



CDC/IDSA COVID-19 Clinician Call

January 16, 2021

Welcome & Introductions

Dana Wollins, DrPH, MGC
Vice President, Clinical Affairs & Guidelines
IDSA

- 50th in a series of weekly calls, initiated by CDC as a forum for information sharing among frontline clinicians caring for patients with COVID-19
- The views and opinions expressed here are those of the presenters and do not necessarily reflect the official policy or position of the CDC or IDSA. Involvement of CDC and IDSA should not be viewed as endorsement of any entity or individual involved.
- This webinar is being recorded and can be found online at www.idsociety.org/cliniciancalls.

Today's Topic: Long COVID

Featured Experts



Brendan Jackson, MD, MPH

Late Sequelae Unit

CDC COVID-19 Response Clinical Team



Mitchell Miglis, MD

Clinical Assistant Professor,

Neurology & Neurological Sciences, Autonomic Division and
Psychiatry and Behavioral Sciences, Sleep Medicine Division

Stanford University



Kathleen Bell, MD

Kimberly-Clark Distinguished Chair in Mobility Research

Professor & Chair, Physical Medicine and Rehabilitation

University of Texas Southwestern



Denyse D. Lutchmansingh, MD

Assistant Professor of Clinical Medicine

Associate Director of the Winchester Chest Clinic

Associate Director, Post COVID Recovery Program

Section of Pulmonary and Critical Care and Sleep Medicine

Yale University School of Medicine



Disclosures

Brendan Jackson, MD, MPH

Nothing to disclose

Mitchell Miglis, MD

Nothing to disclose

Kathleen Bell, MD

Nothing to disclose

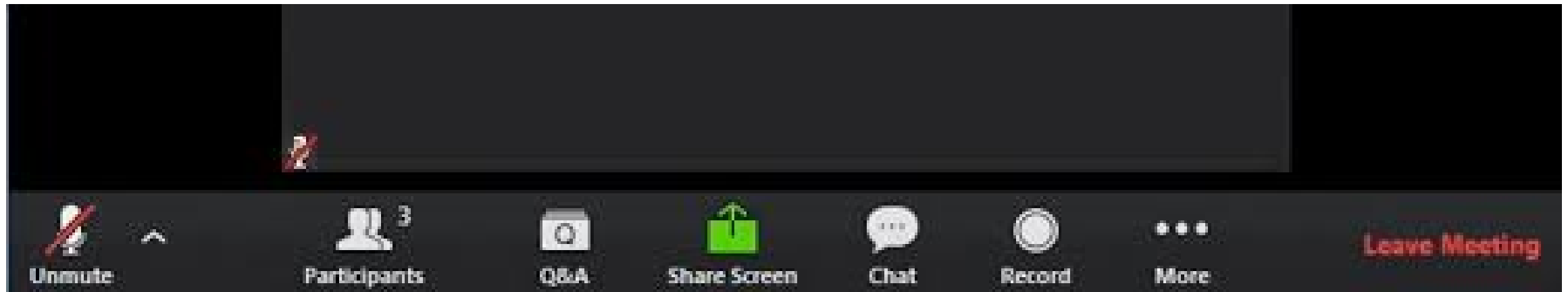
Denyse D. Lutchmansingh, MD

Nothing to disclose

Question?
Use the "Q&A" Button

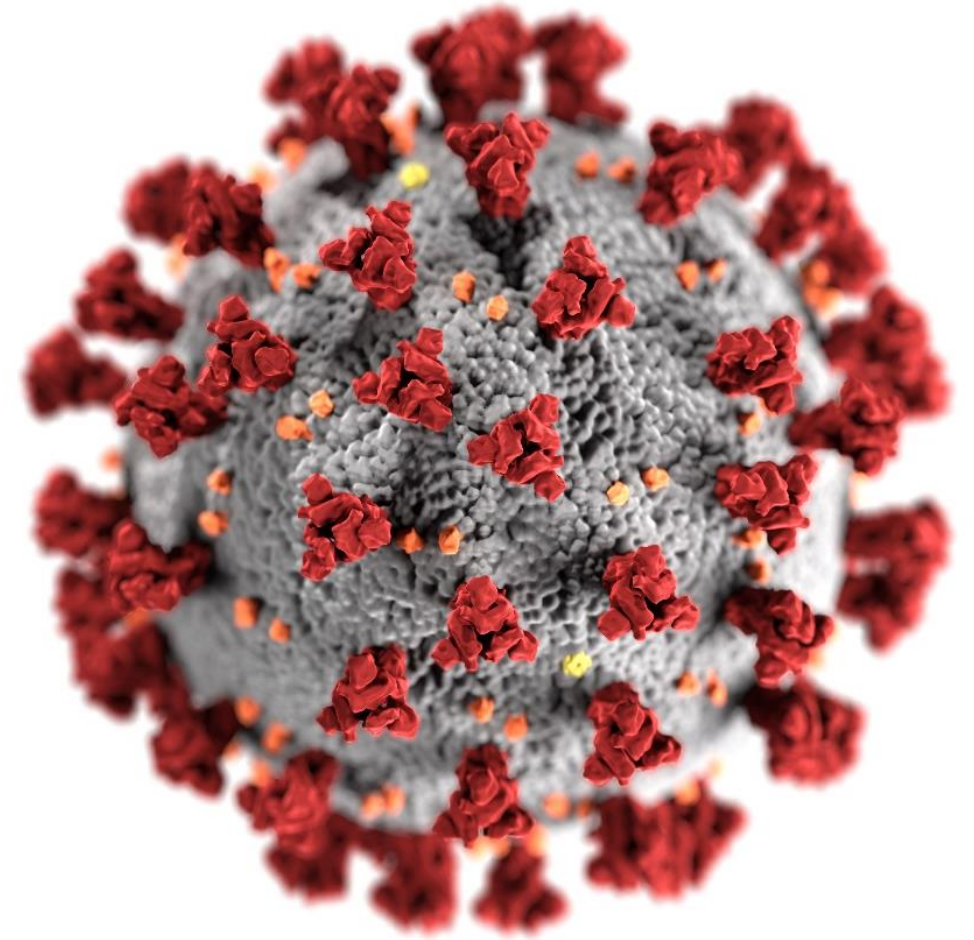


Comment?
Use the "Chat" Button



Long-Term Effects of COVID-19 and CDC's Response

Brendan Jackson, MD, MPH
CDC COVID-19 Response Clinical Team
Late Sequelae Unit



For more information: www.cdc.gov/COVID19

By any name, widely covered in the media, but medical literature still sparse and rapidly evolving

Newsweek

'I Got COVID 9 Months Ago and Still Have Symptoms'

60 MINUTES


PUZZLING, OFTEN DEBILITATING AFTER-EFFECTS PLAGUING COVID-19 "LONG-HAULERS"

Doctors are still searching for answers to why a portion of people who were diagnosed with COVID-19 are still suffering symptoms months later. Anderson Cooper reports.

SCIENTIFIC AMERICAN.

LOCAL // HEATHER KNIGHT

S.F. Millennial was fit and healthy before COVID-19. He's a disabled 'long-hauler' now

 Heather Knight | Jan. 9, 2021 | Updated: Jan. 10, 2021 4:30 p.m.

The New York Times

For Long-Haulers, Covid-19 Takes a Toll on Mind as Well as Body

"It makes you depressed, anxious that it's never going to go away."



HEALTH · Published August 23

Coronavirus survivors plagued by long-term ailments

Symptoms include losing sense of smell, dry cough, fever and chronic fatigue

npr

SHORT WAVE

What's It Like To Be A COVID-19 'Long Hauler'

November 9, 2020 · 4:00 AM ET

Vox

The many strange long-term symptoms of Covid-19, explained

Long Covid "is a phenomenon that is really quite real and quite extensive," Anthony Fauci said.

