

Post Acute Sequelae of COVID-19 (PASC)

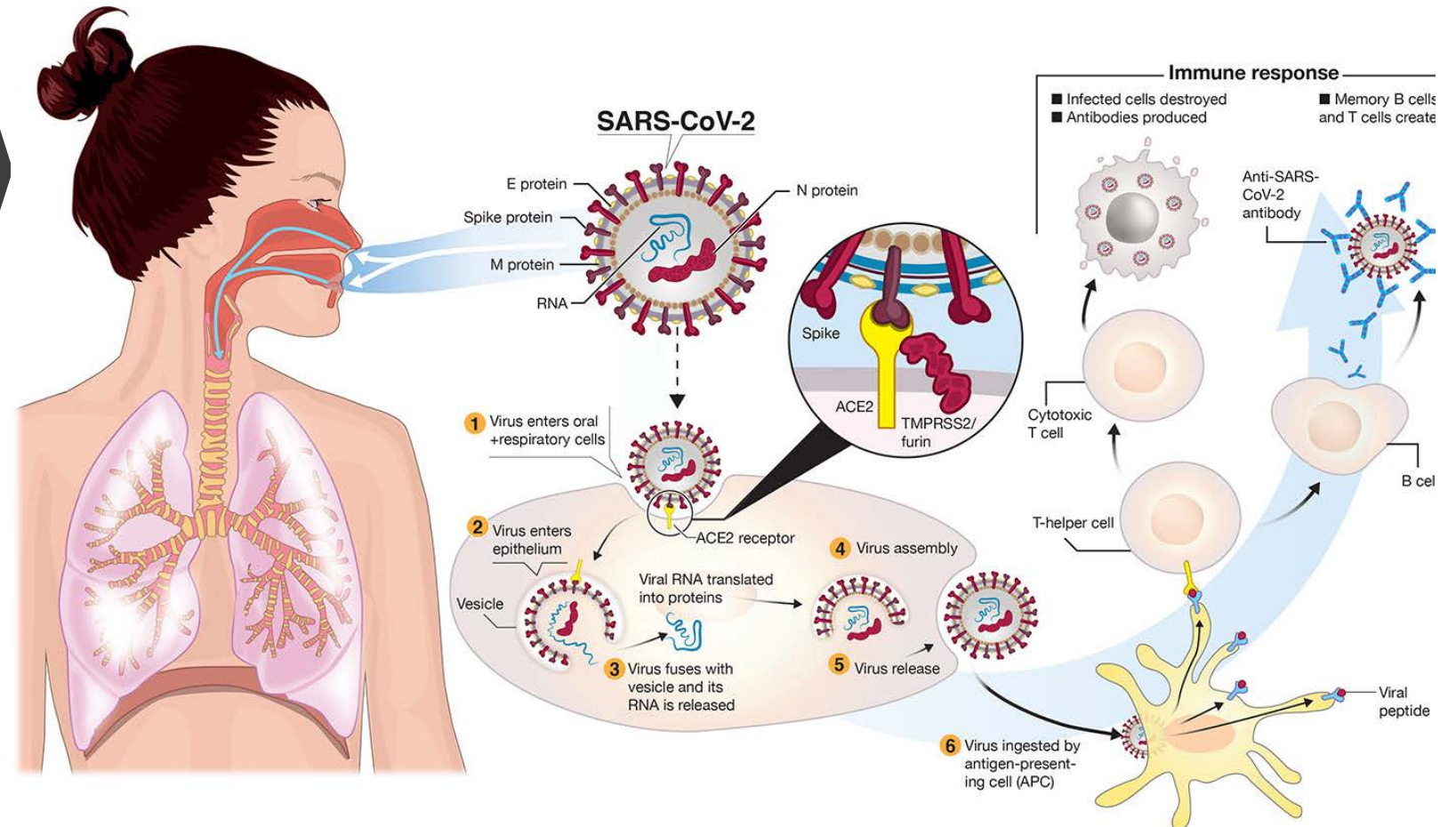
Alexa Simon Meara, MD MS

Objective

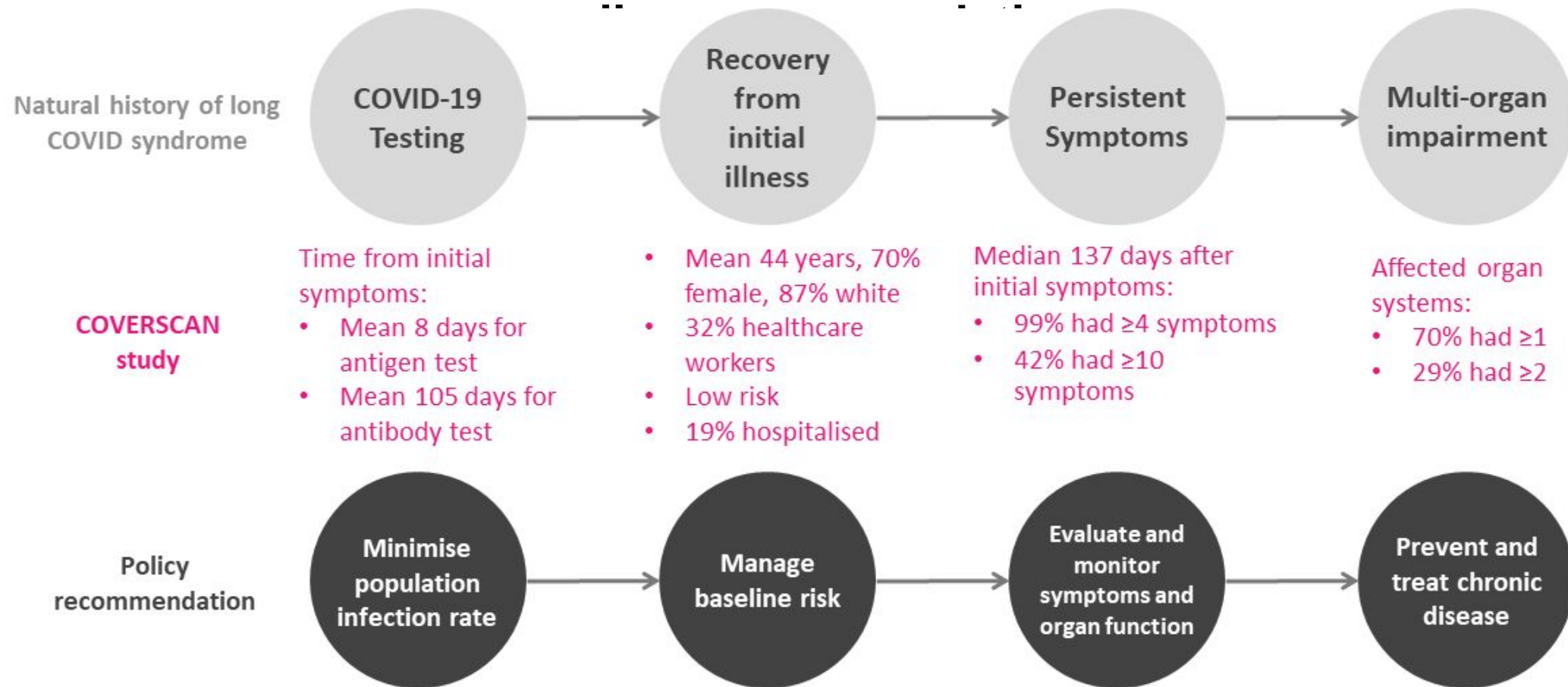
- Discuss the possible pathophysiology of COVID-long haul
- Illustrate a multi-disciplinary approach to COVID-long haul patients
- Call to action to work for clinical guidelines for COVID-long haul patients

