

Rehabilitation of Post-acute COVID- 19 Syndrome

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**Mount
Sinai**

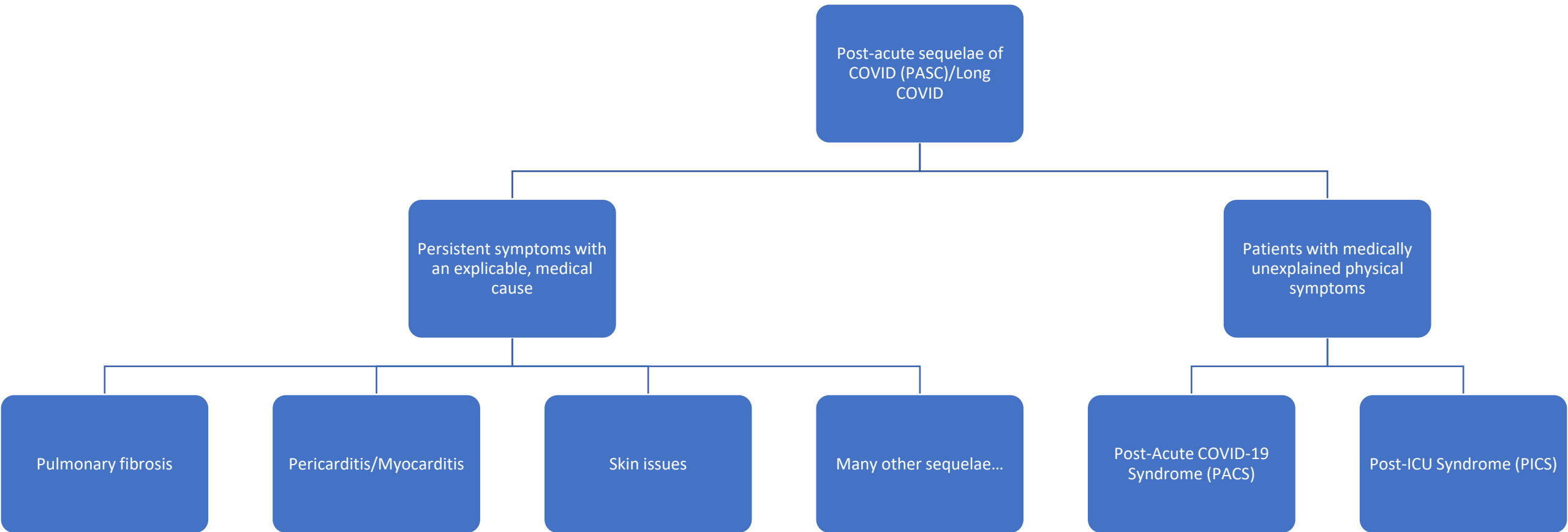
No conflicts of interest to disclose

What are we treating?

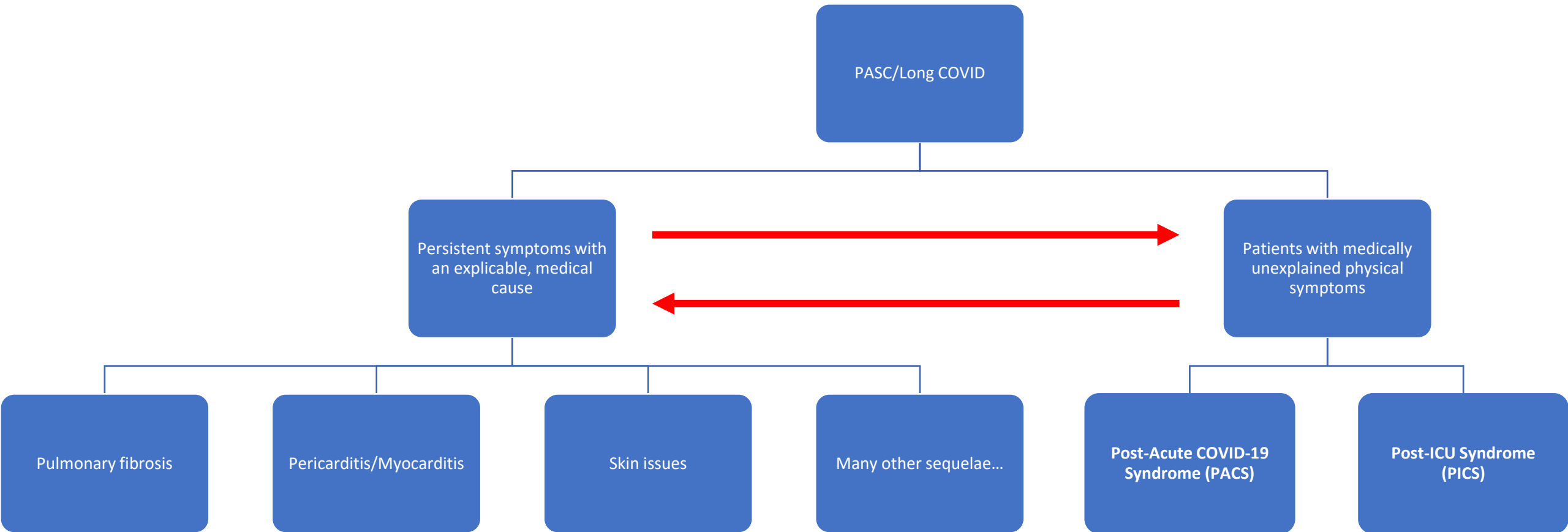
Long COVID and/or Post-Acute Sequelae of COVID (PASC):

Any persistent (>4 weeks from initial infection) symptom or set of symptoms that is related to acute COVID-19 infection