By Lois Parshey | Dec 15, 2020, 4:20pm EST

BBC

Long Covid: 'I thought I'd get over this no problem'

By Claire Smyth
BBC News NI

San Francisco Chronicle

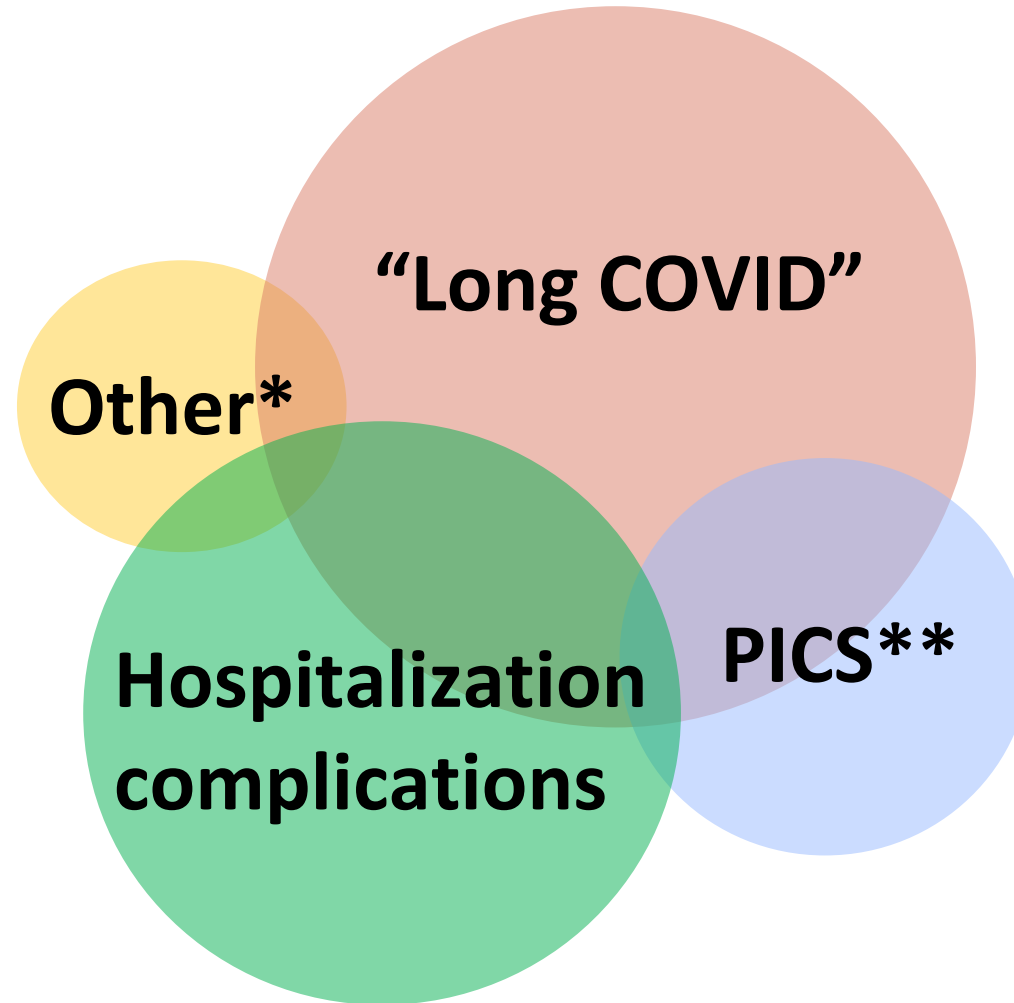
PUBLIC HEALTH | OPINION

The Problem of 'Long Haul' COVID

More and more patients are dealing with major symptoms that linger for months

By Carolyn Barber on December 29, 2020

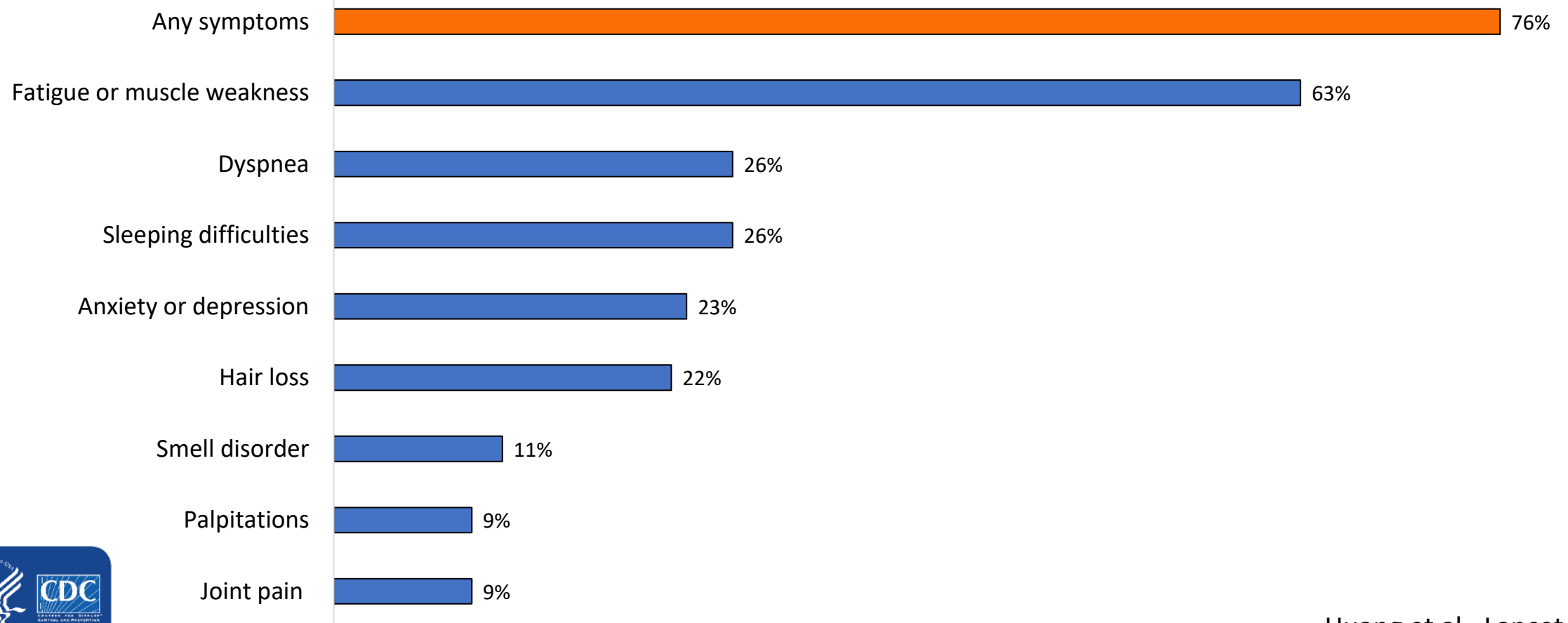
Post-acute effects are heterogeneous and overlapping, making them **hard to define**.



*Multisystem inflammatory disorder, Guillain-Barre, among others
**Post-Intensive Care Syndrome

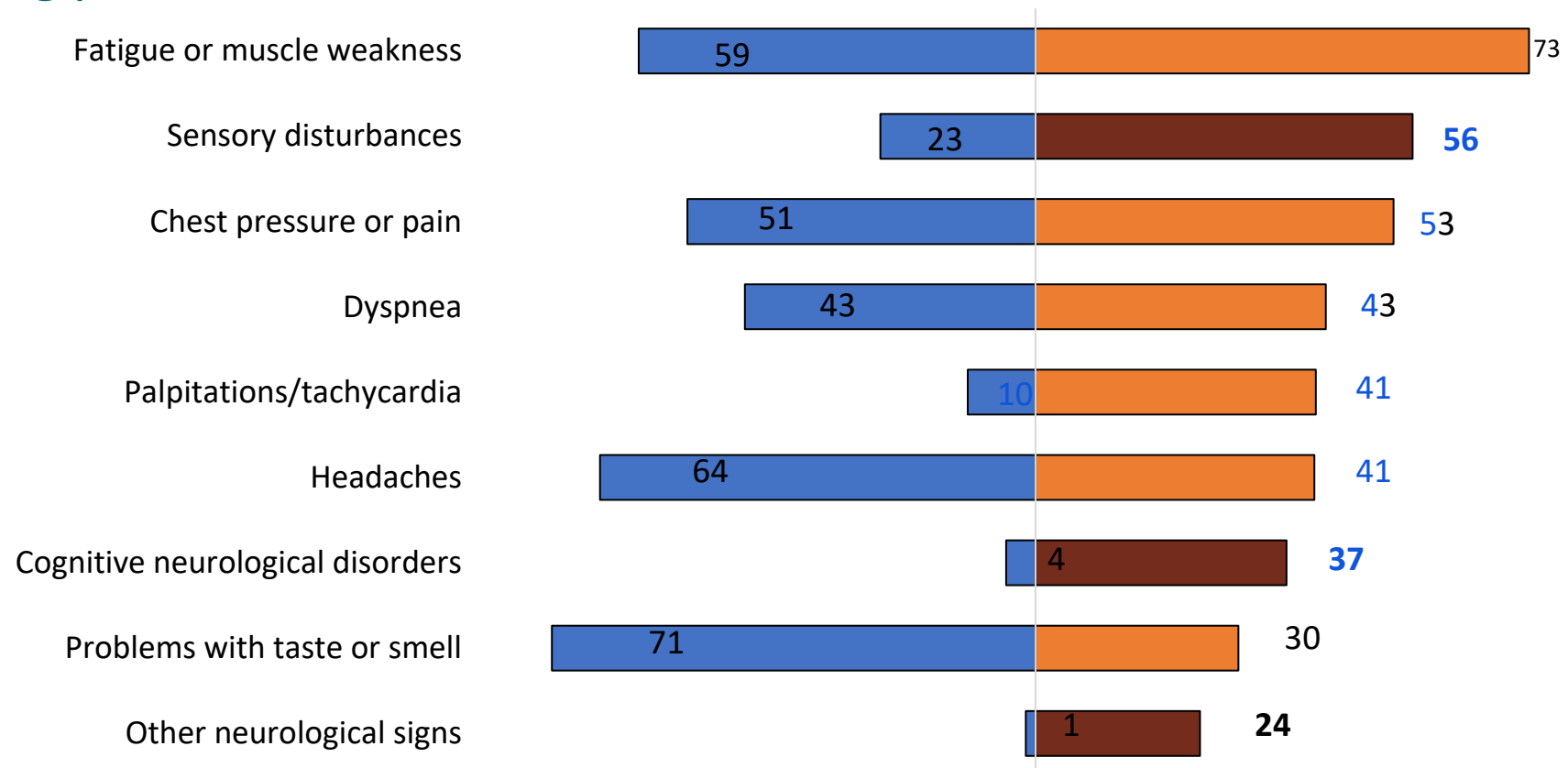
Three-quarters of patients hospitalized with COVID-19 had **at least one ongoing symptom** 6 months after their acute illness.