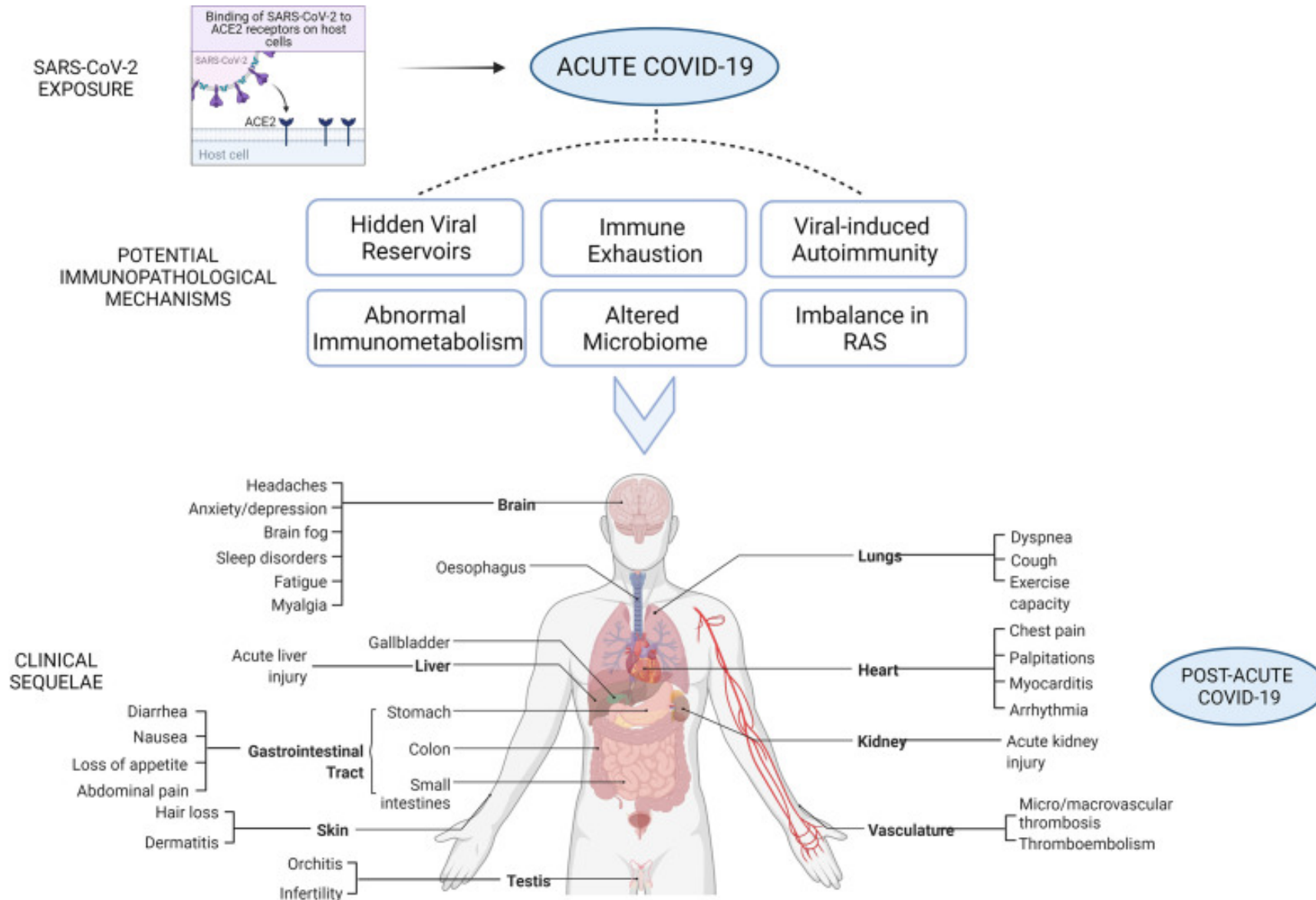
COVID-19 SARS-CoV-2

- > 177 million people infected
- Almost 4 million deaths
- 80% patients recover within 4 weeks
- < 15% require ICU stays which is over 6 weeks of medical care



Natural history of post-COVID-19 syndrome, the COVERSCAN study in low-risk individuals (N=201) and





