

**THE LIVE BROADCAST WILL
BEGIN SHORTLY...**

**Leavitt Partners Future Frame Series:
The Emergence of Long-COVID
and Key Implications**

May 6, 2021

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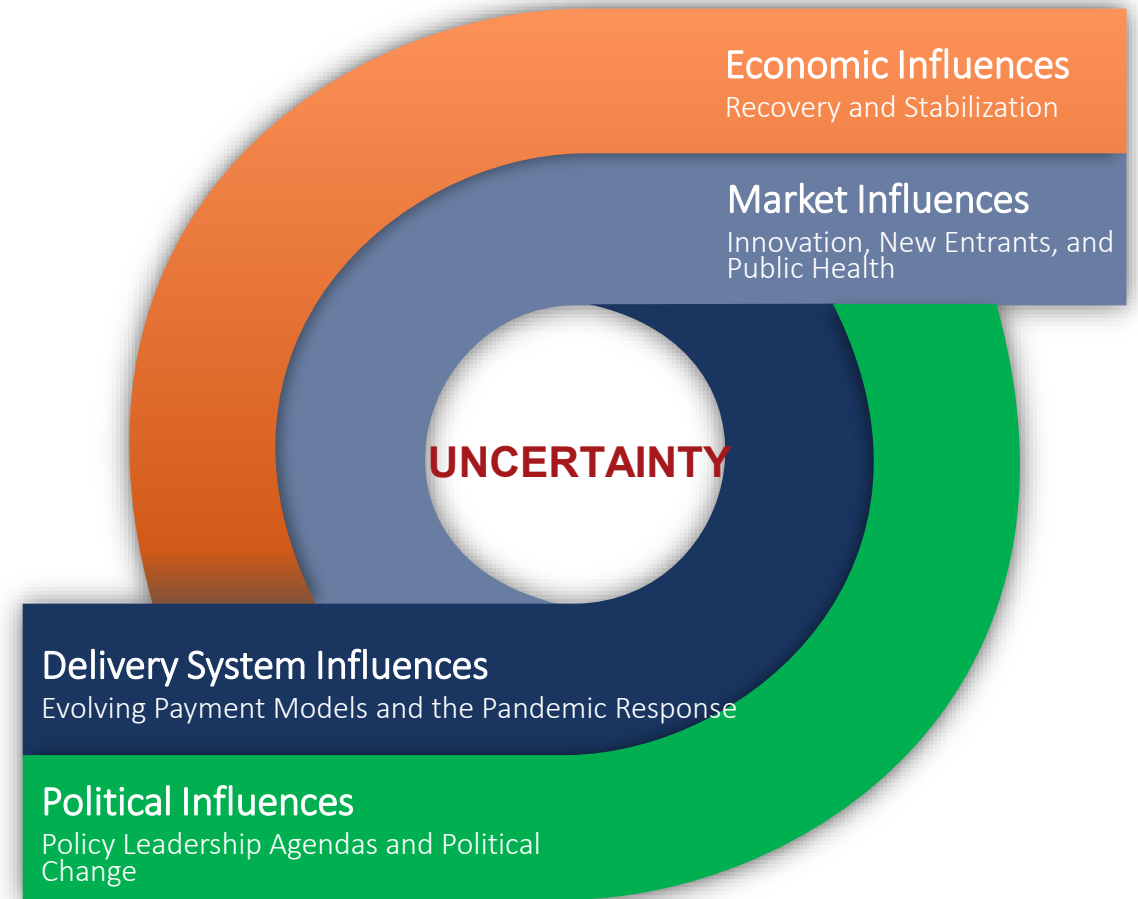




Leavitt Partners Future Frame Series: Opportunities to Grow and Succeed in the Evolving Healthcare Landscape

The **Leavitt Partners Future Frame Series** seeks to make sense of the uncertainty facing the healthcare industry.

We provide a holistic view of economic, market, delivery system, and political influences impacting healthcare.





The Emergence of Long-COVID and Key Implications



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COVID-19: Operational Clinical Definitions

- **Acute COVID-19:**
Signs and symptoms of COVID-19 for up to 4 weeks.
- **Ongoing symptomatic COVID-19:**
Signs and symptoms of COVID-19 from 4 to 12 weeks.
- **Post-COVID-19 syndrome:**
Signs and symptoms that develop during or after an infection consistent with COVID-19, continue for more than 12 weeks and are not explained by an alternative diagnosis.

“Long-COVID” is commonly used to describe signs and symptoms that continue or develop after acute COVID-19. It includes both ongoing symptomatic COVID-19 and post-COVID-19 syndrome (defined above).

NICE guideline Published: 18 December 2020 www.nice.org.uk/guidance/ng188



A Rose by Any other Name....

Post-acute sequelae of SARS-CoV-2 infection (PASC)

Post-acute sequelae of COVID-19

Chronic COVID Syndrome (CCS)

Long-haul COVID

Long-Covid



Lack of Common Case Definition Impedes

“A key challenge to treating long COVID is the absence of a universally recognised case definition, including pathological correlates. It is not known whether long COVID is a novel and distinct syndrome, or multiple, partly overlapping syndromes presenting alone or in combination, and how much of this syndrome is accounted for by post-intensive care syndrome (seen after intensive care admission for non-COVID-19 illness), post-viral fatigue syndrome, or post-traumatic stress disorder.”