Symptoms among 1733 previously hospitalized patients, Wuhan, China



More than one quarter of patients developed new neurological symptoms after their acute COVID-19 illness.

Acute and persistent COVID-19 symptoms among 70 non-hospitalized patients attending a clinic providing post-acute care in Paris, France



Many fundamental questions still unanswered

- How to define?
- How common?
- Disease profiles and course?
- Predictors?
- Mechanisms?
- Effective interventions?
- Overall burden to patients, healthcare, workforce, society?

How CDC is working to address long-term effects of COVID-19

- Definitions
- Cohort studies
- Administrative data and chart reviews
- Patient surveys
- Clinician engagement
- Partnering with other agencies and organizations
- Public and clinical messaging



YOUR HEALTH

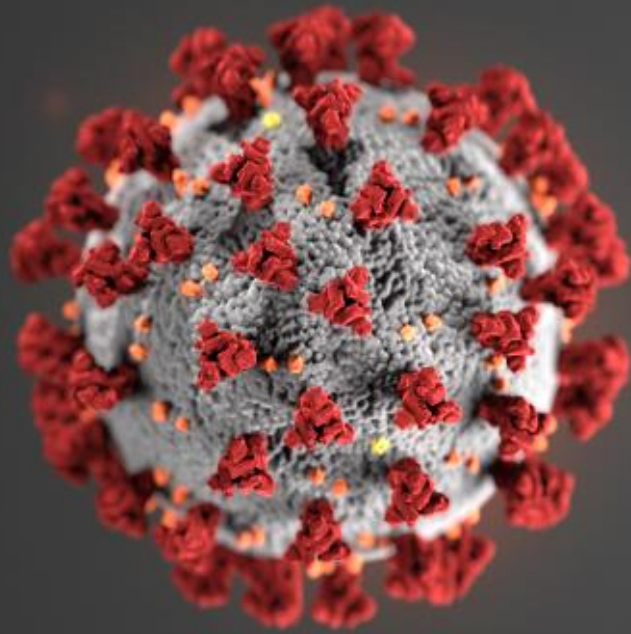
Long-Term Effects of COVID-19

Updated Nov. 13, 2020 [Print](#)
<https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects.html>

HEALTHCARE WORKERS

Late Sequelae of COVID-19

Updated Nov. 13, 2020 [Print](#)
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/late-sequelae.html>



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

Clinicians can reach the Late Sequelae Unit at
EOCevent513@cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.





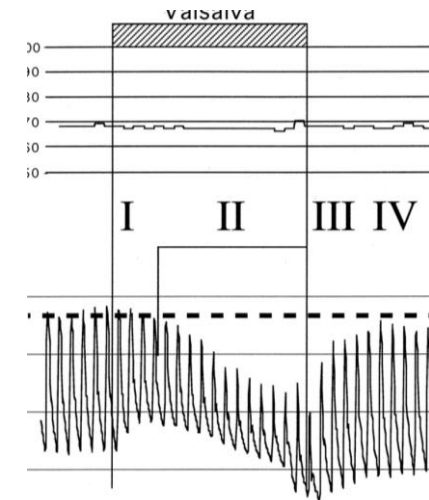
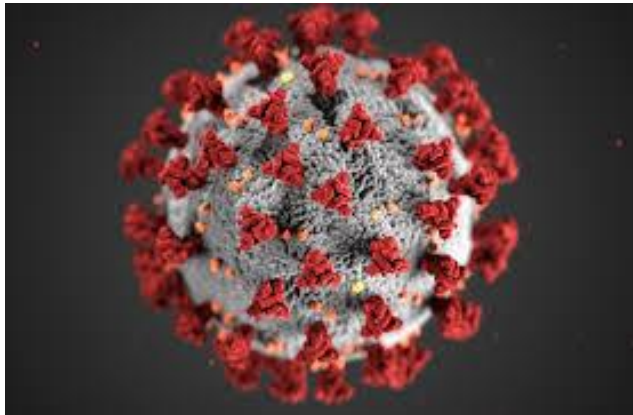
Autonomic Impairment in Post-COVID Syndrome

Mitchell Miglis, MD

Assistant Professor of Neurology

Stanford Center for Autonomic Disorders

Stanford University



Nath et al. Autonomic symptoms reported in Long-Haul COVID

- Tachycardia upon mild exercise or standing
- Night sweats
- Gastroparesis
- Constipation
- Peripheral vasoconstriction

Davido et al. Post COVID-19 chronic symptoms: a postinfectious entity?

- Since mid-May, 30 patients/ wk with persistent sx, 30-40 women (4:1) most previously healthy
- Initially mild symptoms
- Relapse of fatigue, subjective fevers, SOB, chest pains, tachycardia, headaches, anxiety

SPECIAL EDITORIAL

Neurologic complications of coronavirus infections

Avindra Nath, MD

Neurology® 2020;94:809-810. doi:10.1212/WNL.00000000000009455

Correspondence

Dr. Nath
natha@ninds.nih.gov

ARTICLE IN PRESS

Clinical Microbiology and Infection xxx (xxxx) xxx



ELSEVIER

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com



Commentary

Post-COVID-19 chronic symptoms: a postinfectious entity?

Benjamin Davido ^{1,*}, Sophie Seang ², Roland Tubiana ², Pierre de Truchis ¹

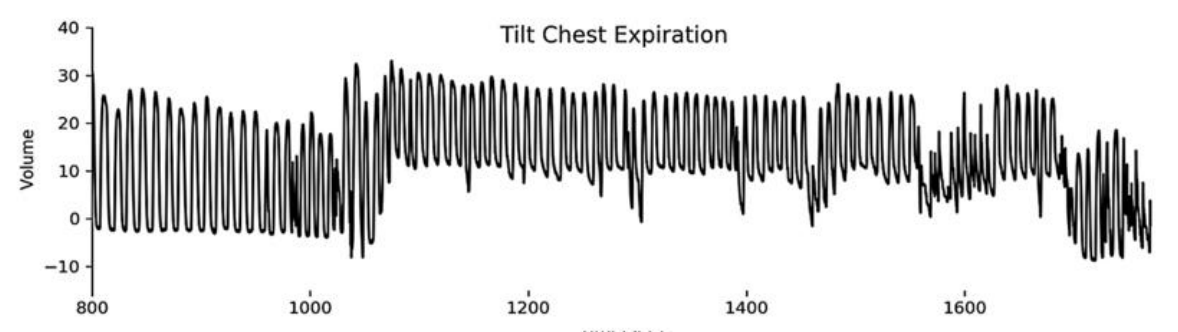
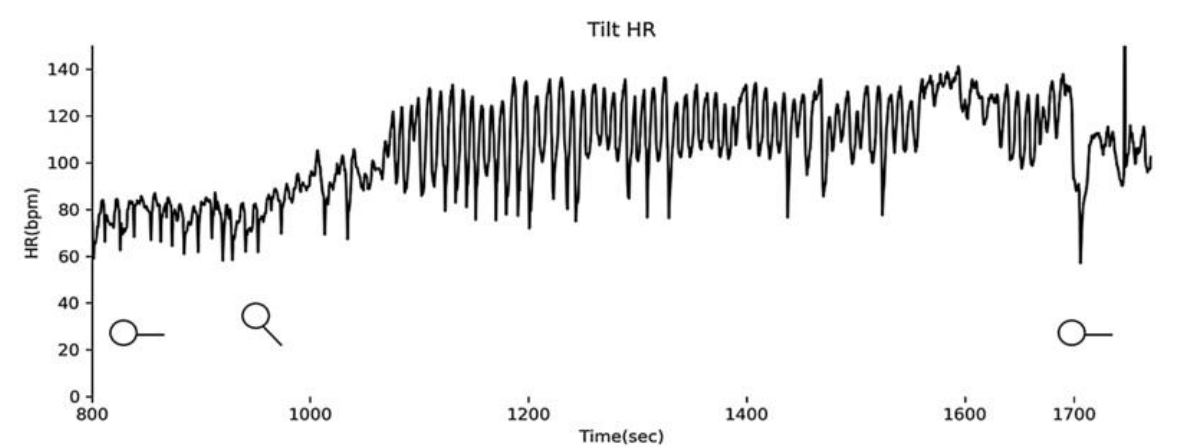
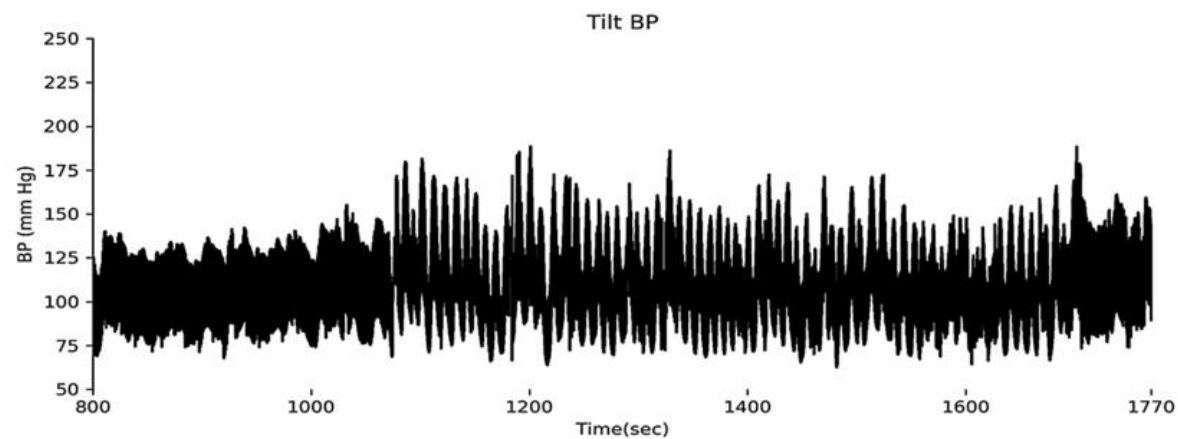
¹ Maladies Infectieuses, Hôpital Universitaire Raymond-Poincaré, APHP, Garches, France