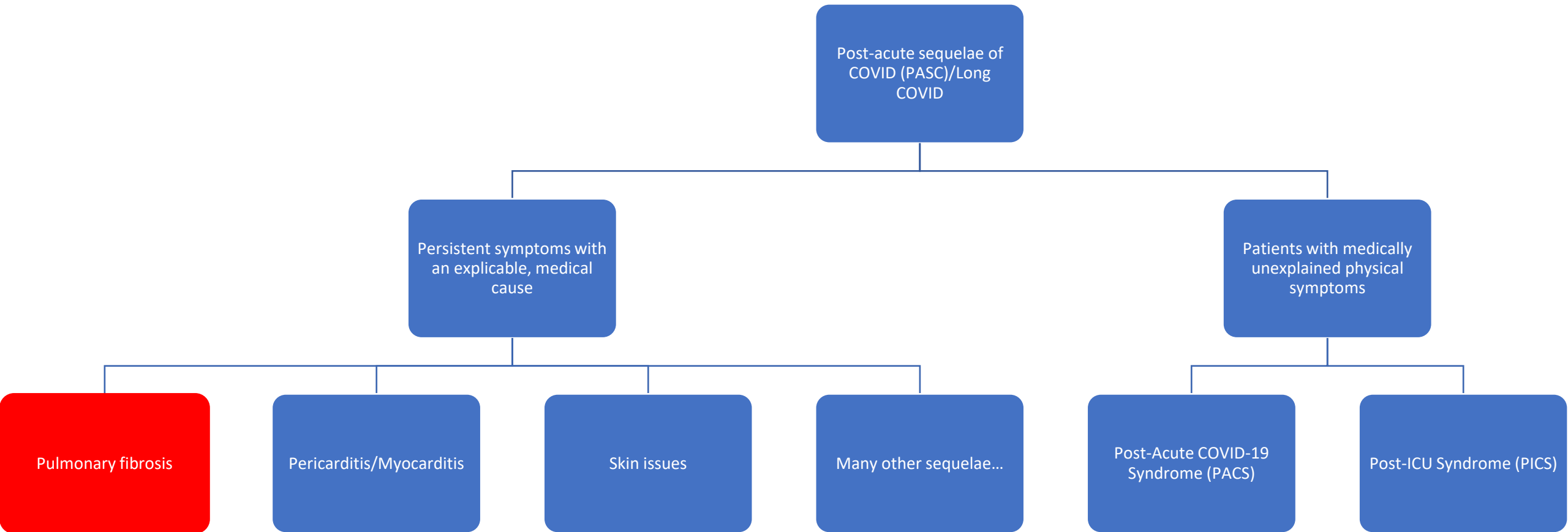
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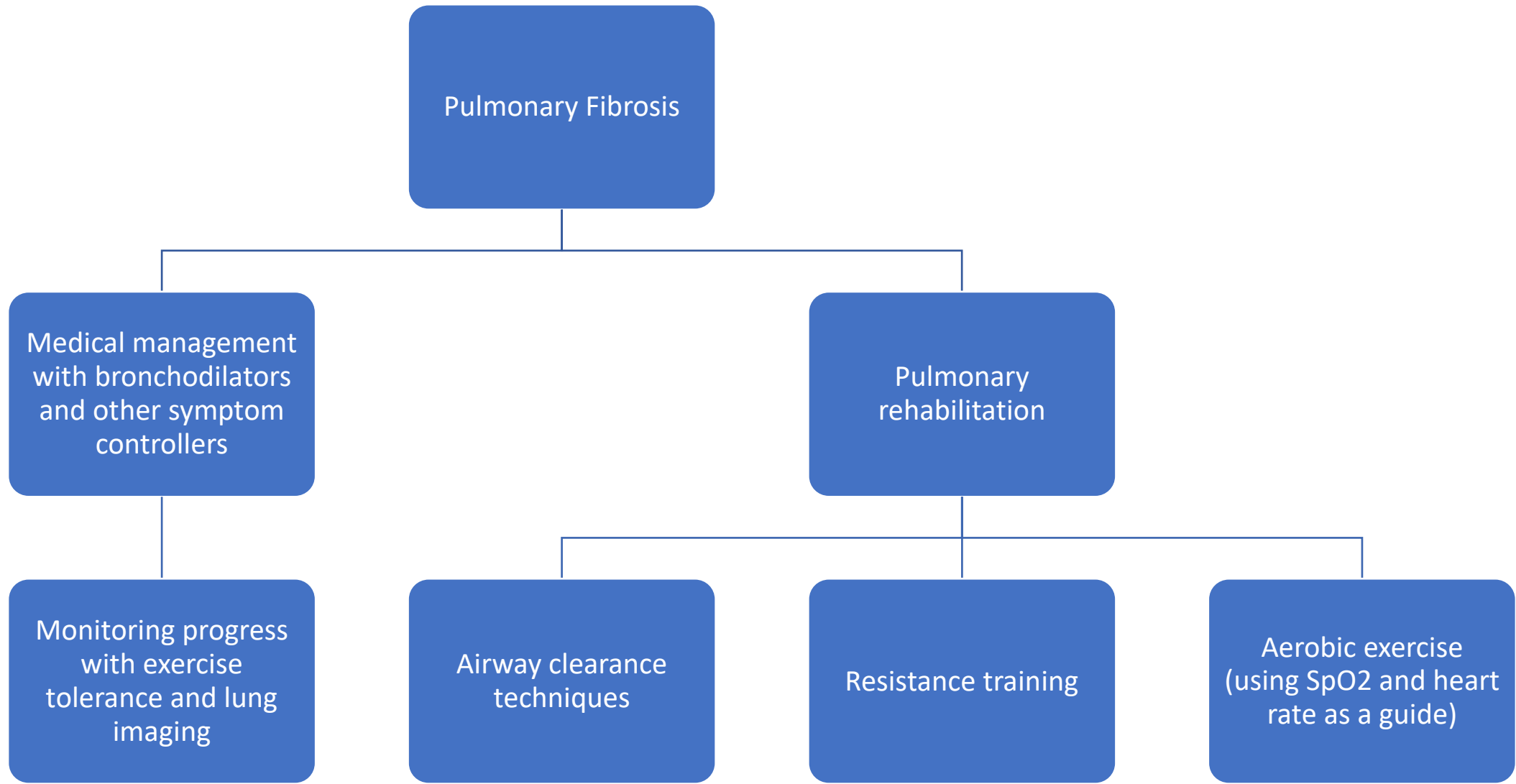
What are we treating?



Why does this matter?



Why does this matter? Treating PURE, symptomatic pulmonary fibrosis

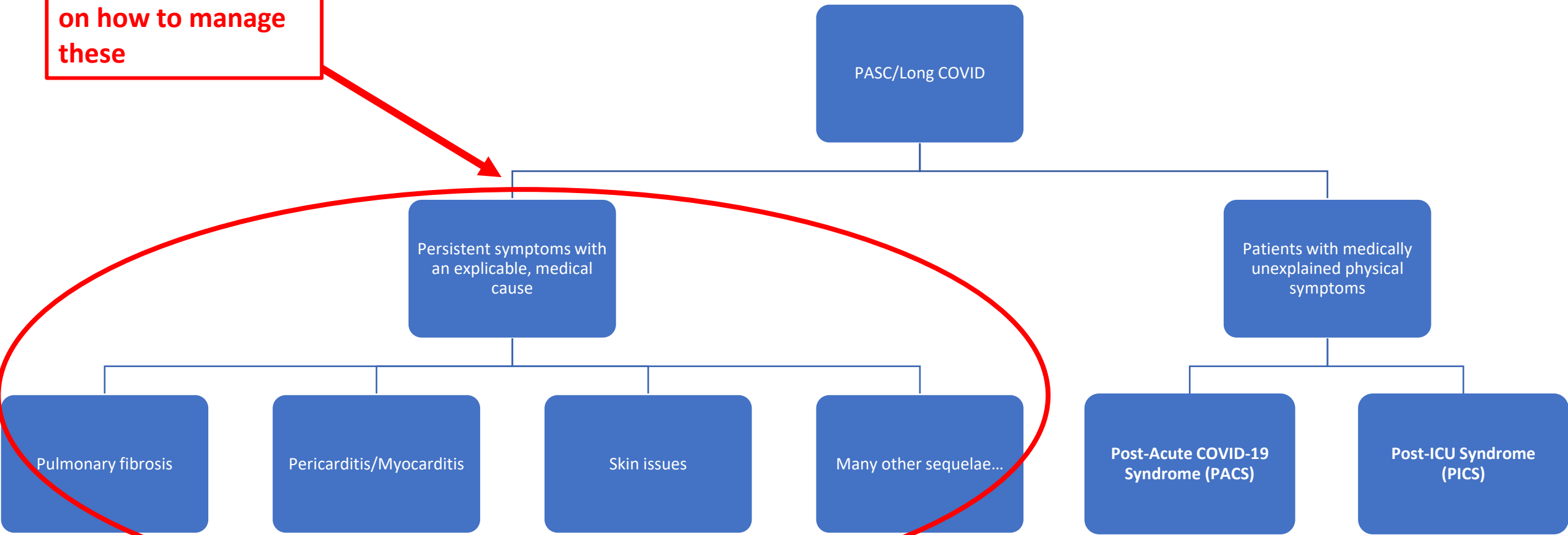


Why does this matter?

