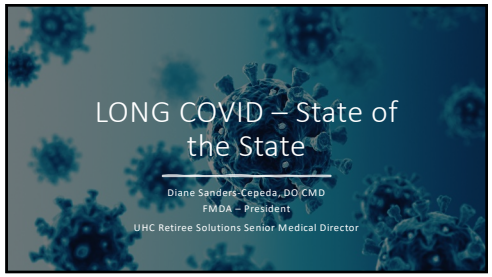
1

Long COVID Summit Agenda

2

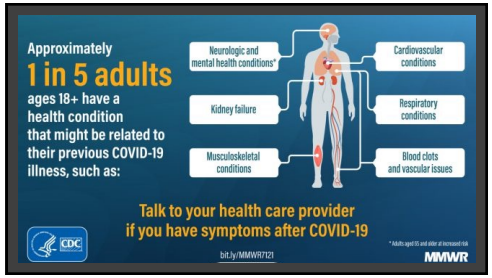


3

Speaker's Disclosure

Dr. Sanders-Cepeda - UnitedHealthcare Full – time Employee

4



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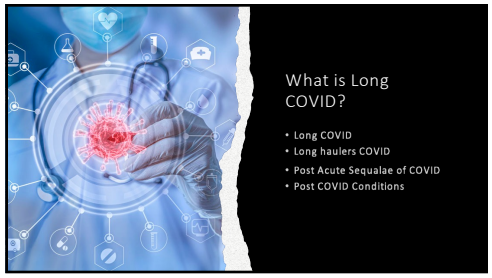

6

World Health Organization

Health Topics | Countries | Newsroom | Emergencies | Data

Home / Publications / Overview / A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021

A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021

6 October 2021 | COVID-19: Clinical care

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Post Acute Sequlae of COVID (PASC) WHO definition

- History of probable or confirmed COVID - 19 infection
- Symptoms 3 months from the onset of COVID
- Lasting for at least 2 months
- Symptoms that cannot be explained by an alternative diagnosis

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COVID-19: Lasting impact

Even those survivors with mild initial cases can have wide-ranging health issues for six months or more.

WashU researchers link many diseases with COVID-19, signaling long-term complications for patients and a massive health burden for years to come.

- **Cardiovascular** acute coronary disease, heart failure, palpitations, arrythmias
- **Respiratory system** cough, shortness of breath, low blood oxygen
- **Kidney** acute kidney injury, chronic kidney disease
- **Musculoskeletal** joint pain, muscle weakness
- **General** malaise, fatigue, anemia
- **Mental health** anxiety, depression, sleep problems, substance abuse
- **Nervous system** stroke, headaches, memory problems, smell problems
- **Metabolic/ endocrine** obesity, diabetes, high cholesterol
- **Gastrointestinal** constipation, diarrhea, acid reflux
- **Skin disorders** hair loss, rash
- **Coagulation disorders** blood clots

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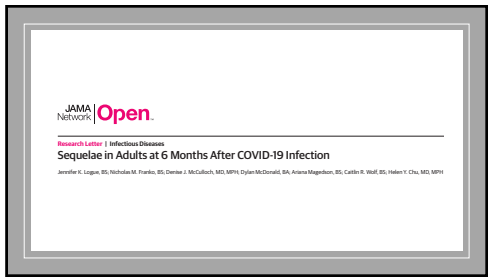

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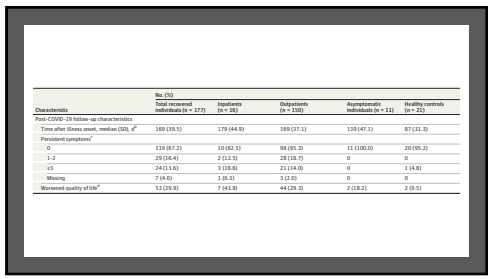