² Maladies Infectieuses, Hôpital Universitaire Pitié Salpêtrière, APHP, Paris, France

Case 1

A 26-year-old Emergency Department nurse developed a mild cough and shortness of breath on day 1. Neg SARS-CoV-2 nasal swab on day 3. Developed chest pains and burning sensation on inhalation, palpitations, and tachycardia with minimal exertion on day 7. Began to awaken at night with tachycardia. Developed orthostatic intolerance and progressive fatigue over the next several days, cough worsened. On day 10 presented to the ED, +SARS-CoV-2 nasal swab. + COVID IgM/IgG Abs.

Over next 1-2 weeks developed episodic orthostatic hypertension to 150/110 mmHg with tachycardia 160 bpm. Her typical resting BP was 110/60 mmHg.



Tilt Table Testing
~ 6 mo. Post-COVID

Supine BP 130/80 HR 77

Upright BP max 160
HR 142

(65 bpm increase)

Postural Tachycardia Syndrome (POTS)

- POTS is characterized by a **sustained** heart rate increment of **at least 30 beats/minute within 10 min of standing or head-up tilt in the absence of orthostatic hypotension.**
- The standing heart rate for all subjects is often greater than 120 beats/minute.
- For individuals aged 12–19 years the required increment is at least 40 beats/minute.
- Accompanied by symptoms of orthostatic intolerance.
- >6 month symptom duration

POTS: associated symptoms

- **Fatigue**- most patients' chief complaint; many describe more fatigue than sleepiness, insomnia common
- **Gastrointestinal**- nausea, bloating, early satiety, constipation, diarrhea, motility disorders
- **Urinary**- Increased frequency, urgency, incontinence, many dx with interstitial cystitis
- **Pain**- many pt's dx with fibromyalgia, small fiber neuropathy, hypermobile Ehlers-Danlos syndrome
- **Migraine**- extremely common (up to 90%)
- **Cognitive**- "brain fog"
- **Psychiatric**- anxiety, "hyperarousal," panic attacks
- **Sleep**- insomnia
- **Allergic**- Skin flushing, hives, dermatographia, food and drug allergies (mast cell)

Themes from case reports on post-COVID dysautonomia (n = 4)

- All women (3/4 <40 y/o)
- All patients developed autonomic symptoms >2-3 weeks after initial para-infectious symptoms of COVID-19
- Mild to moderate initial symptoms
- Prominent cognitive impairment (brain fog), headaches, fatigue, orthostatic intolerance, sx of hyperadrenergic state and mast cell activation
- Pain syndrome may be present, suggestive of SFN



Stanford/Stony Brook Long Haul COVID Study



- Online survey study
- Post-COVID symptoms, including autonomic, MCAS, SFN symptoms
- COVID-19 status self reported
- Control cohort of confirmed Stanford COVID-19 survivors
- Participants reassessed at 3, 6, 12 months
- 1800 participants thus far

Potential mechanisms: Post-COVID syndrome

- Persistent cardiac or pulmonary injury
- Deconditioning
- Direct neuroinvasion of brain or brainstem
- Damage of peripheral nerves
- Indirect neuronal injury and glial activation
- Persistent autoimmune inflammatory response
- Mast cell activation

Future Directions

- Establish patient registries with open access to de-identified data
- Longitudinal studies assessing symptoms and objective markers of ANS and cognitive function
- Greater understanding of immunological markers that may suggest increased susceptibility
- Creation of Post-COVID care centers for long-term care of patients



COVID Recover Program Overview

UT Southwestern Medical Center
Physical Medicine & Rehabilitation

Kathleen Bell, MD

January 16th, 2021

COVID RECOVER

An individualized outpatient rehabilitation program
for patients recovering from COVID-19 infection



1. Refer your patient for an in-person or virtual care consultation through EPIC with COVID RECOVER in the comments, or call 214-645-2080 (Dallas) or 469-914-9187 (Frisco).
2. Patients will receive a comprehensive PM&R and cognitive evaluation.
3. Treatment may include referrals for reconditioning and strengthening, counseling, group psycho-education therapy, and cognitive therapy.

Two locations: one main campus in city, one in northern suburbs

Videos: English and Spanish

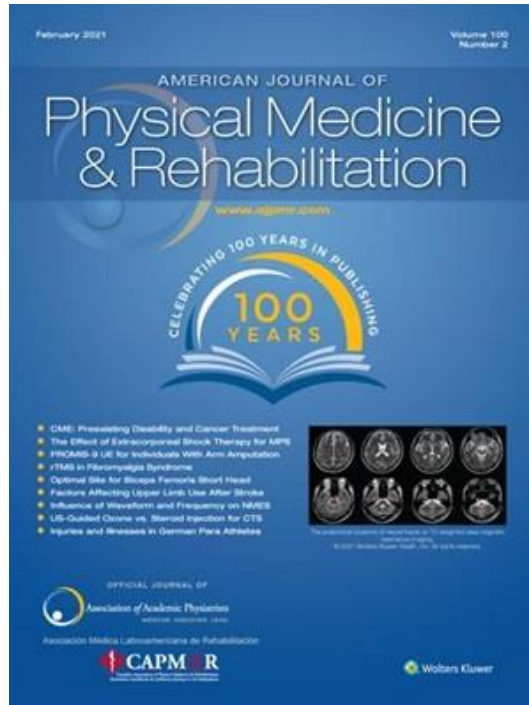
Exercise Brochures:

Used many of the components existing for concussion clinic (persisting symptoms after concussion)

- cognitive impairment
- dizziness
- anxiety/depression

Adapted to knowledge from complex medical discharges (sepsis, prolonged intubation/hospitalization, critical care myopathy/critical care neuropathy)

- muscle deconditioning/sarcopenia
- cardiopulmonary deconditioning
- neuropathies
- delirium and cognitive fog
- autonomic deconditioning
- weight loss/malnutrition
- anxiety/PTSD



COVID-19 Guide for the Rehabilitation Clinician: A Review of Non-Pulmonary Manifestations and Complications
Marielisa Lopez, MD,¹ Kathleen Bell, MD,¹ Thiru Annaswamy, MD,^{1,2} Shannon Juengst, PhD,¹ and Nneka Ifejika, MD¹