A.L. Kondratiuk, et al.

Lancet Infect Dis 2021 (online April 22, 2021)

Diversity of Long-COVID Symptoms

Acute Complications of COVID-19

Neuropsychiatric

- Cerebrovascular accident
- Large vessel disease
- Encephalopathy, delirium
- Anosmia, ageusia

Respiratory

- Pneumonia
- Hypoxemic respiratory failure, ARDS

Cardiovascular

- Arrhythmia
- Myocarditis

Hematologic, Vascular

- Coagulopathy
- Thrombotic events

Renal

- Acute kidney injury

Gastrointestinal, Hepatobiliary

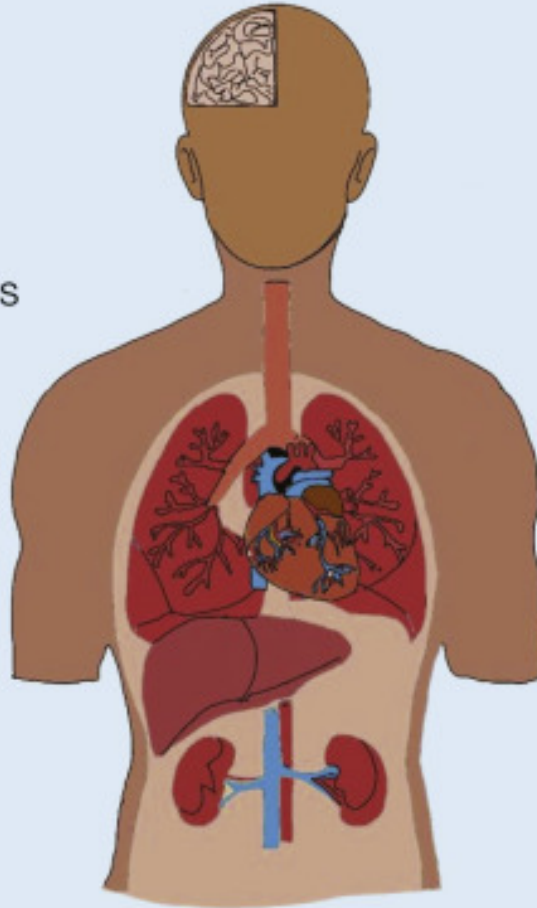
- Diarrhea
- Acute liver injury

Musculoskeletal

- Rhabdomyolysis

Dermatologic

- Livedo reticularis
- Maculopapular or urticarial rash



Post-COVID Symptoms, Sequelae

Neuropsychiatric

- Neurocognitive deficits
- Mood changes
- Sensory & motor deficits
- Chronic fatigue and sleep disruption

Respiratory

- Persistent dyspnea
- Chronic cough

Cardiovascular

- Chest pain
- Palpitations

Hematologic, Vascular

- Persistent or recurrent thrombosis

Renal

- Chronic kidney disease

Gastrointestinal, Hepatobiliary

- Persistent liver dysfunction

Musculoskeletal

- Muscle wasting
- Weakness
- Deconditioning

Dermatologic

- Hair loss

Lutchmansingh et al.
CHEST 2021; 159(3):949-958



Long-COVID in Health Care Workers with Mild COVID-19

Of seropositive health care workers with mild COVID-19:

26% Reported at least **1 moderate to severe symptom** lasting for at least 2 months (RR, 2.9 [95% CI, 2.2-3.8])

- The most common moderate to severe symptoms lasting for at least 2 months in the seropositive group were anosmia, fatigue, ageusia, and dyspnea.

15% Reported at least **1 moderate to severe symptom** lasting for at least 8 months

15% Reported their long-term symptoms moderately to markedly **disrupted their social life**

12% Reported that their long-term symptoms moderately to markedly **disrupted their home life**

8% Reported that their long-term symptoms moderately to markedly **disrupted their work life**

Havervall, et al.

JAMA Published online April 7, 2021



Neurological and Psychiatric Outcomes

Among 236,379 patients diagnosed with COVID-19

33.62%

Estimated incidence of a neurological or psychiatric diagnosis in the following 6 months

46.42%

Estimated incidence of a neurological or psychiatric diagnosis for patients who had been admitted to an ITU