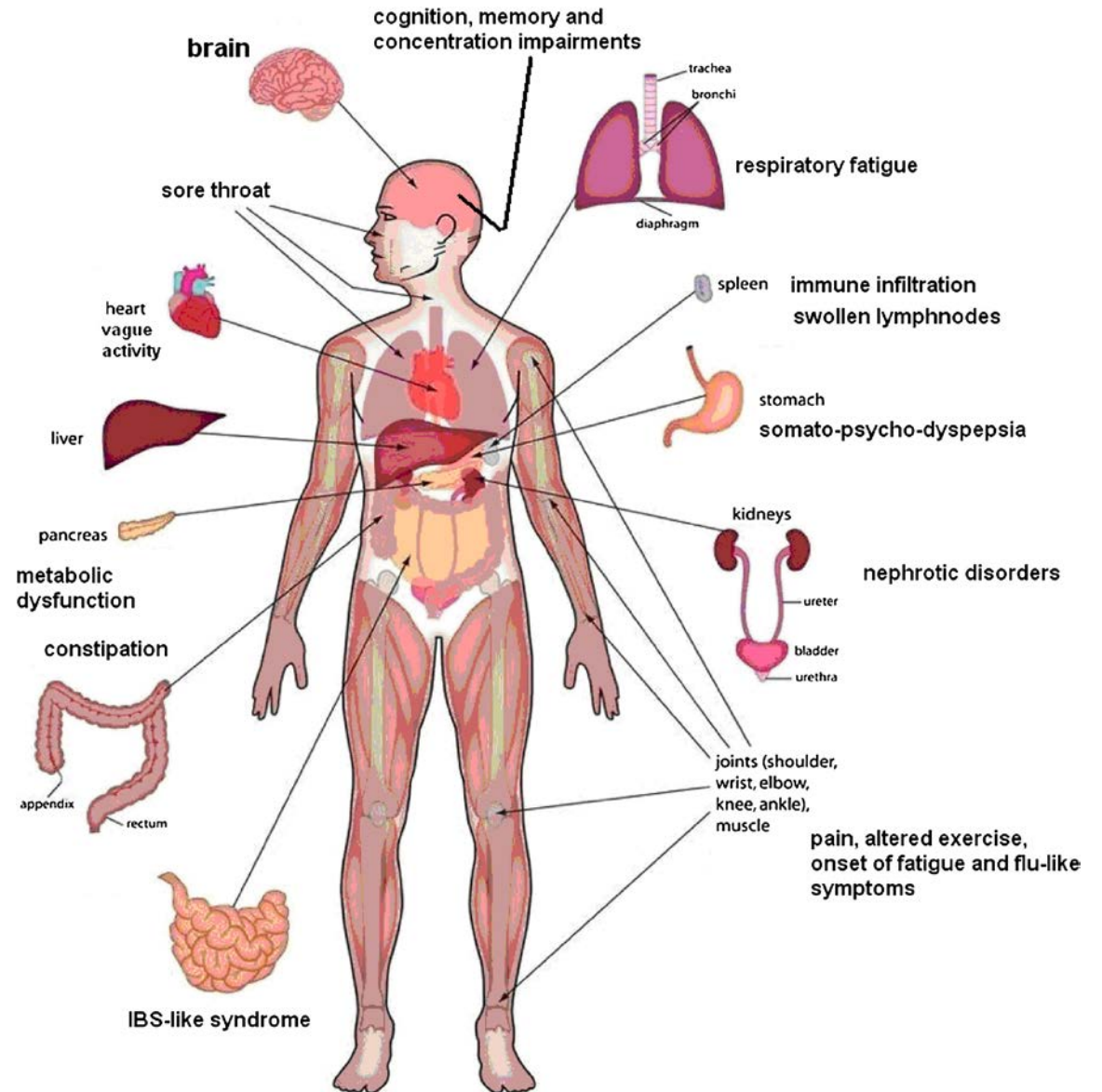
Theories behind PASC

- Chronic COVID-19 associated immune exhaustion
 - Continuous release of senescence-associated secretory phenotype (SASP) from the residual senescent cells
- Altered microbiome
- Abnormal immunometabolism and mitochondrial dysfunction
 - T Cell exhaustion
- Viral induced autoimmunity
- Imbalance in the renin-angiotension system- increased angiotension II leading to abnormal blood vessels

Definition of PASC

- > 12 weeks of symptoms that cannot be explained by an alternative diagnosis
- Heterogenous multi-organ symptoms
- Similar to many other post-viral chronic syndromes

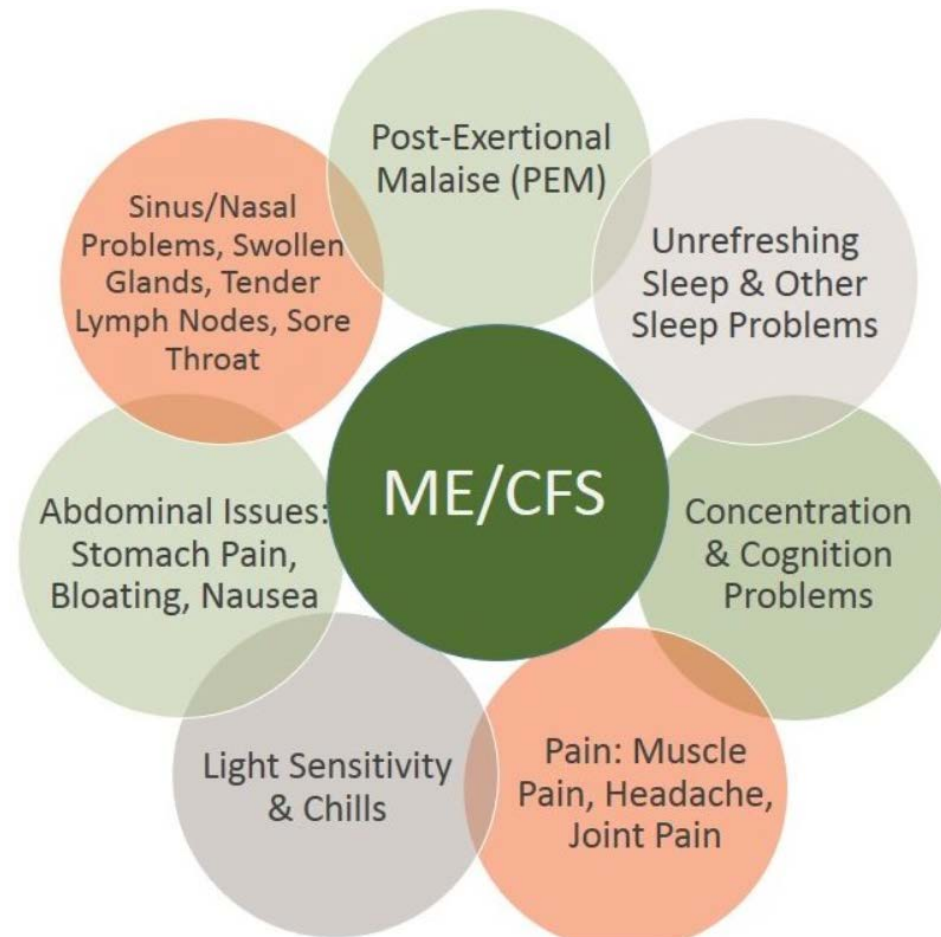
Organs affected in COVID long haul similar to chronic fatigue syndrome



Common Symptoms

- Myalgic encephalomyelitis/chronic fatigue
- Fibromyalgia
- Dysautonomia
- Anxiety/depression
- Sleep disturbances

