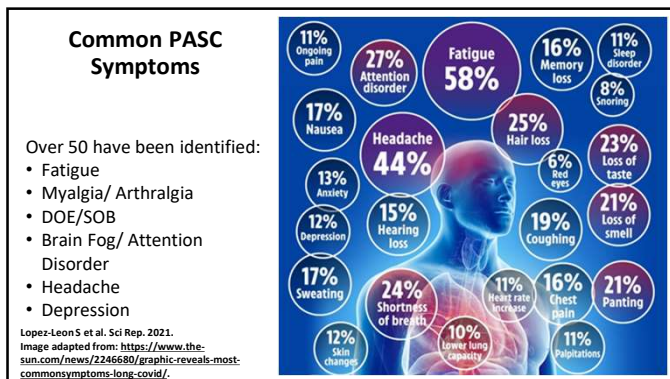
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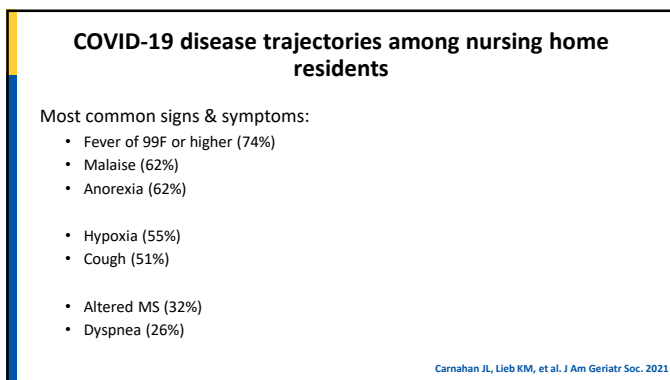
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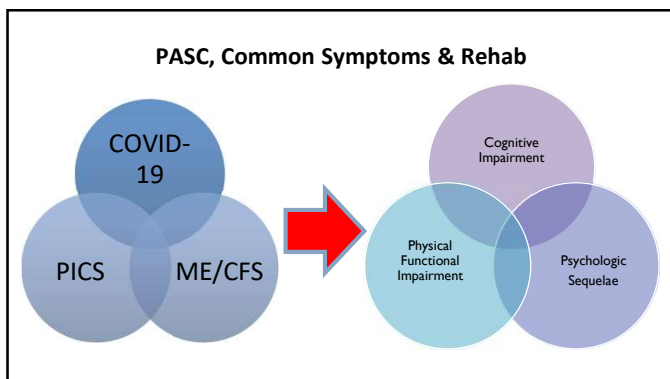
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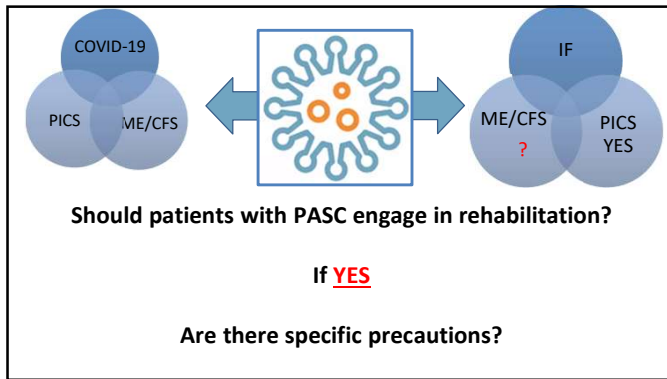
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PACS & IRF

- 30 patients admitted to IRF
 - 90% required critical care (25% MV ~ 18.8 days)
- Average mobility score at admission: 30.4
- Average mobility score at discharge: 79.6
- Average self-care score at admission (21.4)
- Average self care score at discharge: 39
- Frequent & longer duration rehab (approximately 3 h/d and at least 900 min/wk) is safe and feasible

Vickory F, Ridgeway et al. Phys Ther, 2021

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More Outcomes in the IRF Setting

Outcome Measure	Admission Assessment	Discharge Assessment	p-value *
Berg Balance Scale, mean (SD), (n = 24)	22.6 (18.5)	43.7 (14.0)	<0.001*
10 Meter Walk Test, mean meters per second (SD), (n = 17)	0.25 (0.25)	0.86 (0.57)	<0.001*
6 Minute Walk Test, mean meters (SD), (n = 19)	206.6 (258)	764.5 (276.1)	<0.001*
Functional Independence, No. (%)			
Transfer independence (n = 29)	1 (3.4%)	27 (93.1%)	<0.001*
Ambulation independence (n = 29)	0 (0%)	25 (86.2%)	<0.001*
Functional Communication Measure, median (IQR)			
Voice (n = 6)	4 (4-5)	6.5 (4.75-7)	0.032*
Swallowing (n = 18)	4 (3-5)	7 (7-7)	<0.001*
Attention (n = 19)	4 (4-5)	7 (6-7)	<0.001*
Memory (n = 18)	4 (4-5)	7 (6.25-7)	<0.001*
Problem Solving (n = 18)	4 (4-5)	7 (6.25-7)	<0.001*

Olezeze CS et al. PLOS ONE 16(3), 2021.
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0248824>