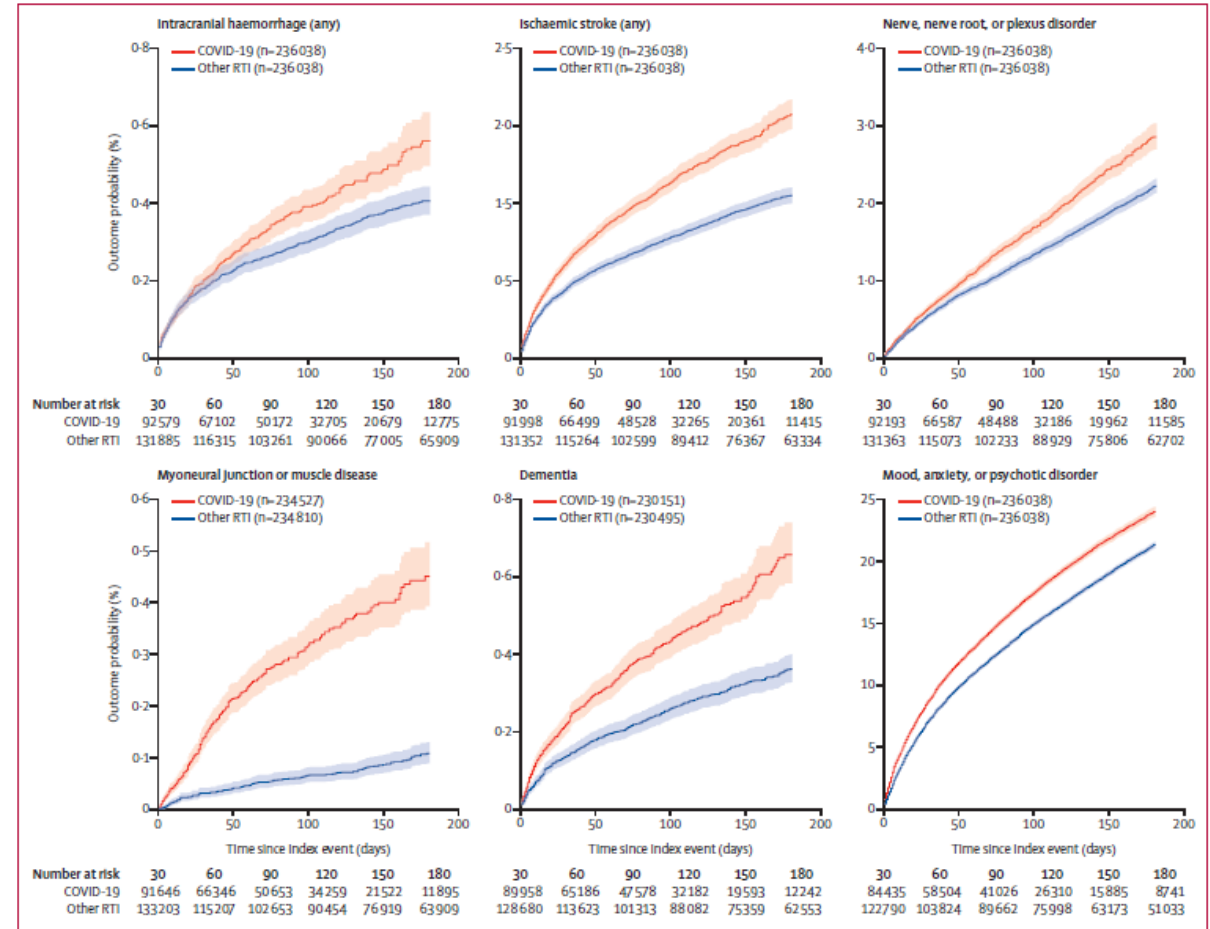


Figure 1: Kaplan-Meier estimates for the incidence of major outcomes after COVID-19 compared with other RTIs. Shaded areas are 95% CIs. For incidences of first diagnoses, the number in brackets corresponds to all patients who did not have the outcome before the follow-up period. For diagnostic subcategories, see appendix (pp 8-10). RTI=respiratory tract infection.

Taquet, et al.
Lancet Psychiatry, 2021

LP Long-COVID: Implications for the United States

Pandemic USA

31% Estimated Americans have been infected¹ → 100 million

Using JAMA Health Care Worker and Lancet Neurological Studies, Long-Covid in mildly symptomatic or asymptomatic could be:

5% will have moderate-severe symptoms > 8 months → 15 million

33% will have a neuro or psychiatric diagnosis at 6 months → 33 million

8% will have work disruption → 8 million

12-15% will have disrupted home or social life → 12-15 million

Tip of the Iceberg?

A large number of COVID-19 survivors have no current symptoms, but have proven organ damage by sensitive medical testing

1. Institute for Health Metrics and Evaluation April 2021 COVID Briefing Update http://www.healthdata.org/sites/default/files/files/Projects/COVID/2021/102_briefing_United_States_of_America_15.pdf



COVID Patient Recovery Alliance

COVID19PatientRecovery.org

- Focus populations
- Alliance approaches to solutions
- Up-to-date information on activities, including data findings and policy positions
- Catalogue of long-COVID research and news articles
- Backgrounders on long-COVID and return to work, variants, vaccines, and healthcare coverage
- Current membership
- Membership inquiries

Alliance Partners

- Ambitna
- Arcadia
- Atrium Health
- Duke Clinical Research Institute
- Duke-Margolis Center for Health Policy
- Health Catalyst
- Health Rosetta
- HCA Healthcare
- Intermountain Healthcare
- Johns Hopkins Medicine
- One Call
- Survivor Corps