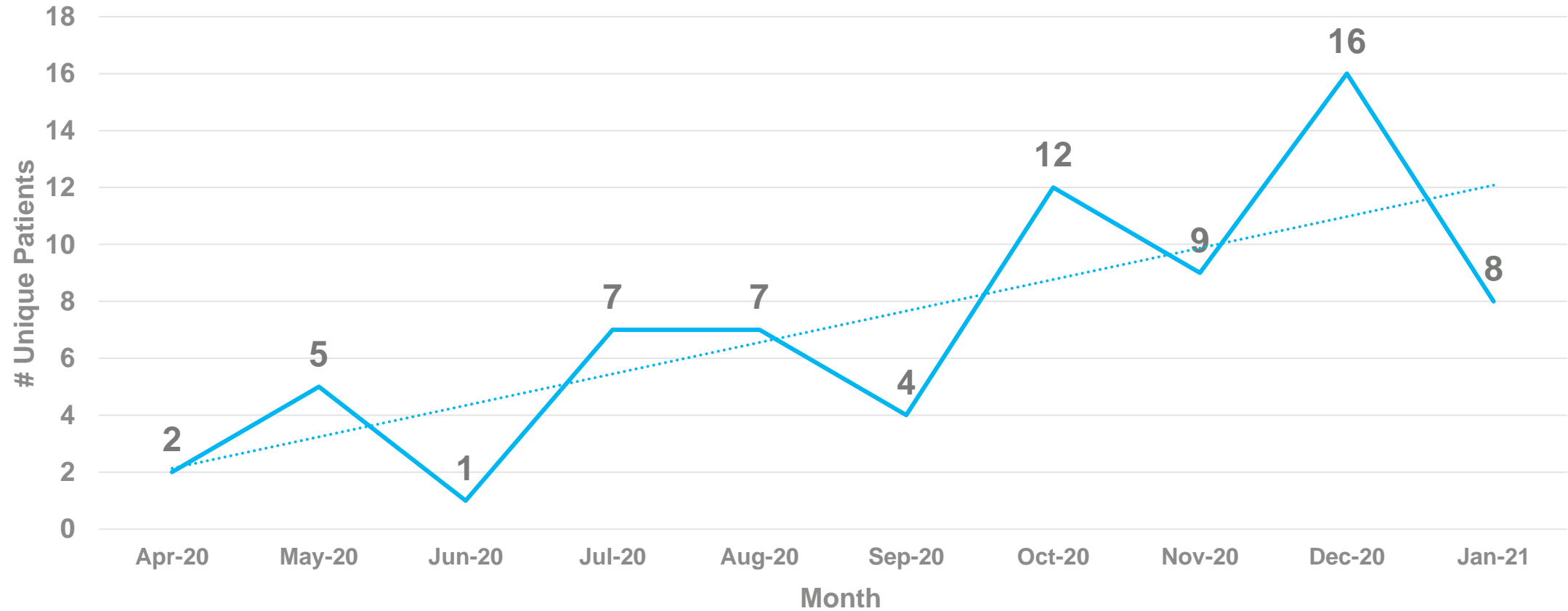
Published online 2020 May 26. American Journal of Physical Medicine & Rehabilitation: August 2020 - Volume 99 - Issue 8 - p 669-673 doi: 10.1097/PHM.0000000000001479

Data Overview

- All data ranges are from April 2020-January 8th, 2021
- COVID Recover visit types created January 12th, 2021
 - COVID Recover-New
 - COVID Recover-Est
 - COVID Recover-Telehealth New
 - COVID Recover-Telehealth Est
- Questionnaires assigned to visit types:
 - Satisfaction With Life Scale
 - GAD-7
 - PHQ-9
 - PTSD Screener
 - COMPASS-31 (new)

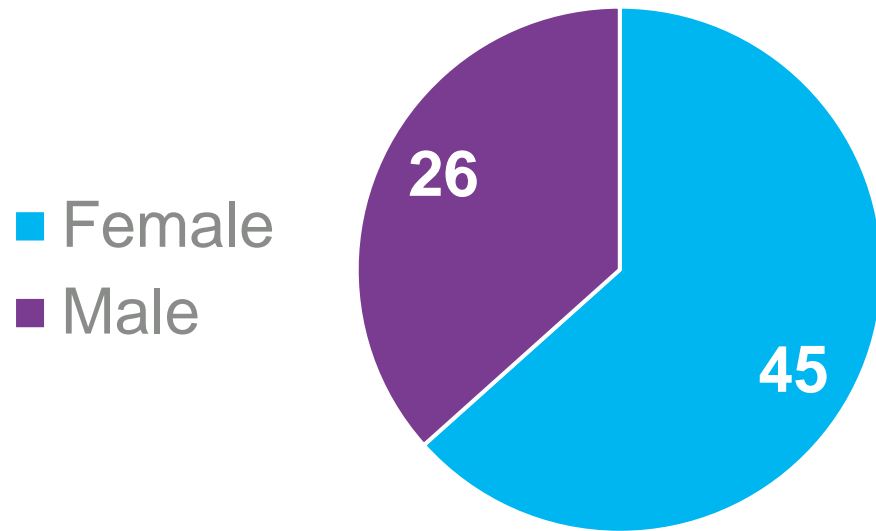
UTSW COVID Recovery-Unique Patient Volume