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Treatment Recommendations

- Individually **titrated, symptom-guided** program
 - Initial Goal: restore patients to previous levels of activity and improve quality of life.
 - Until those goals have been achieved, the rehabilitation program should not focus on high intensity interventions
- Continually assess for Post Exertional Malaise (PEM)
 - RPE Scales are useful
- Fatigue Assessment
- Abnormal cardiopulmonary responses

Fukuda K et al., 1994; FDA, 2013.
Herrera JE et al. PM R 2021

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Post-Exertional Malaise (PEM)

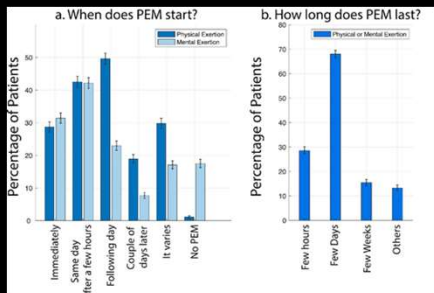
Post-exertional malaise is characteristic of ME/CFS and most ME/CFS patients experience it

- Malaise includes feeling bad, sick, tired as well as fatigued
- Patients describe this as “crash” or “relapse” of illness, as all symptoms are worsened, not just fatigue
- Exertion could be physical or mental
- The malaise persists for more than 24 hours
- Leads to additional limitation in activities

Fukuda K et al., 1994; FDA, 2013.
Herrera JE et al. PM R 2021

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Fig. 8



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Treatment Recommendations

- Initial Activity Goals: ~ 3-5 METs (similar workload for ADL's)
- Progression
 - If symptoms worsen, activity should be returned to the previously tolerated level.
- Energy Conservation
 - "Four Ps": Pacing, Prioritizing, Positioning, & Planning
 - Use of adaptive equipment
 - Identification of "energy windows"
- Encourage healthy sleep & dietary patterns and hydration.

Herrera JE et al. PM R 2021

Modified Borg Scale (Exertion or Dyspnea Scales)

0	-	At Rest
1	-	Very easy
2	-	Somewhat easy
3	-	Moderate
4	-	Somewhat hard
5	-	Hard
6	-	
7	-	Very Hard
8	-	
9	-	
10	-	Very Very Hard

PASC
Rehab

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Special Considerations: Fatigue

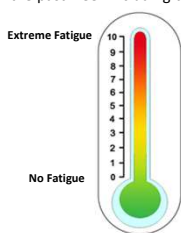
- Fatigue is a feeling of weariness, tiredness, or lack of energy. It can be **physical, cognitive, or emotional**, mild to severe, intermittent to persistent, and affect a person's energy, motivation, and concentration.
- Fatigue is "multi-dimensional"

Herrera JE et al. 2021 PM R
NCCN 2018; Servaes et al 2002; Cella et al 2001

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Fatigue Thermometer

Pick a number (0-10) that best describes how much fatigue you have been experiencing in the past week including today.



Example of Fatigue Tools

One Item Fatigue Scale

- "Since your last visit, how would you rate your worst fatigue on a scale of 0 to 10?"
- Categorical description as follows:
 - 0: No fatigue
 - 1-3: Mild fatigue
 - 4-6: Moderate fatigue
 - 7-10: Severe fatigue

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Example of Fatigue Tools:

Brief Fatigue Inventory (BFI)

THE UNIVERSITY OF TEXAS
MDAnderson
Cancer Center
<https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/symptom-research/symptom-assessment-tools/brief-fatigue-inventory.html>

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Special Considerations

- Hypoxemia/ Silent Hypoxemia
 - Hypoxemia: a below-normal level of oxygen in the blood
 - Silent: an individual has a **lower oxygen saturation** level than anticipated, however, the individual **does not experience any breathing difficulty**
- Pulse Oximetry
 - Assess for accuracy
 - Pulses & digital perfusion
 - Review pulse waveform (pleth)

Rahman A, Tabassum T, Araf Y, Al Nahid A, Ullah MA, Hosen MJ. Silent hypoxia in COVID-19: pathomechanism and possible management strategy. Mol Biol Rep. 2021;48(4):3863-3869.

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Special Considerations

- Tachycardia & Postural Orthostatic Tachycardia Syndrome (POTS)
 - Characterized,
 - Complaints of lightheadedness, palpitations, headaches, nausea/vomiting, fatigue
 - A sustained heart rate (HR) increment of ≥ 30 beats/min within 10 min of standing

Tachycardia:
 • $\Delta 42$ bpm
 Labile BP:
 • ΔSBP^* 14-34 mmHg

Shouman K et al. 2021
 Dani M et al. 2021
 Freeman R et al. 2018

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Special Considerations

- Tachycardia & POTS
 - Education:
 - Avoid hot baths/showers, Valsalva, large meals; dehydration; HOB elevation;
 - To do (counter pressure maneuvers): isometrics; crossing & uncrossing UE/LE; squatting
 - Other Considerations: hydration, sodium intake, compression garments, & progressive exercise
- Referral

Shouman K et al. 2021
Dani M et al. 2021
Freeman R et al. 2018

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