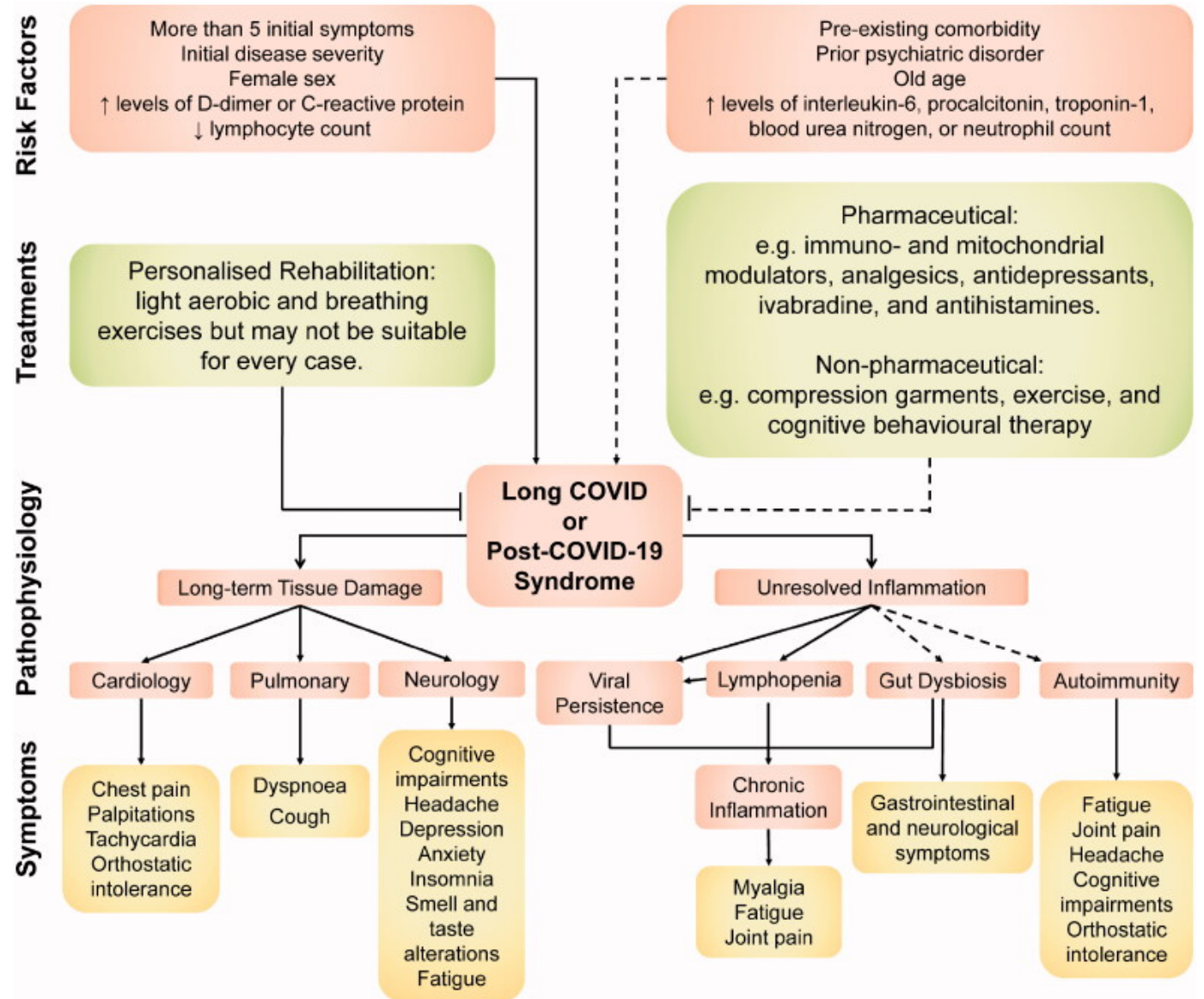
Myalgic Encephalomyelitis / Chronic Fatigue Syndrome



<https://solvecfs.org/about-the-disease/>

PASC Flow Chart

Yong. Infect Dis (Lond) 2021



Other Infections that Cause Similar Symptoms

Lyme disease

Epstein-bar virus (EBV)

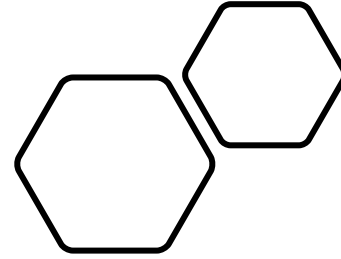
HIV

Cytomegally virus (CMV)

Severe acute respiratory syndrome (SARS)

Middle East respiratory syndrome (MERS)