April 2020-January 8th, 2021

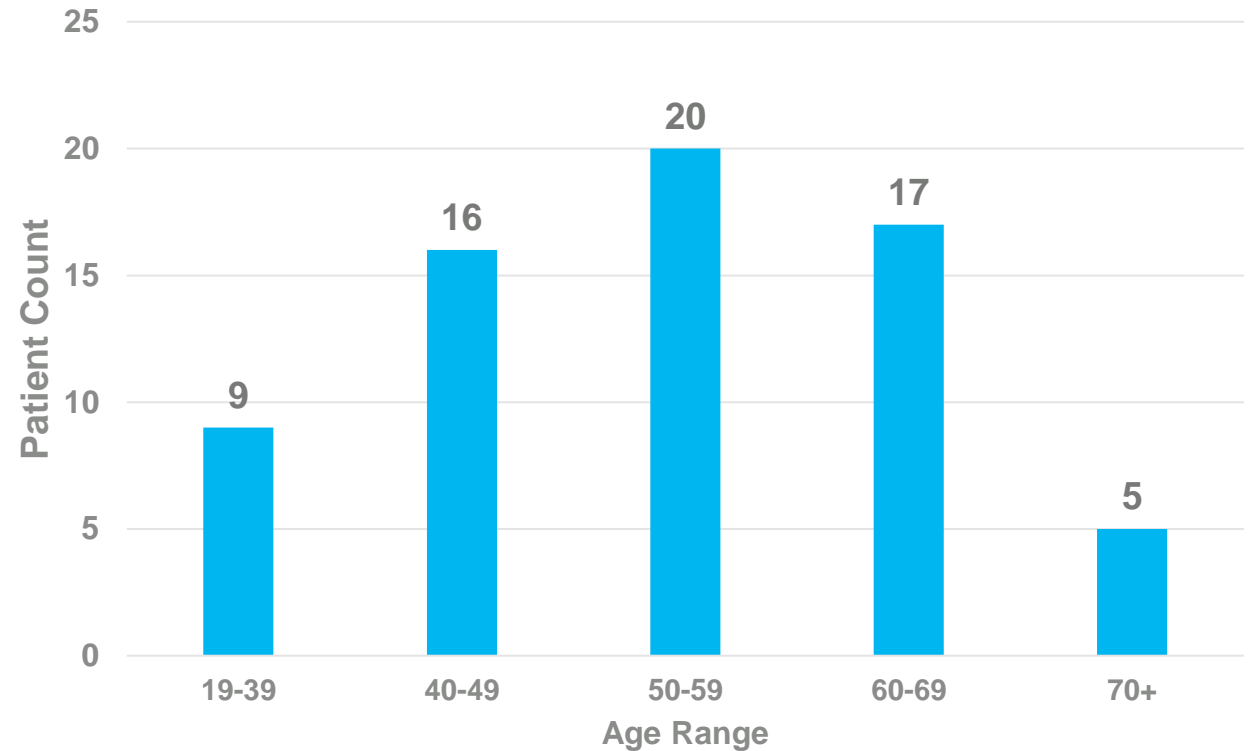


COVID Recover-Patient Demographics

Gender

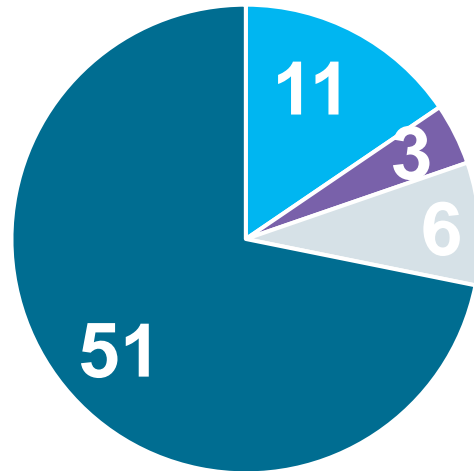


Age Range



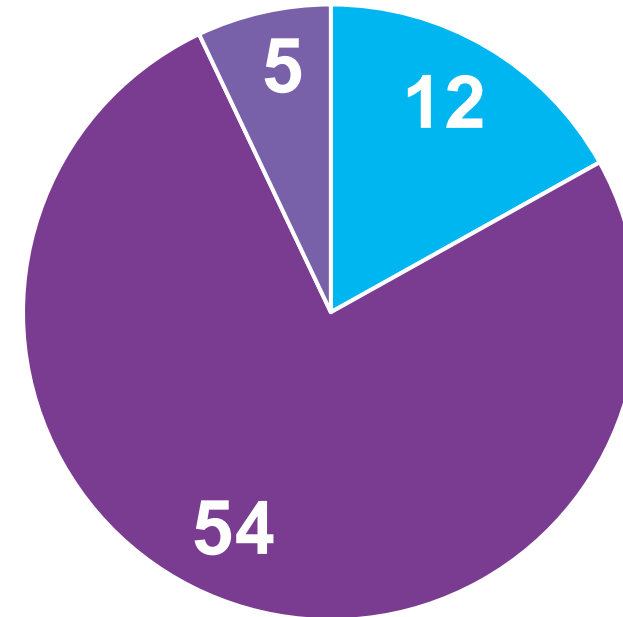
COVID Recover-Patient Demographics

Race



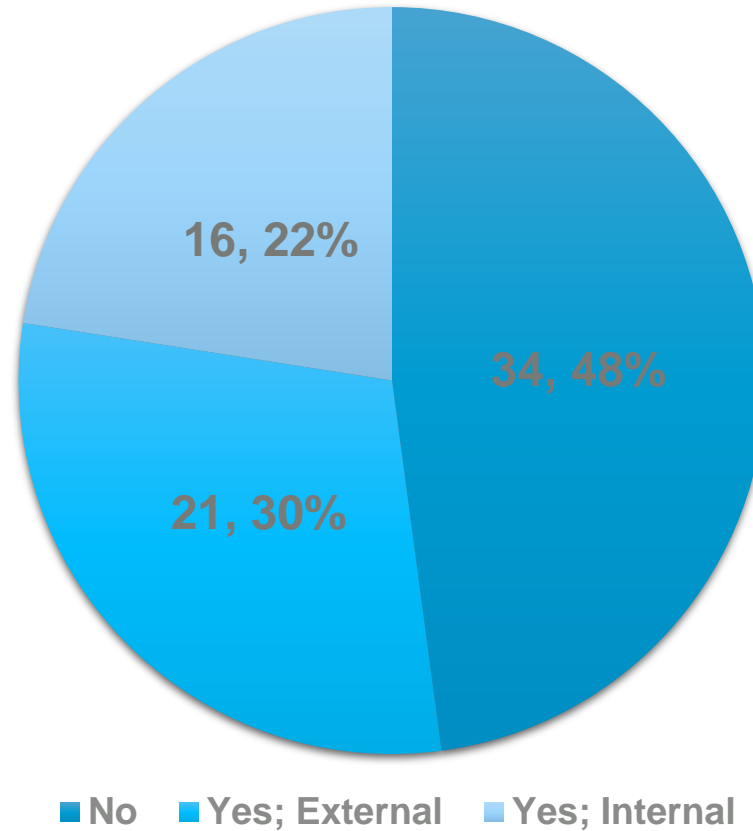
- Black or African American
- Other
- Unknown
- White

Ethnicity

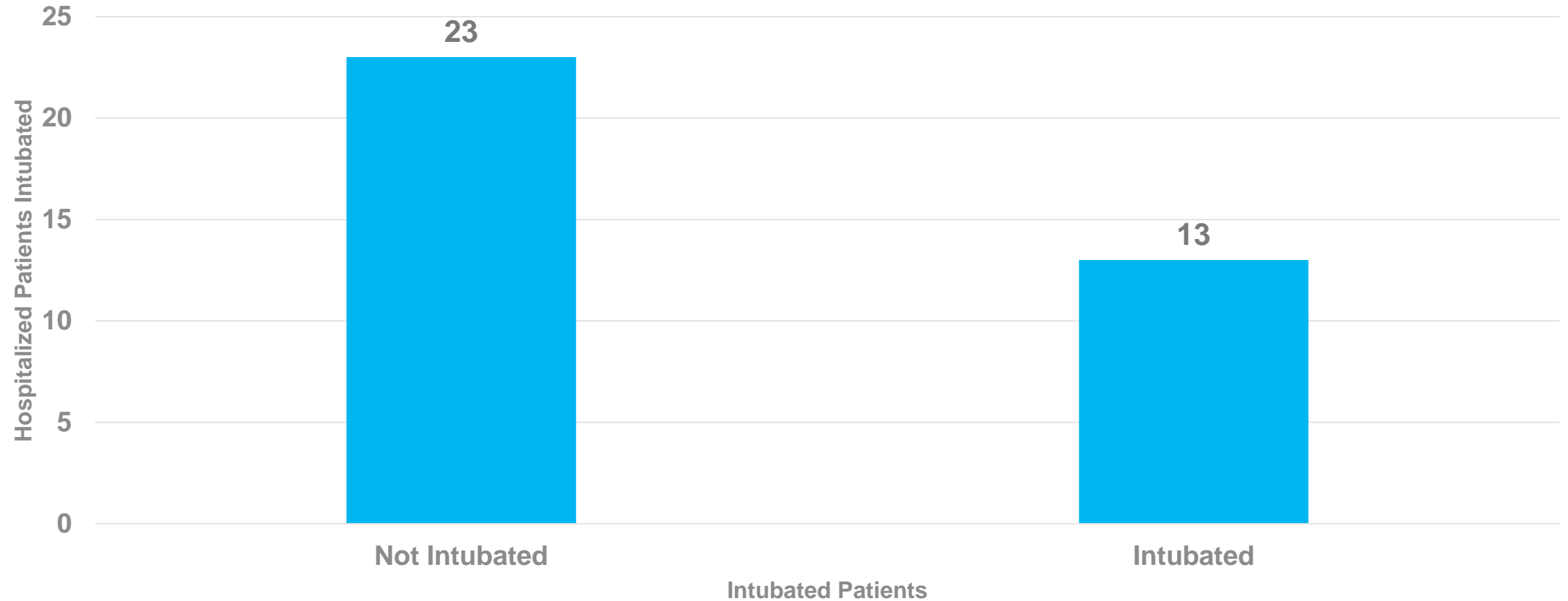


- Hispanic or Latino
- Non-Hispanic/Latino
- Unknown

UTSW COVID Recover Patients Hospitalized Due To COVID-19



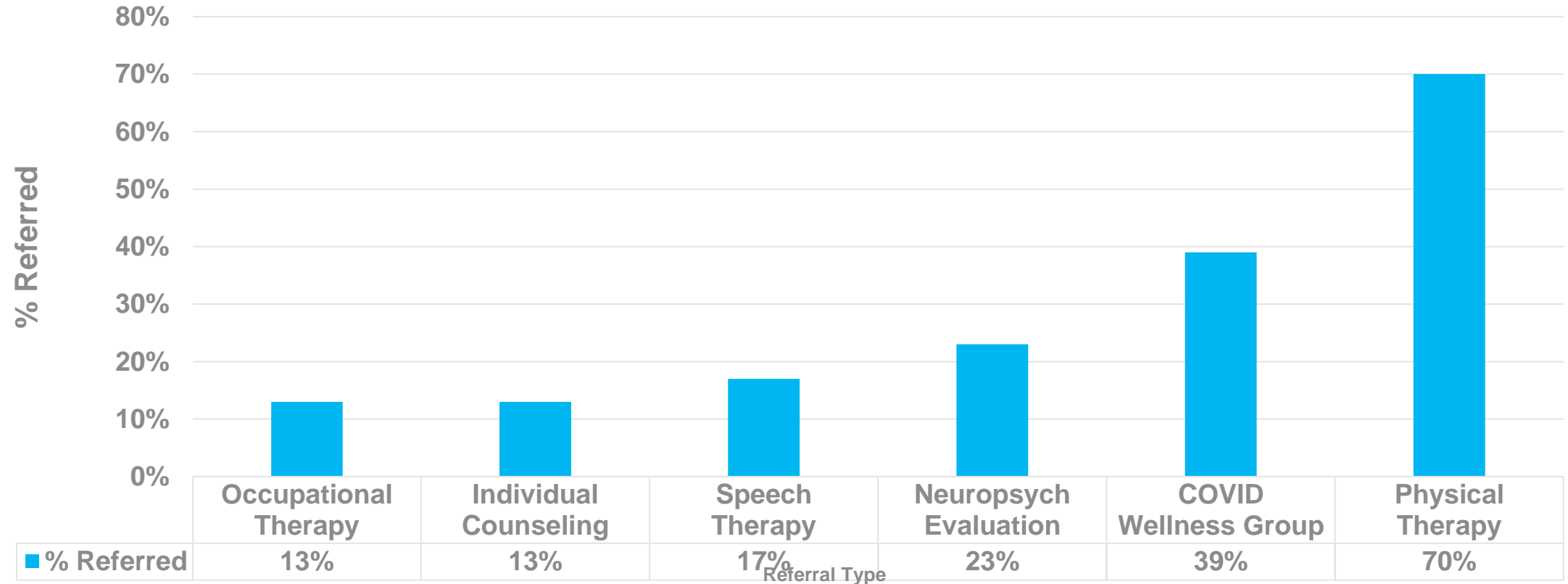
COVID Recover Hospitalized Patients Intubated



Components of COVID RECOVER Program

- Medical Evaluation: functional oxygenation, orthostasis, neuropathy, anxiety/depression/PTSD, link with IM (pulmonary, ID), referrals
 - Physical Therapy: strengthening, balance, conditioning, pacing
 - Occupational Therapy: activities of daily living
 - Neuropsychology: cognitive screen/neuropsychological examination
 - Licensed counselor/VRC: counseling re anxiety/depression, CBT-I, Return to Work/School
 - Speech Therapy: cognitive rehabilitation and strategies
- COVID RECOVER Wellness Group: virtual education/self-management group, weekly for 4 weeks
 - Sleep/Rest and Recovery
 - Exercise and Recovery
 - Brain Health and Recovery
 - Life/Community and Recovery

% COVID Recover Patients Referred to Subspecialty



The RECOVERY Program at Yale

CDC/IDSA COVID-19 Clinician Call
January 16th, 2021.