Characteristic	No. (%)				
	Total recovered individuals (n = 177)	Inpatients (n = 16)	Outpatients (n = 150)	Asymptomatic individuals (n = 11)	Healthy controls (n = 21)
Post-COVID-19 follow-up characteristics					
Time after illness onset, median (SD), d[a]	169 (16.5)	179 (44.9)	169 (17.1)	159 (47.1)	87 (31.3)
Persistent symptoms[b]					
0	119 (67.2)	10 (62.5)	98 (65.3)	11 (100.0)	20 (95.2)
1-2	29 (16.4)	2 (12.5)	28 (18.7)	0	0
≥3	24 (13.6)	3 (18.8)	21 (14.0)	0	1 (4.8)
Missing	7 (4.0)	1 (6.3)	3 (2.0)	0	0
Worsened quality of life[c]	53 (29.9)	7 (43.8)	44 (29.3)	2 (18.2)	2 (9.5)

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aapm&r

American Academy of Physical Medicine and Rehabilitation

MARCH 18, 2021 NEWS RELEASE

President Biden And Congress Urged to Prepare and Implement National Crisis Management Plan to Address Needs of Millions Suffering from Long COVID

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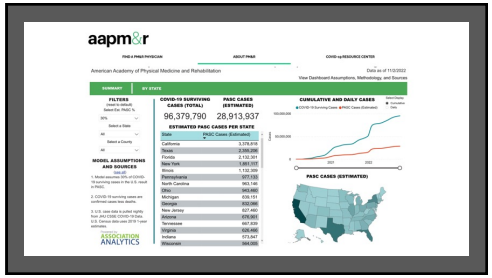

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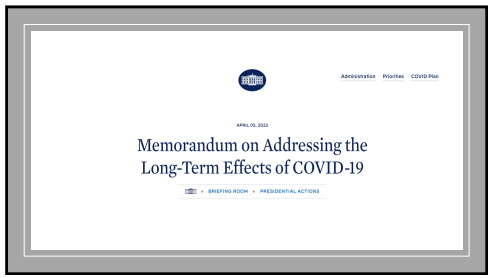
15


Administration Priorities COVID Plan
APRIL 05, 2022
Memorandum on Addressing the Long-Term Effects of COVID-19
BRIEFING ROOM › PRESIDENTIAL ACTIONS

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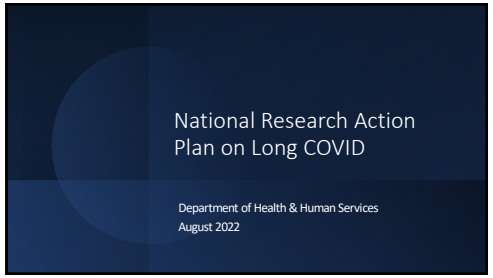
National Research Action Plan on Long COVID
Department of Health & Human Services
August 2022

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Priorities align across Seven Research Areas
1. Characterizing the Full Clinical Spectrum of Long COVID and Diagnostic Strategies
2. Pathophysiology
3. Surveillance and Epidemiology
4. Long COVID and Overall Well-Being
5. Therapeutics and other Health interventions
6. Human Services, Supports, and Interventions
7. Health Services and Health Economics Research

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Research
Moving
Forward…

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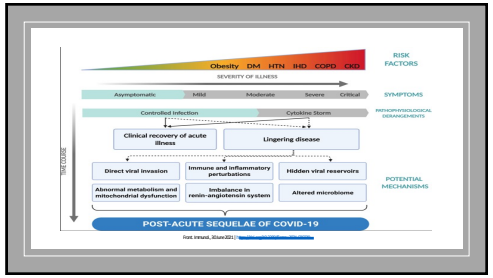
Obesity DM HTN IHD COPD CKD
RISK FACTORS
SEVERITY OF ILLNESS
Asymptomatic Mild Moderate Severe Critical
SYMPTOMS
Controlled Infection
Cytokine Storm
PATHOPHYSIOLOGICAL DERANGEMENTS
TIME COURSE
Clinical recovery of acute illness
Lingering disease
Direct viral invasion
Immune and inflammatory perturbations
Hidden viral reservoirs
Abnormal metabolism and mitochondrial dysfunction
Imbalance in renin-angiotensin system
Altered microbiome
POTENTIAL MECHANISMS
POST-ACUTE SEQUELAE OF COVID-19