- People with post-acute Pulmonary Fibrosis from their acute COVID-19 infection **HAVE LONG COVID**
- You **can** successfully treat pulmonary fibrosis with pulmonary rehabilitation
- You **cannot** successfully treat all Long COVID with pulmonary rehabilitation
- **Some** (not all) cases of Long COVID *will* respond to pulmonary rehabilitation

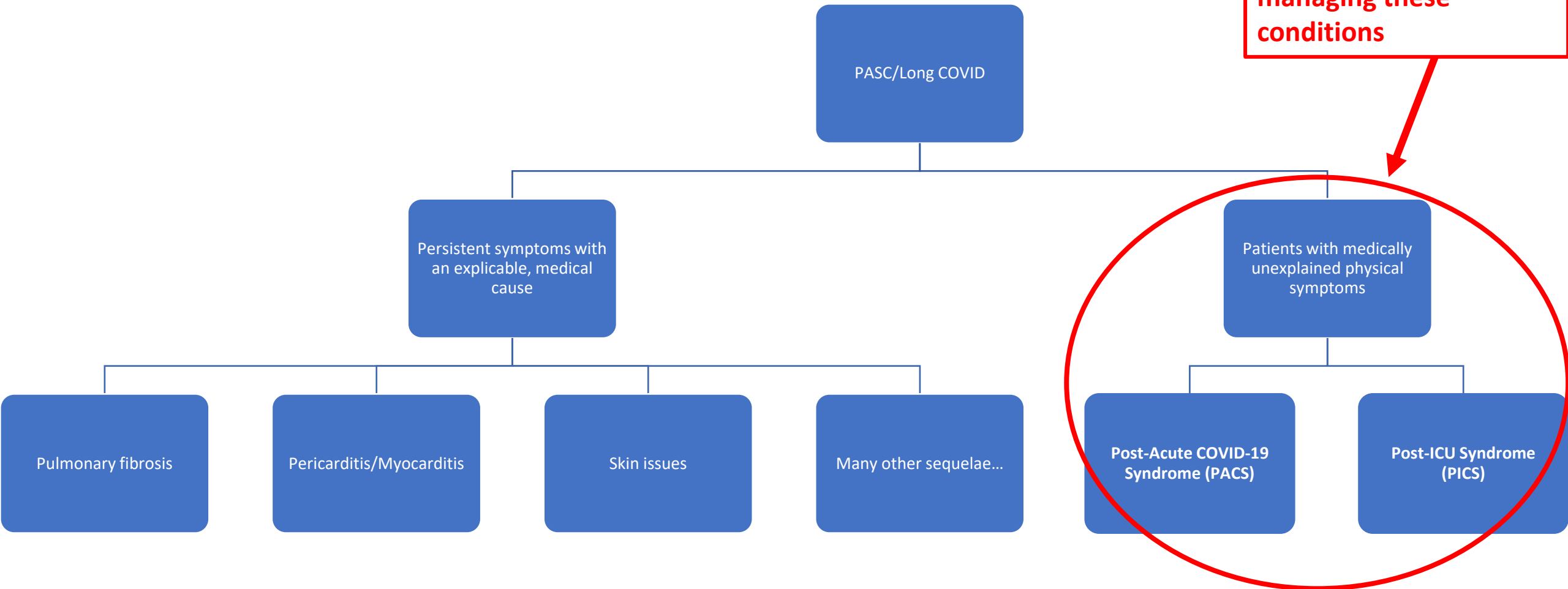
What are we treating (Part 2)?

The medical community has a pretty good handle on how to manage these

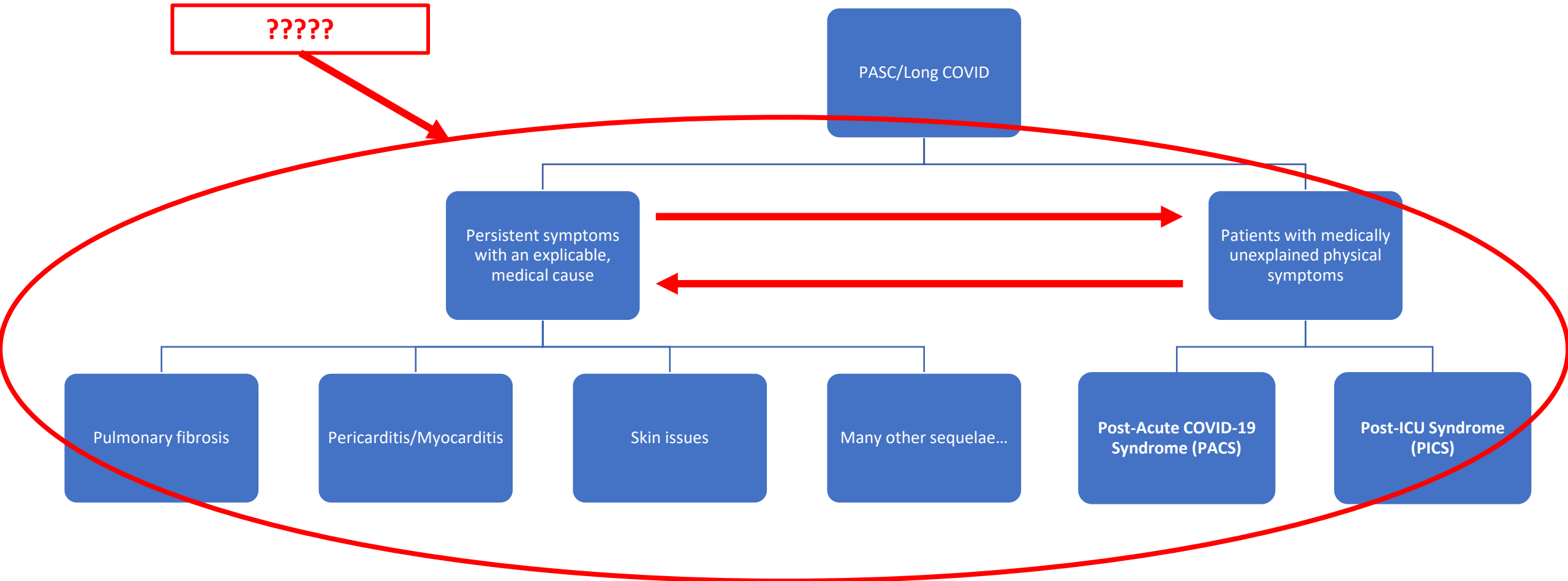


What are we treating (Part 2)?

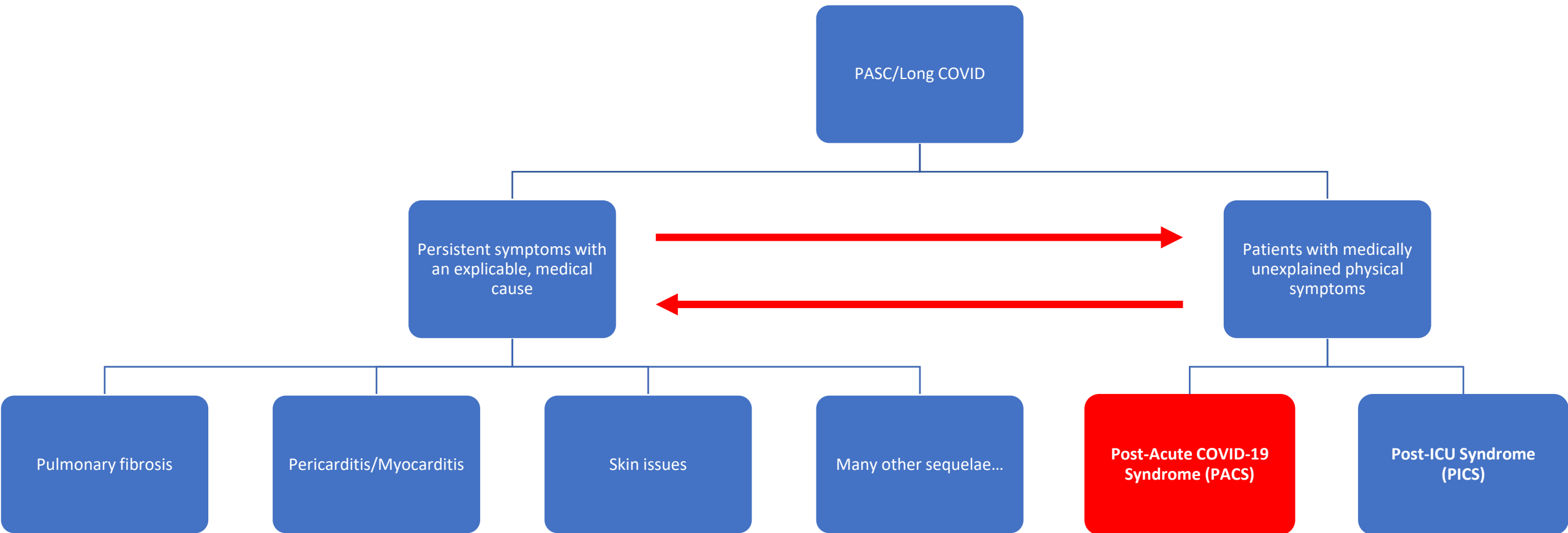
The medical community traditionally has a terrible track record managing these conditions