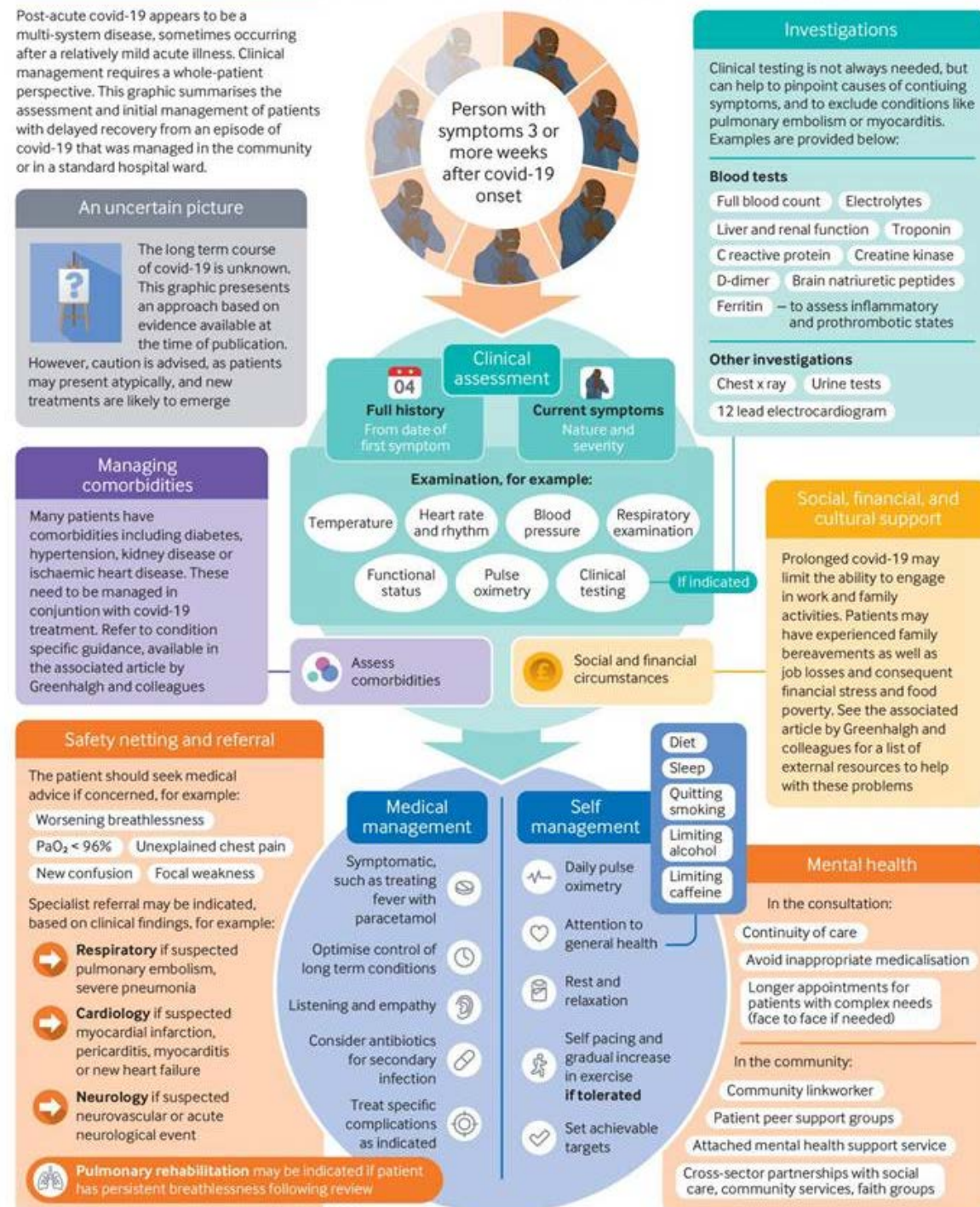
Multi- Disciplinary Treatment for PASC



Supporting patients
Coping skills
Rehab

BMJ Summary Long COVID in primary care: assessment and initial management of patients with continuing symptom

<https://www.bmj.com/content/370/bmj.m3026/infographic>



PASC Blood Tests Considerations in Primary Care

Investigations

Clinical testing is not always needed, but can help to pinpoint causes of continuing symptoms, and to exclude conditions like pulmonary embolism or myocarditis. Examples are provided below:

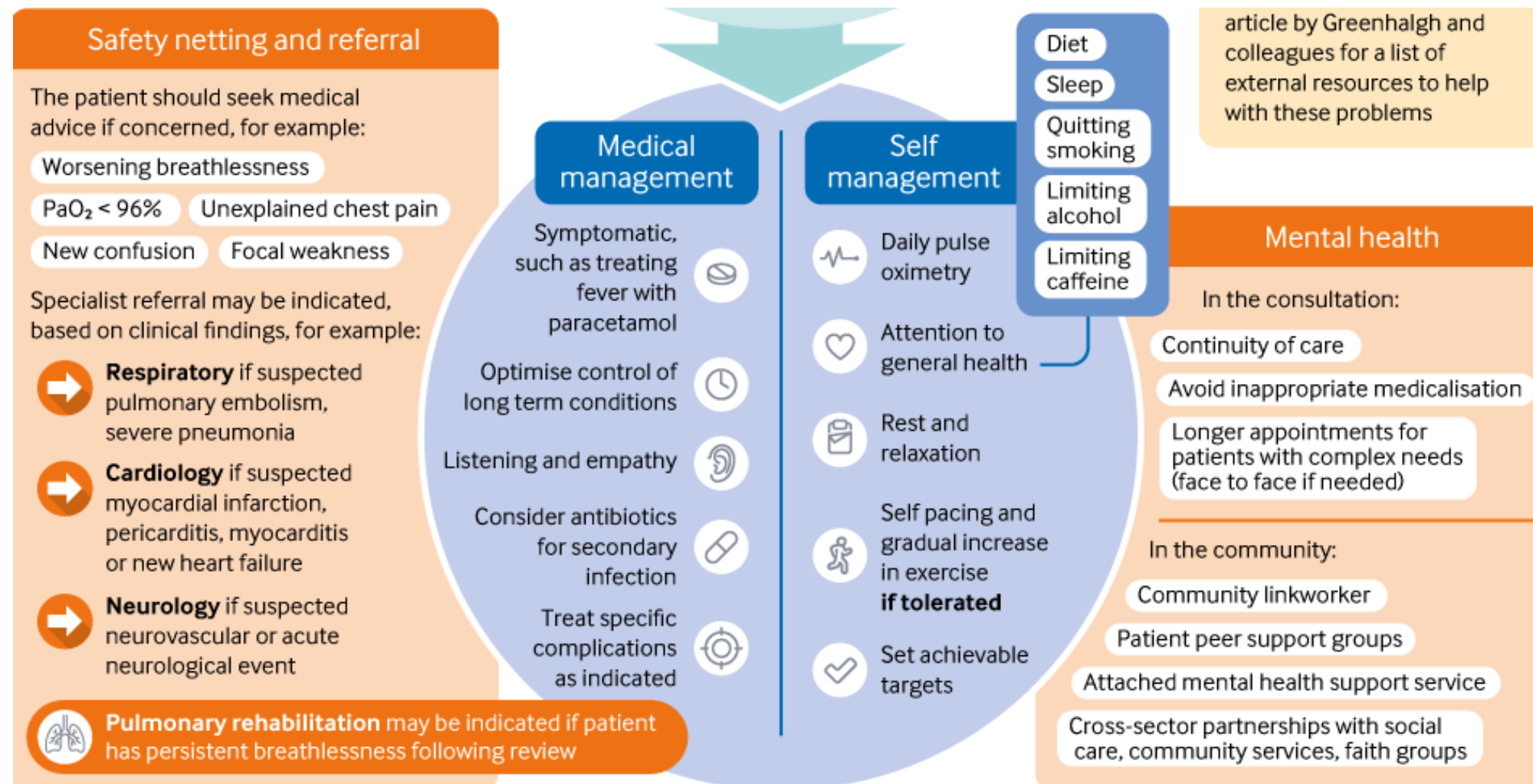
Blood tests

Full blood count Electrolytes
Liver and renal function Troponin
C reactive protein Creatine kinase
D-dimer Brain natriuretic peptides
Ferritin – to assess inflammatory and prothrombotic states

Other investigations

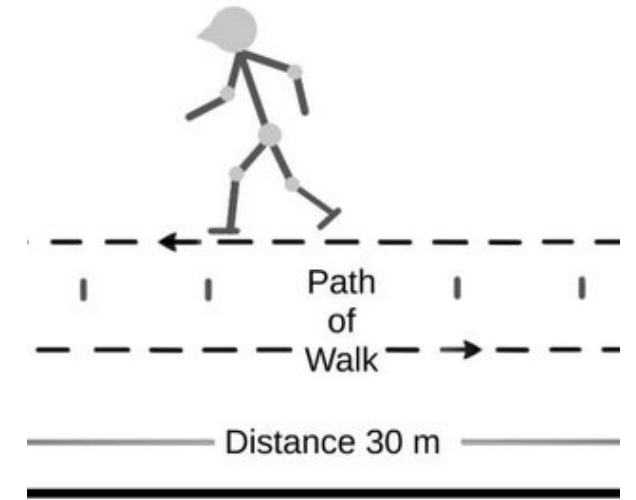
Chest x ray Urine tests
12 lead electrocardiogram