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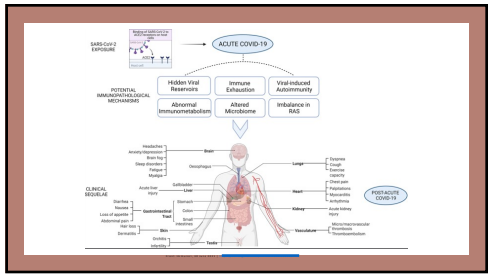
SARS-CoV-2 EXPOSURE
ACUTE COVID-19
POTENTIAL IMMUNOPATHOLOGICAL MECHANISMS
Hidden Viral Reservoirs
Immune Exhaustion
Viral-Induced Autoimmunity
Abnormal Immunometabolism
Altered Microbiome
Imbalance in RAS
CLINICAL SEQUELAE
POST-ACUTE COVID-19

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RECOVER
RECOVER: Researching COVID to Enhance Recovery
The National Institutes of Health (NIH) created the RECOVER Initiative to learn about the long-term effects of COVID.
Everyone can join the search for answers to Long COVID. Whether or not you have had COVID, you may be able to participate in RECOVER research.
FIND A STUDY SITE NEAR YOU
RECOVER research aims to understand how people recover from a COVID infection, and why some people do not fully recover and develop Long COVID or PASC (post-acute sequelae of SARS-CoV-2). Long COVID is when people have symptoms weeks or months after they first had COVID.

22


RECOVER
Researching COVID to Enhance Recovery
RECOVER program takes first steps in advancing toward clinical trials to better understand Long COVID

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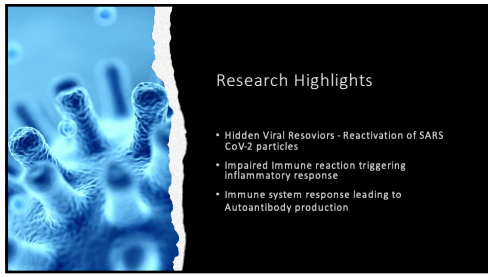
Research Highlights
• Hidden Viral Resoviors - Reactivation of SARS CoV-2 particles
• Impaired Immune reaction triggering inflammatory response
• Immune system response leading to Autoantibody production

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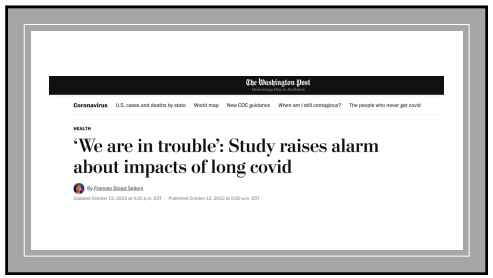

The Washington Post

Coronavirus U.S. cases and deaths by state World map New CDC guidance When am I still contagious? The people who never get covid

HEALTH

'We are in trouble': Study raises alarm about impacts of long covid

By Frances Stead Sellers

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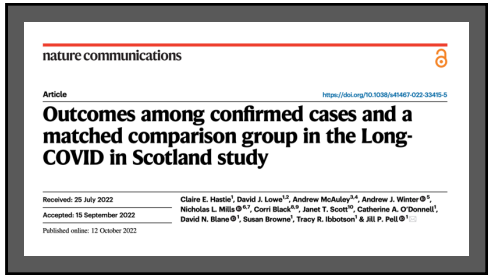


nature communications

Article

https://doi.org/10.1038/s41467-022-33415-5

Outcomes among confirmed cases and a matched comparison group in the Long-COVID in Scotland study