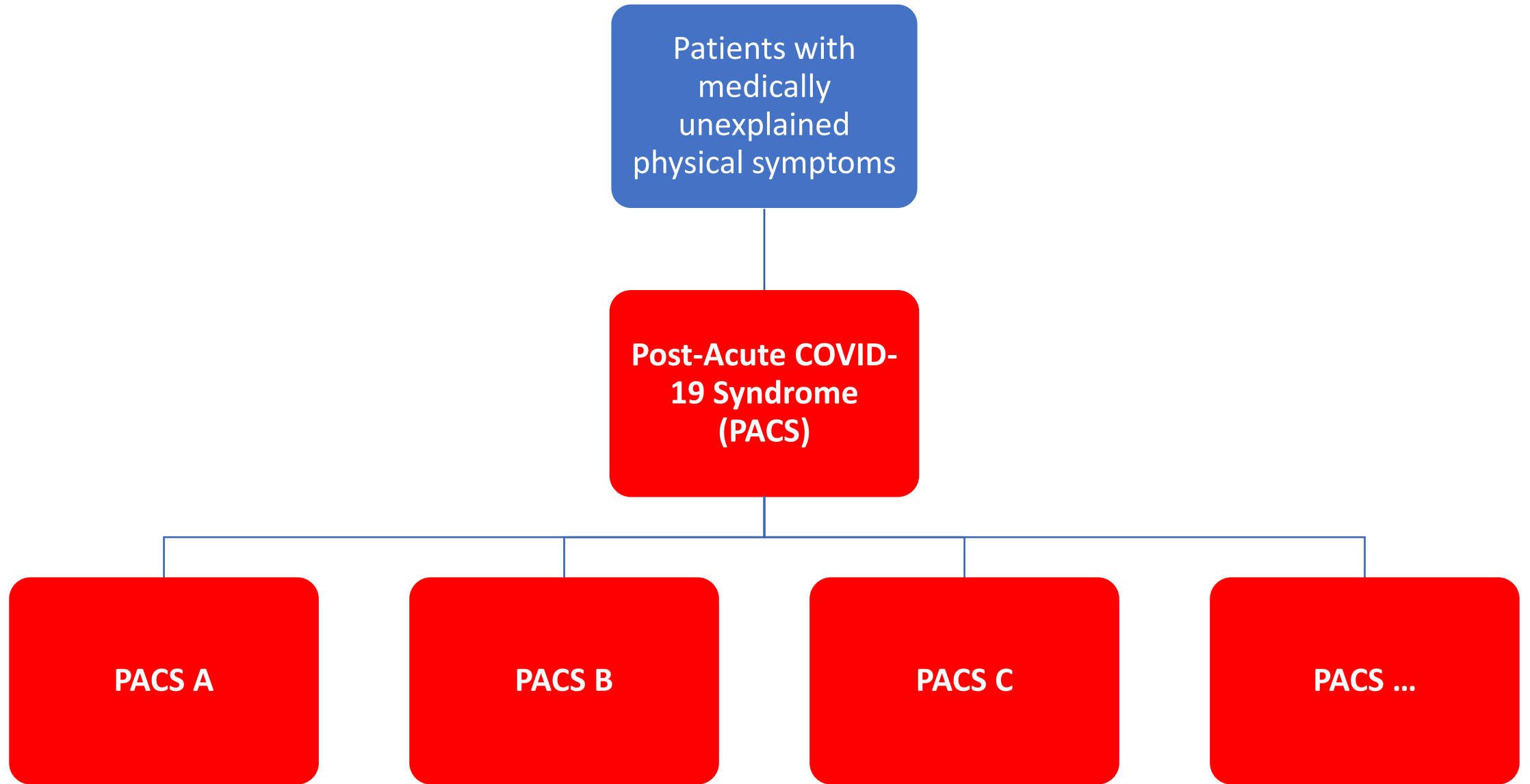
What are we treating (Part 2)?



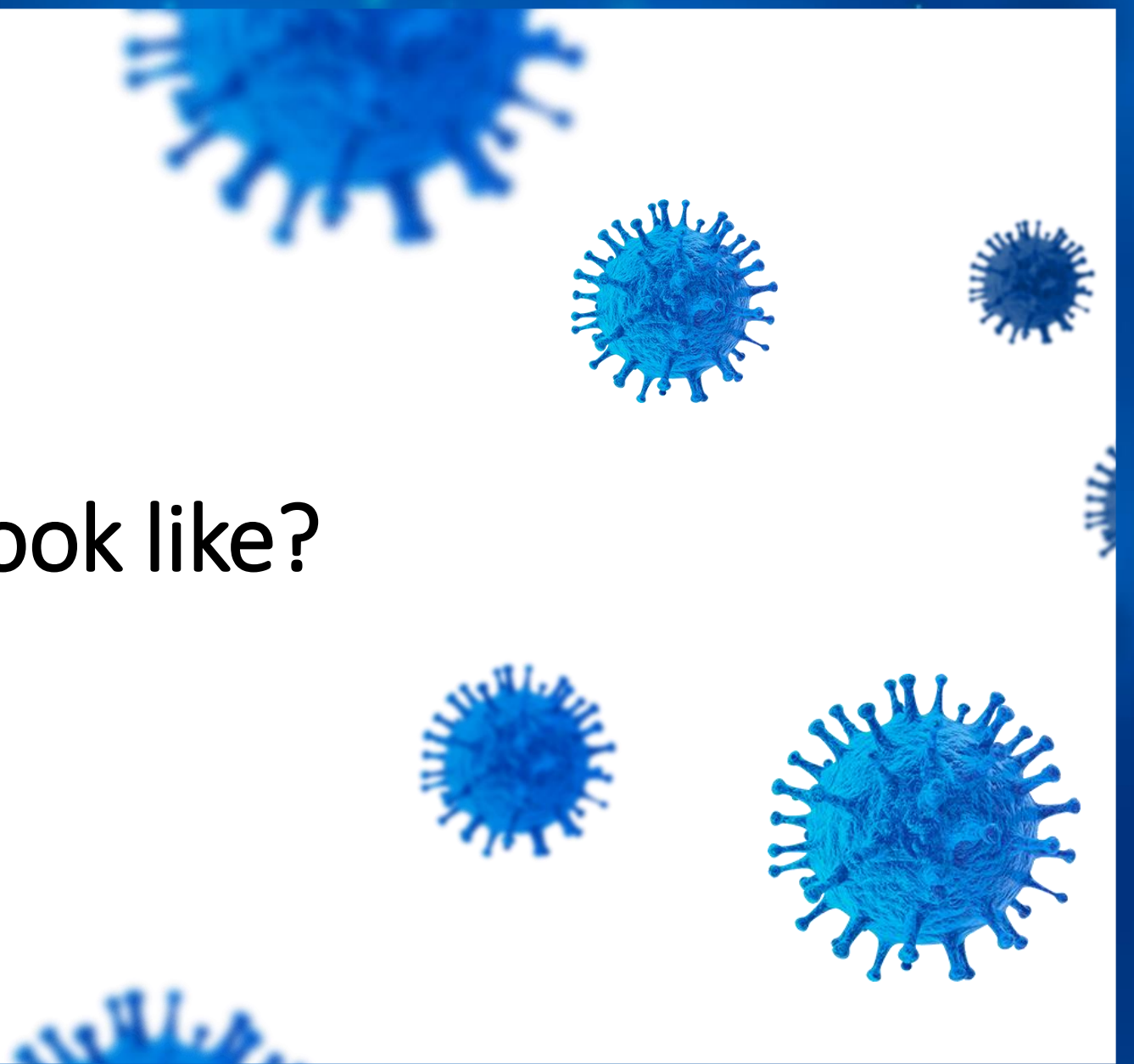
What are we treating...TODAY?