Denyse Lutchmansingh, MD

Assistant Professor, Section of Pulmonary, Critical care and Sleep Medicine

Associate Director, Winchester Chest Clinic

Associate Director, Post COVID Recovery Program



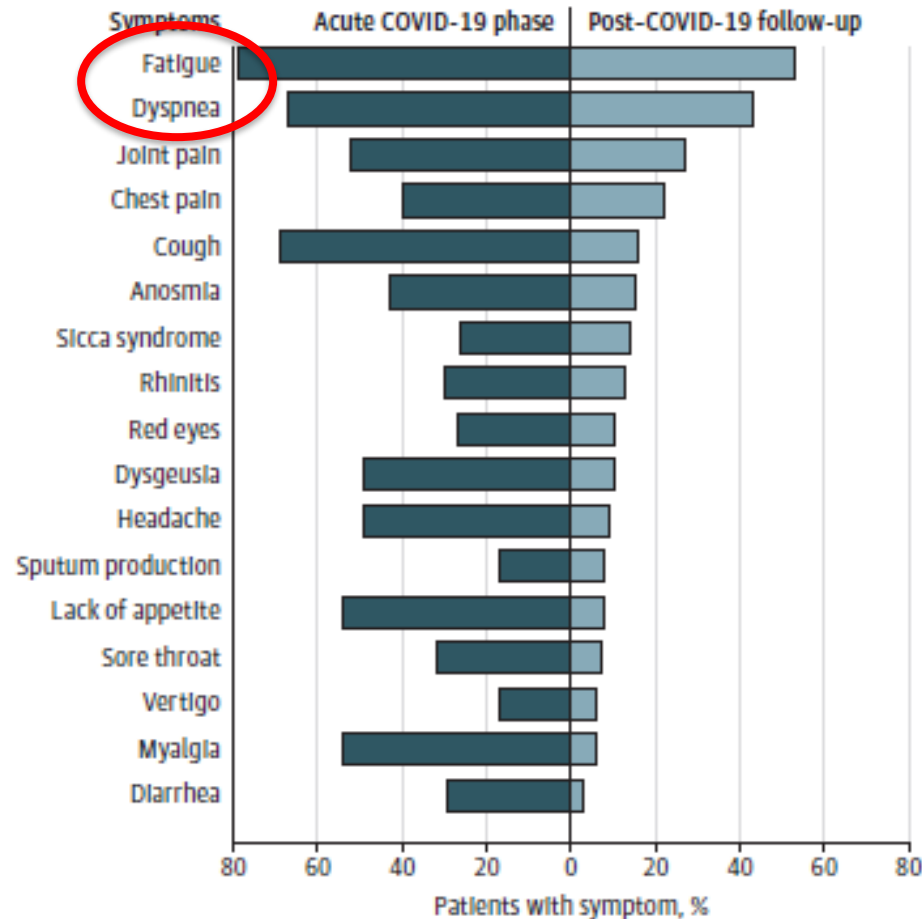
‘Nobody has very clear answers for them’: Doctors search for treatments for covid-19 long-haulers



Edison Chiluisa undergoes testing with respiratory care practitioner Shelly Mattei as part of the Post-Covid-19 Recovery Program at Yale New Haven Hospital's Winchester Chest Clinic. (Stan Godlewski for The Washington Post)

Post-COVID-19 symptoms are common and diverse, with respiratory symptoms a frequent feature

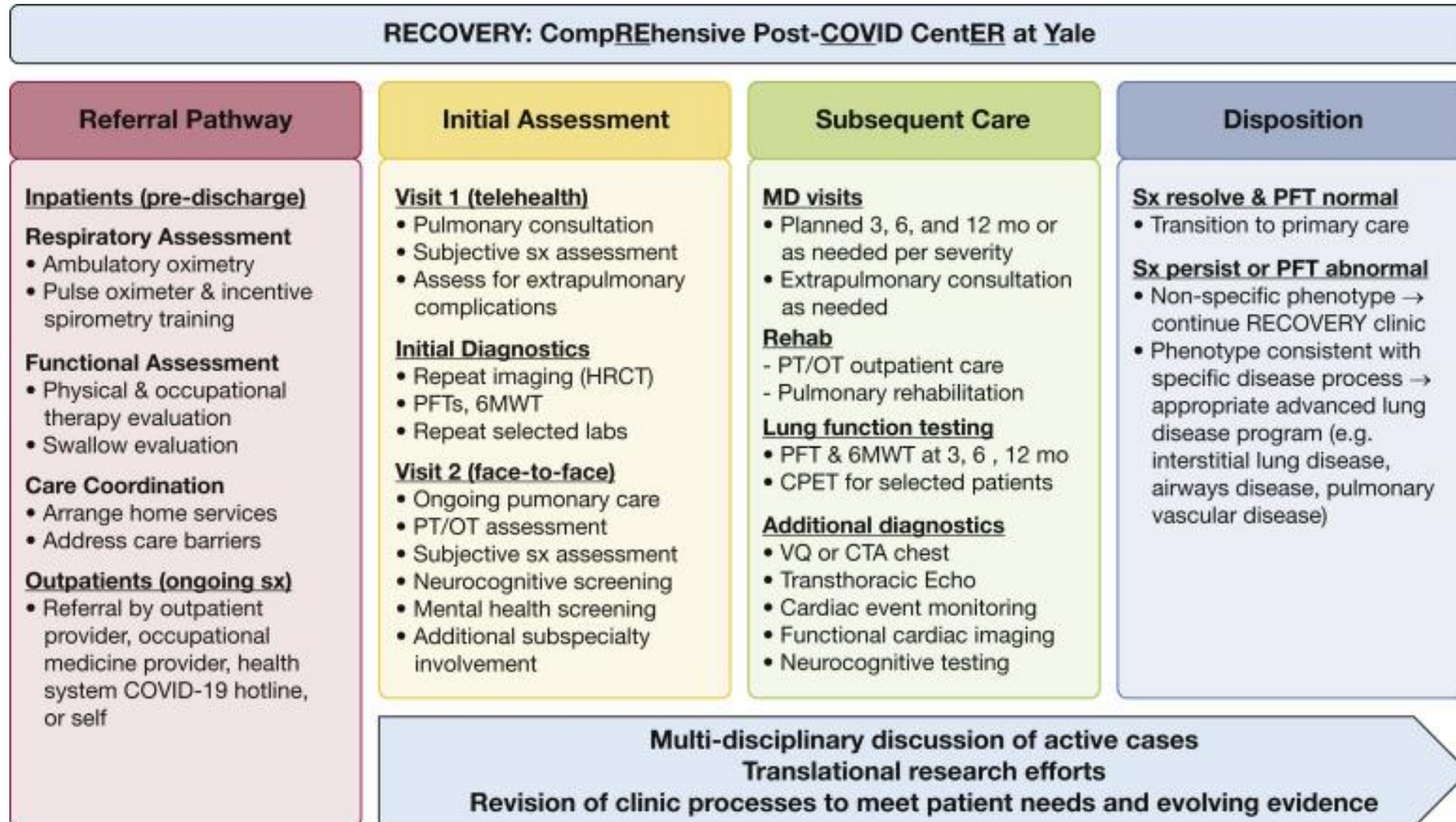
Figure. COVID-19-Related Symptoms



RECOVERY Program at Yale

- Launched June 2020
- Standardized approach to evaluation and care for patients with persistent symptoms > 6 weeks after initial infection
- Multidisciplinary Team
 - Pulmonary
 - Cardiology
 - Neurology
 - ENT
 - Rheumatology
 - Physical Therapy
 - Psychiatry
 - Social Work
 - Pharmacists

Our initial clinical model:



Modified Medical Research Council (mMRC) Dyspnea Scale

	mMRC Grade
I only get breathless with strenuous exercise	0
I get short of breath when hurrying on the level or walking up a slight hill	1
I walk slower than people of the same age on the level because of breathlessness, or I have to stop for breath when walking on my own pace on the level	2
I stop for breath after walking about 100 meters or after a few minutes on the level	3
I am too breathless to leave the house or I am breathless when dressing or undressing	4