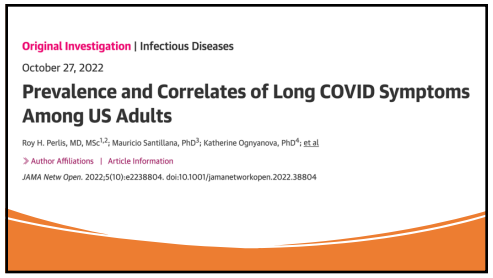
Received: 25 July 2022

Accepted: 15 September 2022

Published online: 12 October 2022

Claire E. Hastie[1], David J. Lowe[1,2], Andrew McAuley[3,4], Andrew J. Winter[5], Nicholas L. Mills[6,7], Corri Black[8,9], Janet T. Scott[10], Catherine A. O'Donnell[1], David N. Blane[1], Susan Browne[1], Tracy R. Ibbotson[1] & Jill P. Pell[1]

26



Original Investigation | Infectious Diseases

October 27, 2022

Prevalence and Correlates of Long COVID Symptoms Among US Adults

Roy H. Perlis, MD, MSc[1,2]; Mauricio Santillana, PhD[3]; Katherine Ognyanova, PhD[4]; et al

Author Affiliations | Article Information

JAMA Netw Open. 2022;5(10):e2238804. doi:10.1001/jamanetworkopen.2022.38804

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Key Findings – JAMA LONG COVID Prevalence Study 10-2022

Sociodemographic features

- Age > 40 and female gender– higher prevelance
- Urban environment and Higher level of education – lower prevalence

Most Common Lingering Symptoms

- Fatigue
- Loss of Smell
- Brain Fog
- Shortness of Breath

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Managing Long COVID

Post-COVID Clinics

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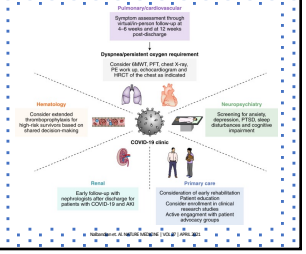
Post COVID Clinic Model



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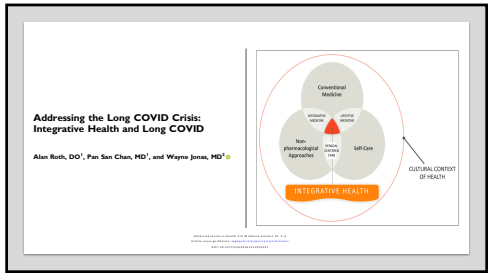
Addressing the Long COVID Crisis: Integrative Health and Long COVID
Alan Roth, DO[1], Pan San Chan, MD[1], and Wayne Jonas, MD[2]
Conventional Medicine
Non-pharmacological Approaches
Self-Care
INTEGRATIVE HEALTH
CULTURAL CONTEXT OF HEALTH

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Thinking about treatment

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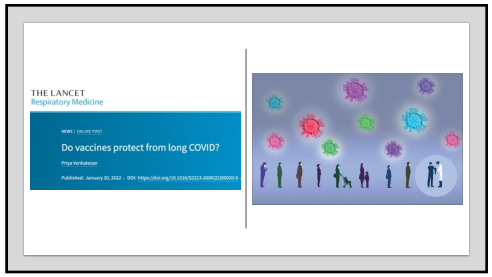
THE LANCET
Respiratory Medicine
Do vaccines protect from long COVID?
Priya Venkatesan

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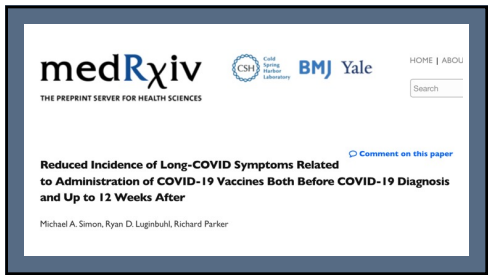
medRxiv
THE PREPRINT SERVER FOR HEALTH SCIENCES
BMJ Yale
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Search
Comment on this paper
Reduced Incidence of Long-COVID Symptoms Related to Administration of COVID-19 Vaccines Both Before COVID-19 Diagnosis and Up to 12 Weeks After
Michael A. Simon, Ryan D. Luginbuhl, Richard Parker