What are we treating...TODAY? (Disclaimer)



PACS: What does it look like?



PACS – Rough Demographics (from >200 cases with a detailed evaluation)

- **Gender**

- Female: 71%
- Male: 28%
- Non-binary: 1%

- **Median age: 43 (12 - 78)**

- **BMI: 24 (16 - 44)**

- **Hospitalized for COVID: 4%**

- **COVID “status”:**

- PCR/Antibody positive: 55%
- Presumptive positive using WHO guidelines: 45%

- **Race/Ethnicity**

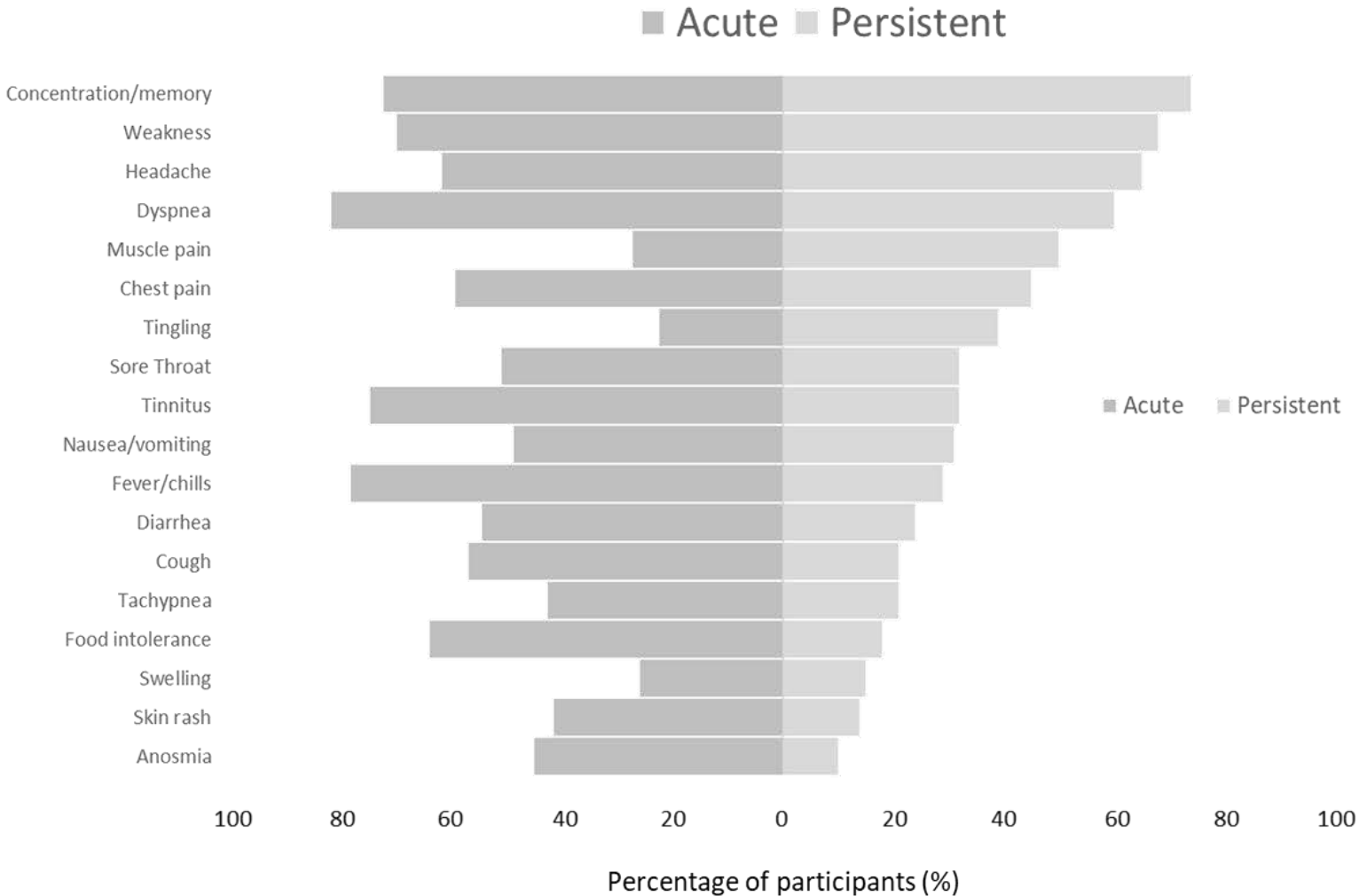
- White: 88%
- Asian: 6%
- Black/African American: 2%
- American Indian/American Native: 1%
- Native Hawaiian/Pacific Islander: 0%
- Other: 7%
- Hispanic/Latinx: 10%

- **Notable Comorbidities:**

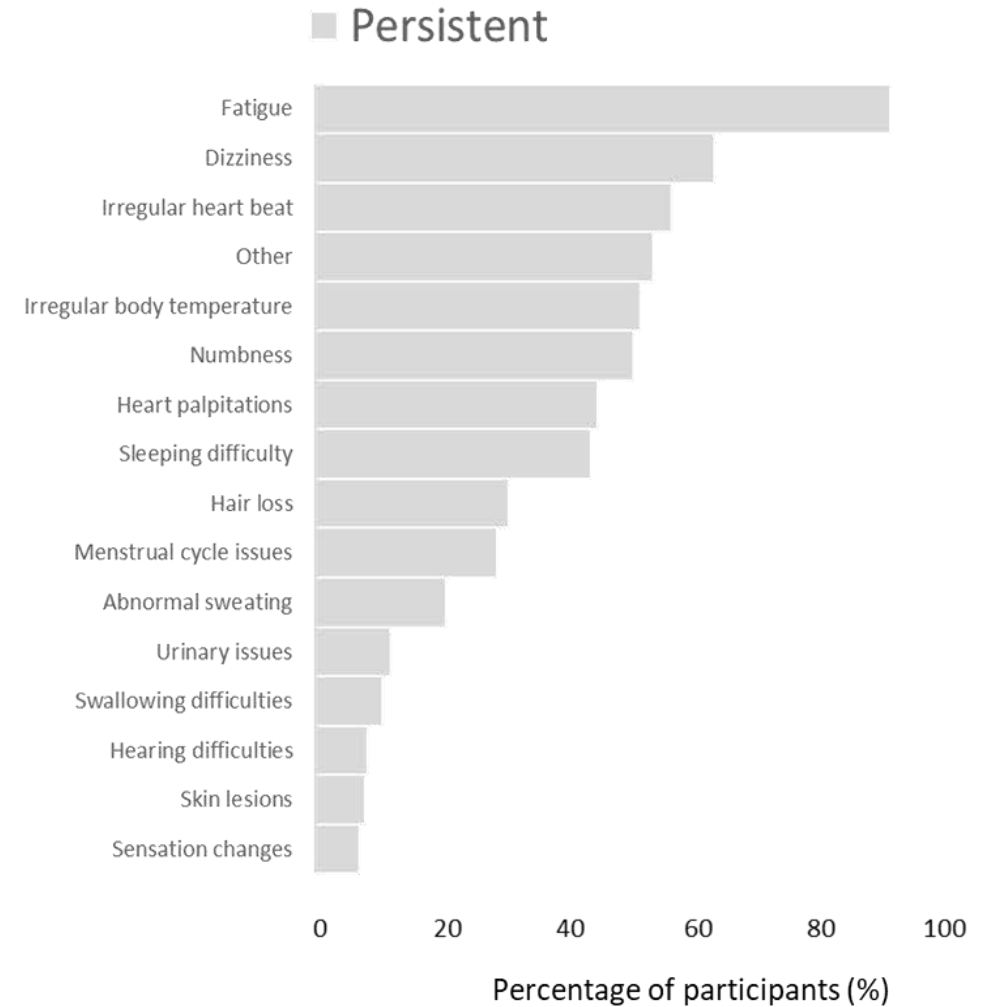
- Previous Cancer (all types): 26%
- Asthma: 24%
- Anxiety: 13%
- Depression: 9%
- Hypertension: 9%