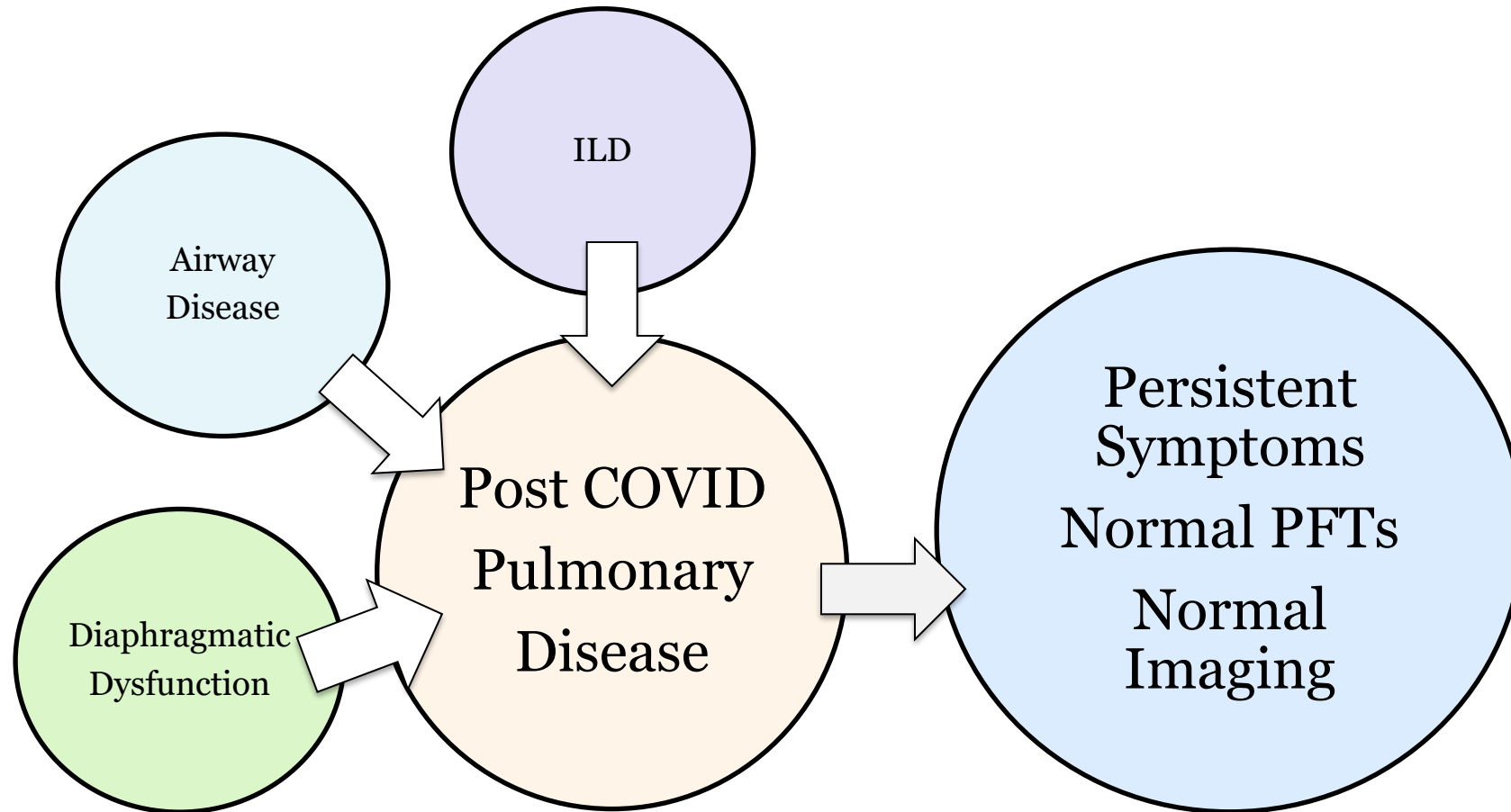
Stenton C. *Occup Med (Lond)*. 2008;58:226-227.

Score	Daytime
0	No Cough
1	Transient cough occasionally
2	Frequent Cough mildly affecting daily life
3	Frequent Cough severely affecting daily life

Score	NightTime
0	No Cough
1	Transient Cough before sleep or occasional cough at night
2	Cough mildly affecting night sleep
3	Cough Severely affecting night sleep

	Please respond to each item by marking <u>one box per row</u>	Excellent	Very good	Good	Fair	Poor							
Global 01	In general, would you say your health is:	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
Global 02	In general, would you say your quality of life is:	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
Global 03	In general, how would you rate your physical health?	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
Global 04	In general, how would you rate your mental health, including your mood and your ability to think?	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
Global 05	In general, how would you rate your satisfaction with your social activities and relationships?	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
Global 09	In general, please rate how well you carry out your usual social activities and roles. (This includes activities at home, at work and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.)	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
		Completely	Mostly	Moderately	A Little	Not At All							
Global 06	To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
	In the past 7 days	Never	Rarely	Sometimes	Often	Always							
Global 10	How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
		None	Mild	Moderate	Severe	Very Severe							
Global 08	How would you rate your fatigue on average?	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1							
Global 07	How would you rate your pain on average?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10	
		No Pain		Worst Imaginable Pain									
Scoring:													
Re-code Global07. The recoded score ranges from 1 to 5. (0 No pain =5; 1, 2, or 3 =4; 4, 5, or 6 =3; 7, 8, or 9 =2; 10 worst pain imaginable =1)													
After recoding, the Global Physical Health score = SUM responses to G03 + G06 + G07 + G08. Global Mental Health score = SUM G02 + G04 + G05 + Global10.													

Variable Pulmonary Phenotypes



Many Questions.....Few Answers

Learning while Treating

- “Subjective/objective mismatch” is common but symptoms are debilitating for patients.
- Partnership with PT has been essential, but what is the ideal rehab structure for this population?
- Social work heavily utilized and very effective
- Many are essential workers so consider early referral to Occupational medicine in those with ongoing symptoms.
- Most people slowly improving – therefore supportive interventions may be more high value than serial diagnostics

Thank you

- Yale School of Medicine, Dept of Internal Medicine, and Section of Pulmonary, Critical Care and Sleep Medicine
- Yale-New Haven Hospital
- Winchester Chest Clinic Post-COVID-19 Recovery Program team
 - ✓ Jennifer Possick
 - ✓ Lauren Ferrante
 - ✓ Clemente Britto-Leon
 - ✓ Jean Paul Higuero-Sevilla
 - ✓ Isabel Bazan
 - ✓ Heather Shanahan, RN
 - ✓ Catherine Rives
 - ✓ Vikki Winks
- Collaborators across YSM/YNHH and at other institutions

“Ask the Vaccine Expert”

Kathleen Dooling, MD, MPH

Co-Lead for the COVID-19 Work Group of
the Advisory Committee on Immunization
Practices (ACIP)

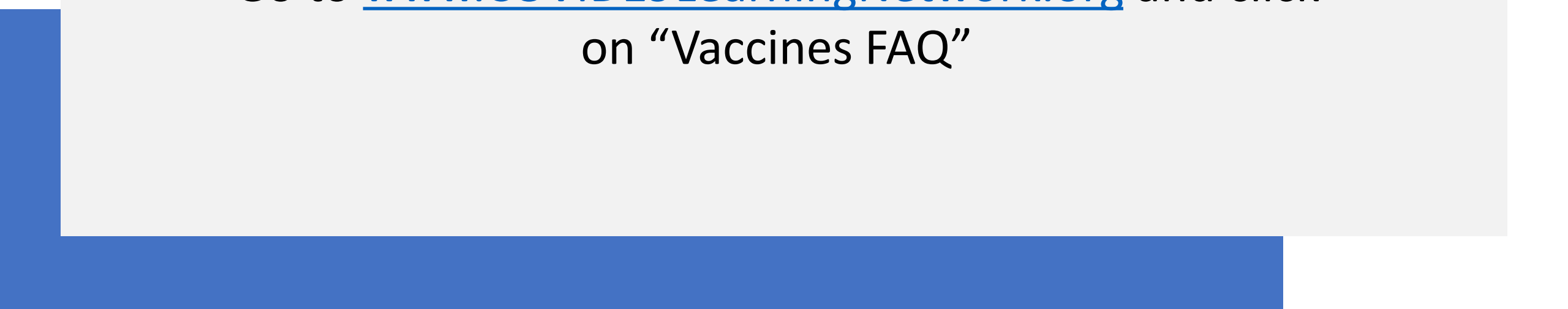
Centers for Disease Control and Prevention





Now Available: COVID-19 Vaccine FAQs

Go to www.COVID19LearningNetwork.org and click
on “Vaccines FAQ”



Continue the
conversation on Twitter

@RealTimeCOVID19
#RealTimeCOVID19



We want to hear from you! Please complete
the post-call survey.

Next Call: **Saturday, January 23rd**

A recording of this call will be posted at
www.idsociety.org/cliniciancalls
-- library of all past calls now available --

Contact Us:

Dana Wollins (dwollins@idsociety.org)

Deirdre Lewis (dlewis@idsociety.org)