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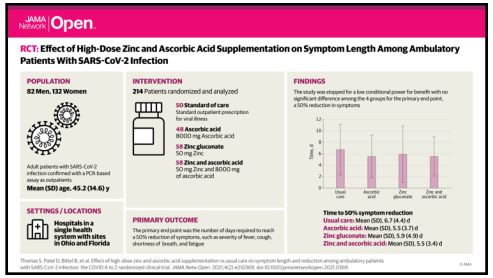
JAMA Network Open
RCT: Effect of High-Dose Zinc and Ascorbic Acid Supplementation on Symptom Length Among Ambulatory Patients With SARS-CoV-2 Infection
POPULATION
82 Men, 132 Women
Adult patients with SARS-CoV-2 infection confirmed with a PCR based assay as outpatients
Mean (SD) age, 45.2 (14.6) y
INTERVENTION
214 Patients randomized and analyzed
50 Standard of care
Standard outpatient prescription for viral illness
48 Ascorbic acid
8000 mg Ascorbic acid
58 Zinc gluconate
50 mg Zinc
58 Zinc and ascorbic acid
50 mg Zinc and 8000 mg of ascorbic acid
FINDINGS
The study was stopped for a low conditional power for benefit with no significant difference among the 4 groups for the primary end point, a 50% reduction in symptoms
Time to 50% symptom reduction
Usual care: Mean (SD), 6.7 (4.4) d
Ascorbic acid: Mean (SD), 5.5 (3.7) d
Zinc gluconate: Mean (SD), 5.9 (4.9) d
Zinc and ascorbic acid: Mean (SD), 5.5 (3.4) d
SETTINGS / LOCATIONS
Hospitals in a single health system with sites in Ohio and Florida
PRIMARY OUTCOME
The primary end point was the number of days required to reach a 50% reduction of symptoms, such as severity of fever, cough, shortness of breath, and fatigue

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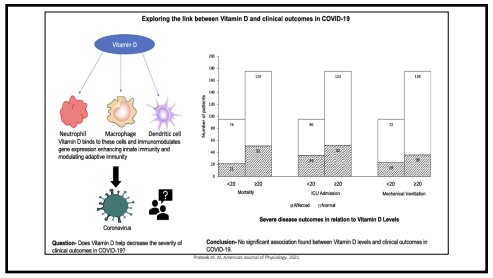
Exploring the link between Vitamin D and clinical outcomes in COVID-19
Vitamin D
Neutrophil
Macrophage
Dendritic cell
Vitamin D binds to these cells and immunomodulates gene expression enhancing innate immunity and modulating adaptive immunity
Coronavirus
Question- Does Vitamin D help decrease the severity of clinical outcomes in COVID-19?
Number of patients
Mortality
ICU Admission
Mechanical Ventilation
Affected
Normal
Severe disease outcomes in relation to Vitamin D Levels
Conclusion- No significant association found between Vitamin D levels and clinical outcomes in COVID-19.

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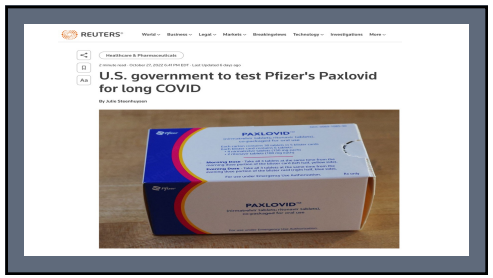
REUTERS
U.S. government to test Pfizer's Paxlovid for long COVID
PAXLOVID
PAXLOVID

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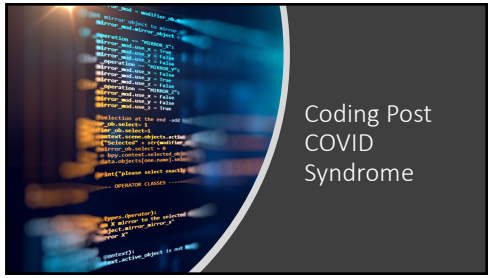
Coding Post COVID Syndrome