PACS – Symptom presentation

a)



b)



Know your symptoms!

Fatigue

- A feeling of weariness, tiredness, or lack of energy
- Can be physical, emotional or cognitive
- Persistent and debilitating

Exercise Intolerance

- Inability to engage in exercise
- Immediate onset: patient must stop during activity due to symptoms

Post-exertional Symptom Exacerbation

- Severe symptom flairs as a result of exertion
- Exertion can be physical, cognitive or emotional
- Delayed-onset: exertion can trigger symptoms days later

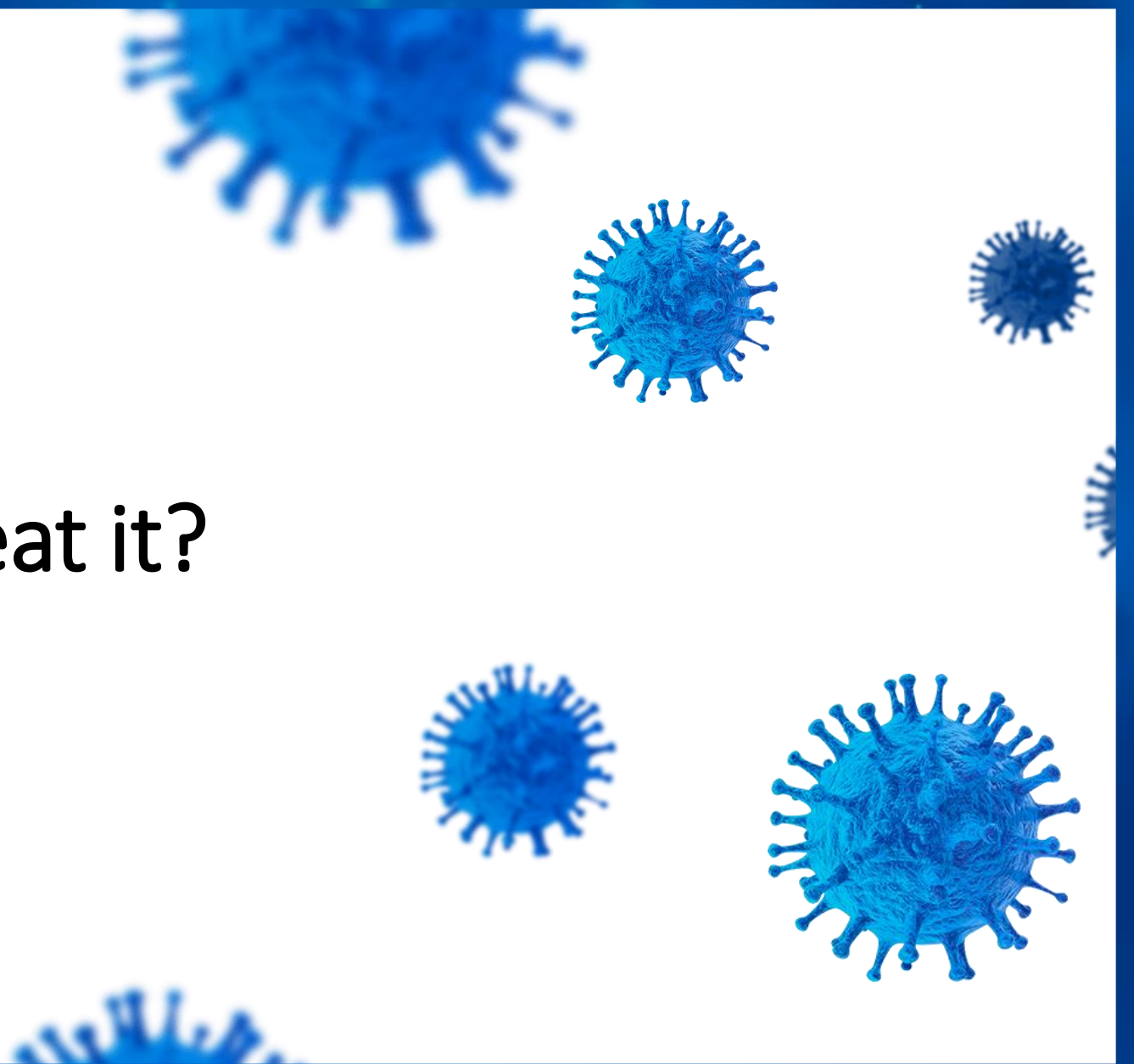
PACS – Most common symptom triggers

- Physical or cognitive exertion (86%)
- Stress (69%)
- Dehydration (49%)
- Weather changes (37%)
- Consuming large meals (28%)
- Premenstrual period (22%)
- Alcohol consumption (22%)