Post-Acute Chronic COVID-19 Management Considerations in Primary Care



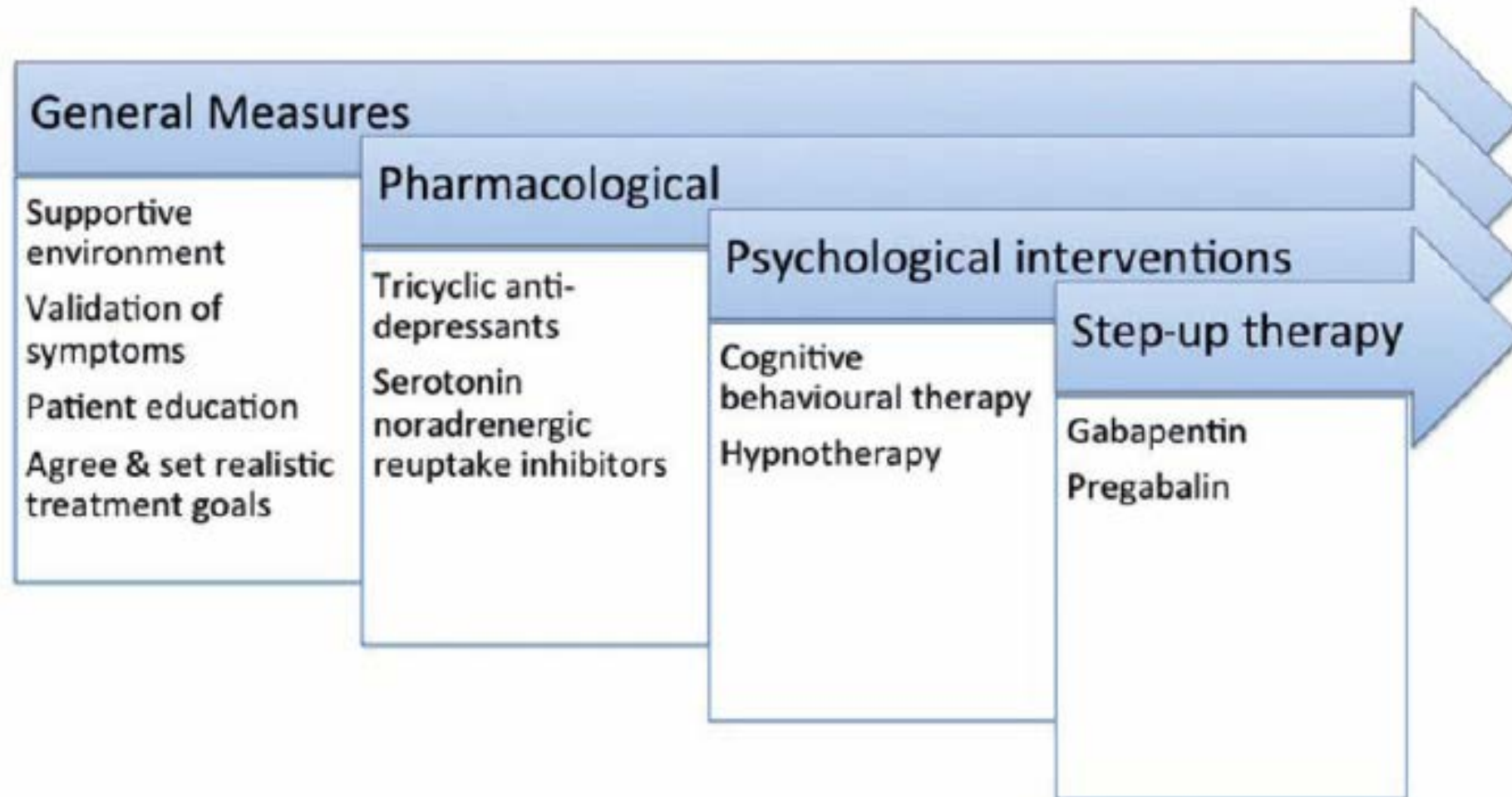
PASC-Dyspnea Treatments

- Pulse oximeter. SpO₂ >92% on RA.
- 6 minute walk test
- Imaging generally not necessary unless hypoxic
- Incidence of post-COVID-19 VTE in patients recovering from mild to moderate disease not known but probably not high risk
- Reassurance with recommendation for modest exercise, breathing techniques and adequate sleep. Recovery generally the rule, but time course prolonged (weeks to months)



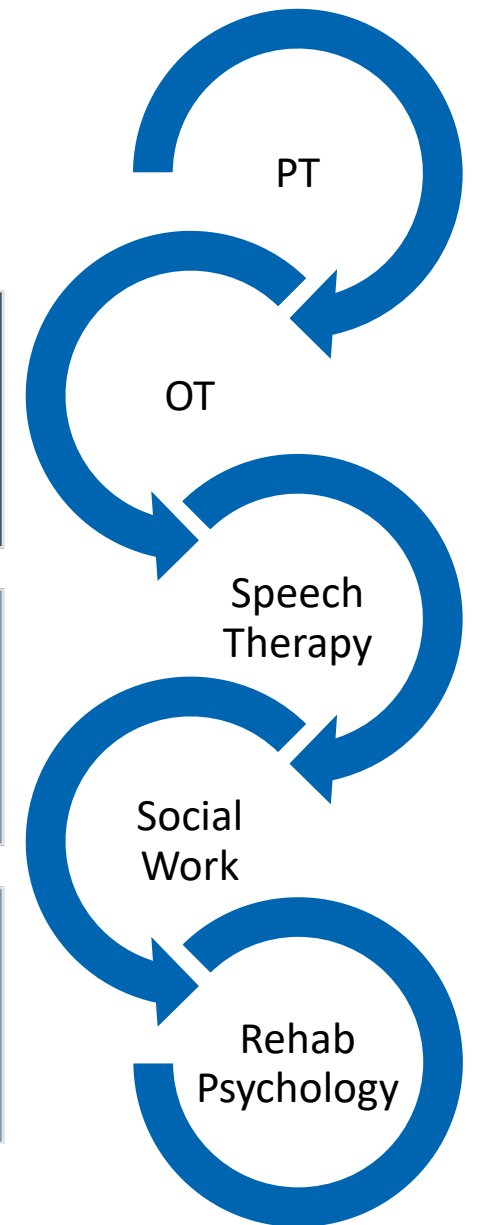
Chronic Abdominal Pain

STEP-UP APPROACH



Refer to Rehabilitation if unable to return to ADLs in COVID-19 Recovery Period

Deconditioning/Dyspnea on exertion	Decreased balance/Fall risk	Brain fog/Cognitive issues	Chronic fatigue
Muscle weakness	Myalgias	Joint pain	Vertigo, dizziness
Headaches	GI Issues	Difficulty swallowing	Anxiety/depression/PTSD



Approach to Therapeutics

- Risk: Benefit analysis
 - PT, Pulmonary Rehab, CBT
- Listen Intently
 - Validation of concerns
- Remain open to other diagnostic considerations
 - Avoid Anchor bias especially with prolonged symptoms
- Consider Palliative approach when appropriate

Call to Action

- Physicians need to recognize and validate patients symptoms
- We do not have a pill or an easy button
- Destigmatize that a person may not be the same after an infection
- Discuss lifestyle modifications focusing on exercise, diet
- Focus patients on what a new normal looks like
- Fundings outcomes and trials for fatigue and chronic pain



The End

Questions?