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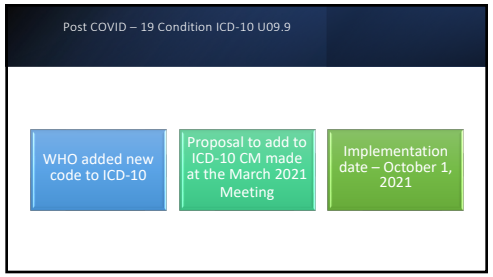
Post COVID – 19 Condition ICD-10 U09.9
WHO added new code to ICD-10
Proposal to add to ICD-10 CM made at the March 2021 Meeting
Implementation date – October 1, 2021

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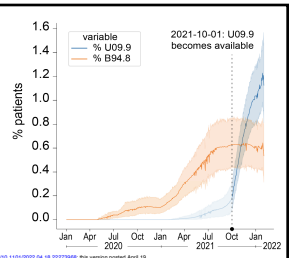
Transitioning to U09.9

- B94.8 - Sequelae of other specified infectious and parasitic diseases
- U09.9 – Post COVID Conditions



https://doi.org/10.1101/2022.04.18.22273468; this version posted April 19, 2022

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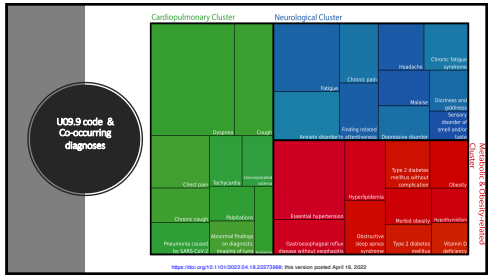

https://doi.org/10.1101/2022.04.18.22273468; this version posted April 19, 2022

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POST COVID Syndrome Symptoms

- **Fatigue**
- **Difficulty thinking or concentrating**
  - *sometimes referred to as "brain fog"*
- **Difficulty breathing**
  - *with and without abnormal imaging and pulmonary function testing*
- **Cough**
- **Painful joints** or **muscles**
- **Chest pain**
- **Depression** or **anxiety**
- **Headache**
- **Fever**
- **Palpitations**
- **Loss of smell** or **taste**
- **Dizziness on standing**
- *Rashes*
- *Hair Loss*
- *Lesions on Toes " COVID TOES"*

Code presenting symptom first, then code Post COVID condition

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Example: Coding Post COVID Condition

Add **U09 Post COVID-19 condition**

Add **U09.9 Post COVID-19 condition, unspecified**

Add **Note:** This code enables establishment of a link with COVID-19.
Add This code is not to be used in cases that are still presenting with active COVID-19.
However, an exception is made in cases of re-infection with COVID-19, occurring with a condition related to prior COVID-19.
Post-acute sequela of COVID-19

Add **Code first** the specific condition related to COVID-19 if known, such as:
Add chronic respiratory failure (J96.1-)
Add loss of smell (R43.8)
Add loss of taste (R43.8)
Add multisystem inflammatory syndrome (M35.81)
Add pulmonary embolism (I26.-)
Add pulmonary fibrosis (J84.10)

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Example: Coding Post COVID Condition

CODE The Presenting Condition first

Patient with Fatigue 2 months after COVID infection

You will code R53.8 first

Then add Post COVID Condition code

Then, You will code U09.9

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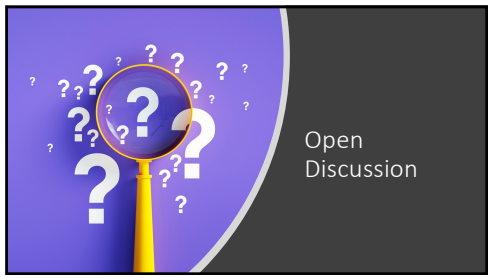

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