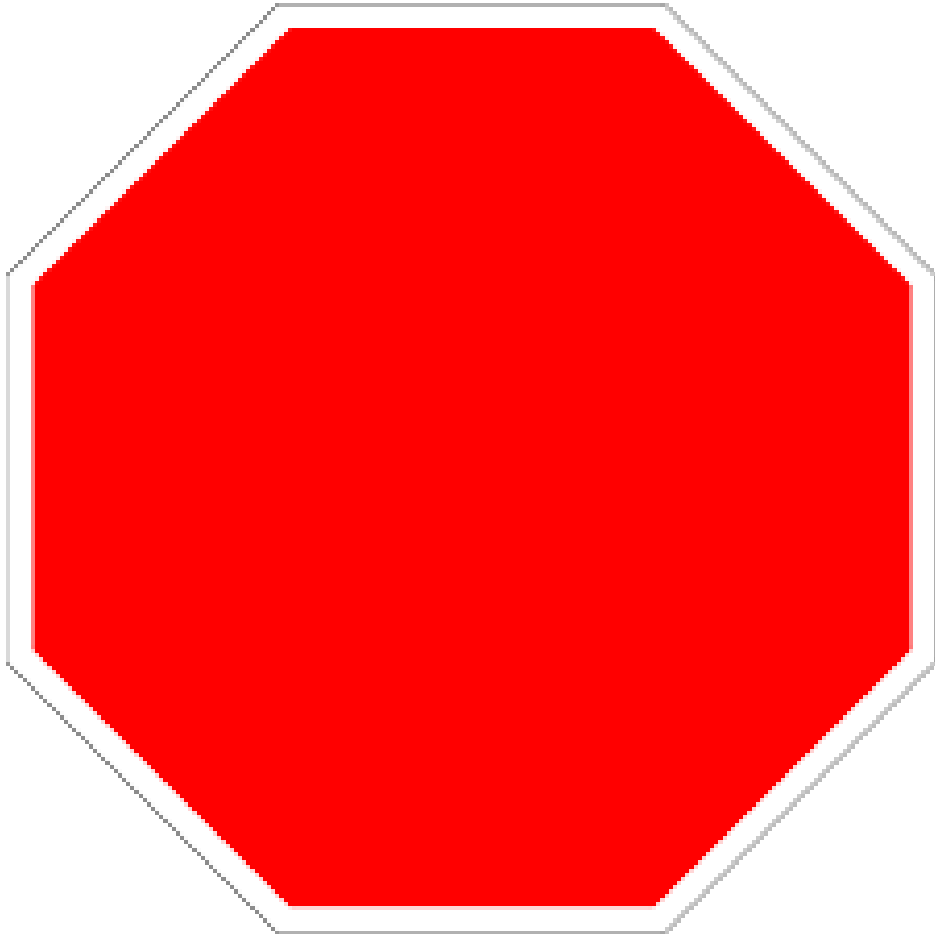
PACS – Impact on participation

- 40% of patients reported moderate to severe shortness of breath (MRC Breathlessness Scale)
- 78% of patients reported problematic fatigue (Fatigue Severity Score)
- 63% of patients scored for at least mild cognitive impairment (Neuro-Qol)
- 62% of patients have had to change their employment status as a result of their symptoms

PACS: How do we treat it?



Clinicians: know your history



- **Be aware** that there is a long and storied history of clinicians gaslighting patients presenting with post-viral syndromes and other conditions with invisible symptoms
- **Understand** that physicians have told the ME/CFS community “all you need is exercise and positive thoughts” for decades
- **Acknowledge** that these approaches have consistently led to harm: worsened symptoms and increased disability

Current care pathway for patients with PACS

MYMEE

Initial evaluation
(physician)

Begin work on
behavioral
strategies to get
symptom attacks
under control

Referral to
specialties care
(Nutrition,
Cognitive rehab,
Neuropsychology,
etc)

Cardiac clearance
(EKG/Echo)

Referral to
breathwork
coaching for
prehab

Referral to
physical therapy
for Autonomic
Conditioning
Therapy

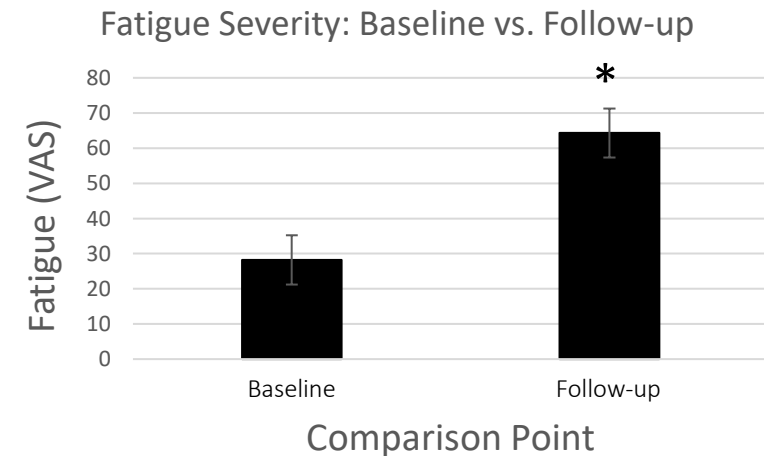
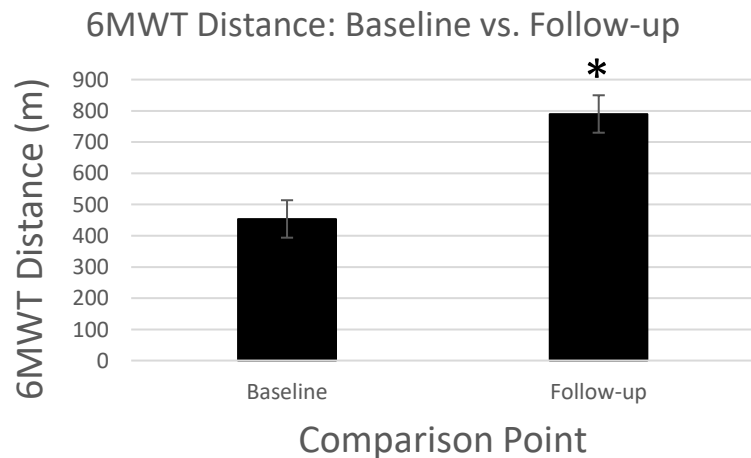
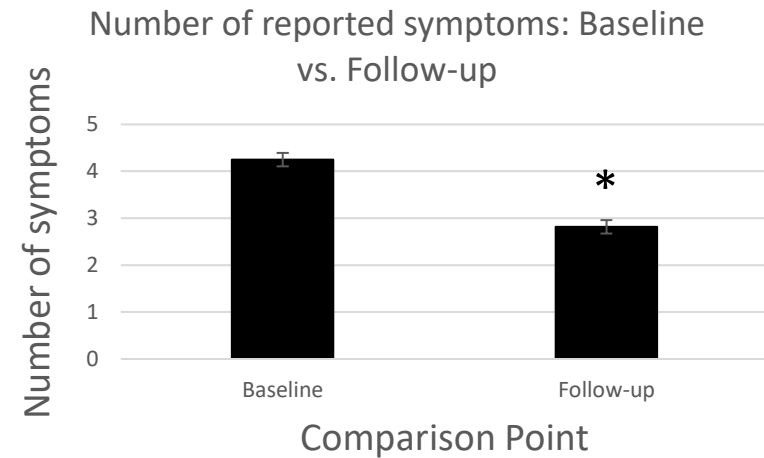
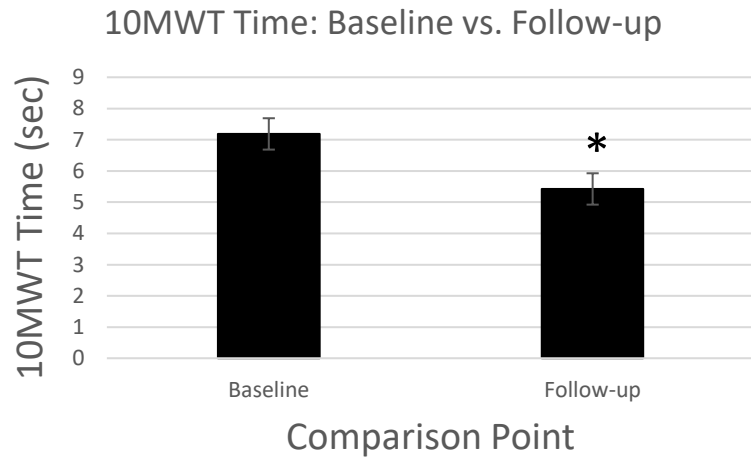




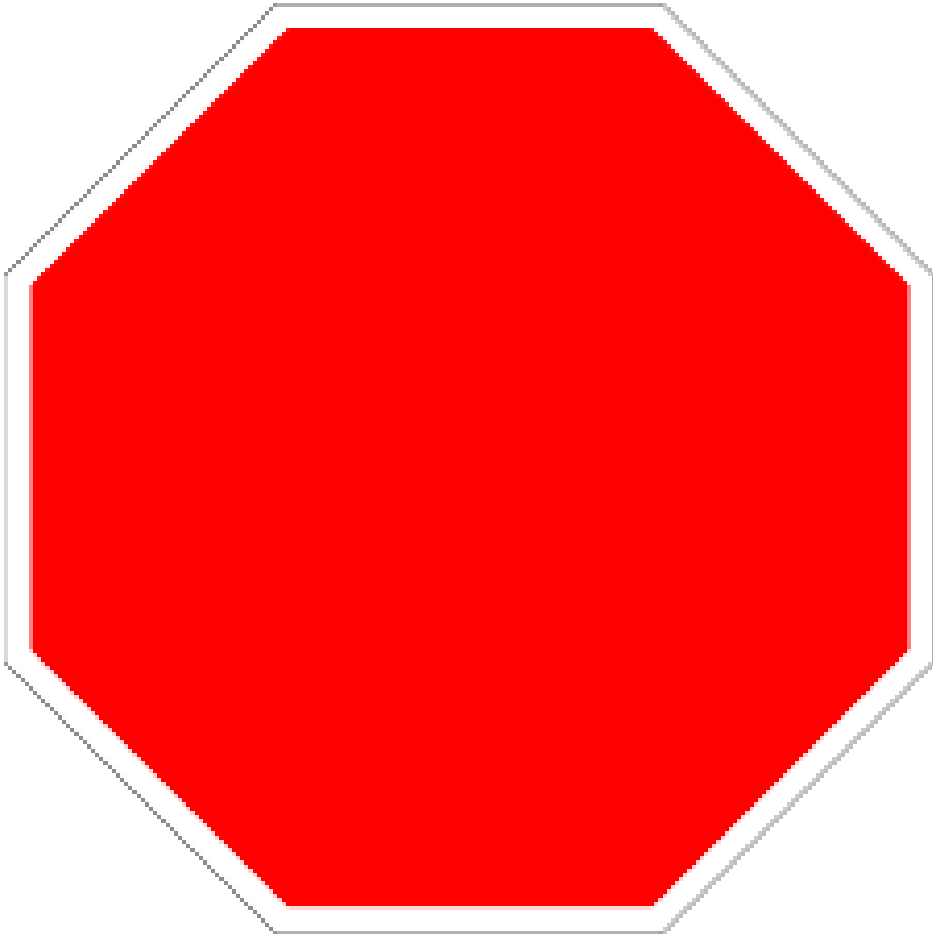
Autonomic Conditioning Therapy

- A novel autonomic rehabilitation program for PACS patients
- The design has been based on existing, successful rehabilitation programs for dysautonomia with specific customizations for PACS
- To date, we have trained >700 clinicians in the United States on how to run the program
- We have data from over two hundred patients to suggest that autonomic rehabilitation appears to work in easing PACS symptoms

Autonomic Conditioning Therapy Eases Symptoms of PACS and improves function



Is it “working”?



- What we are presenting is that **careful and skilled** autonomic rehabilitation appears to ease symptoms of Long COVID and increase function in patients
- It requires intensive rehabilitation over a long period of time
- We have observed relapses in patients post-discharge

Remember this slide?

DISCLAIMER: We are still discovering all of the ways that Long COVID affects the body. There will be clusters of patients that are non-responsive to our approaches

**Post-Acute
COVID-19
Syndrome (PACS)**

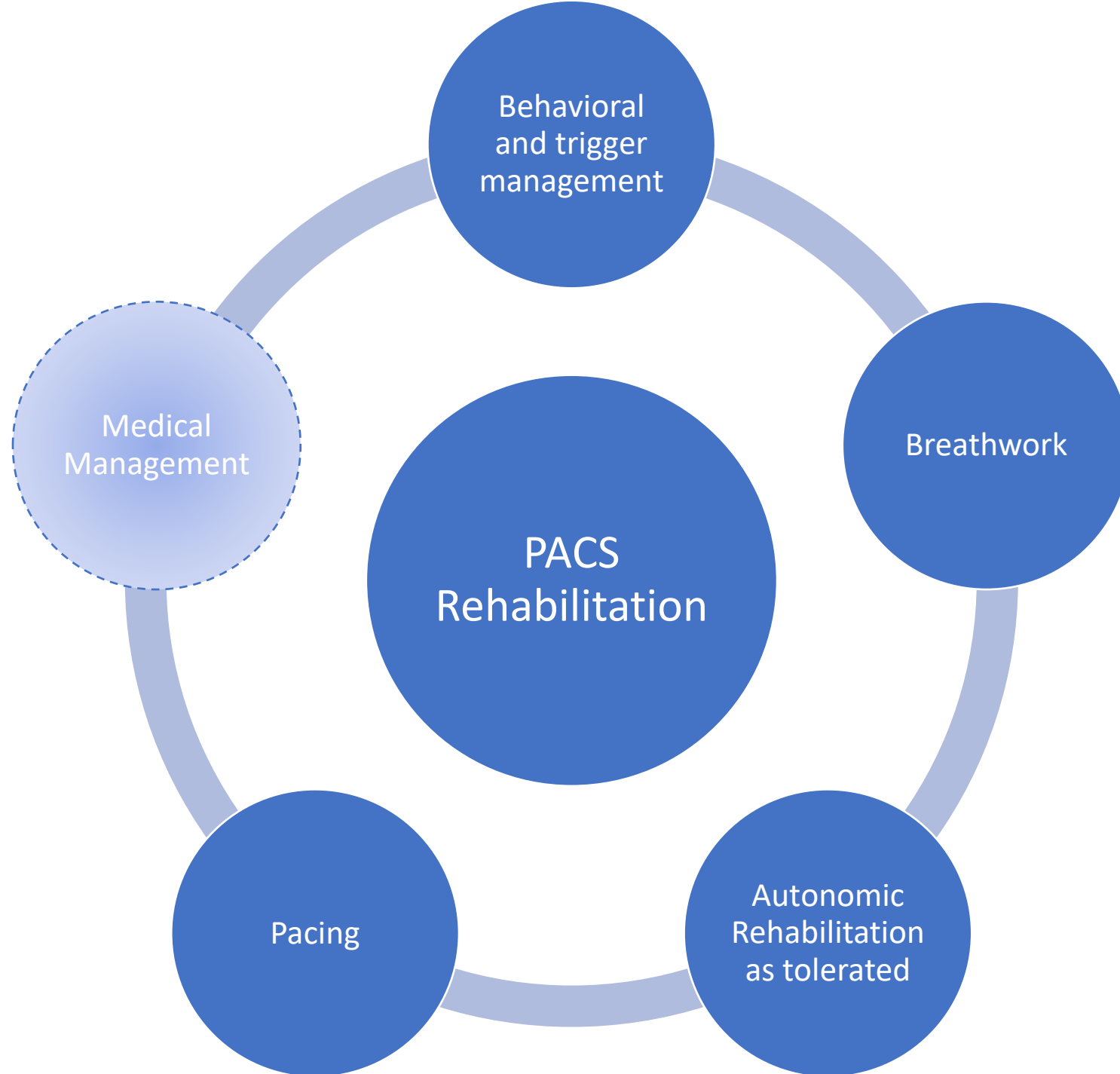
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graph TD; PACS[Post-Acute COVID-19 Syndrome (PACS)] --- PACS_A[PACS A]; PACS --- PACS_B[PACS B]; PACS --- PACS_C[PACS C]; PACS --- PACS_D[PACS ...];
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PACS A

PACS B

PACS C

PACS ...



Behavioral
and trigger
management

Breathwork

Autonomic
Rehabilitation
as tolerated

Pacing

Medical
Management

PACS
Rehabilitation



Future: Understanding the pathophysiology of Long
COVID

Additional resources



LONG
COVID
PHYSIO

aapm&r

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past lab members

All of our patients and the
incredible patient-led
groups



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