



# Evaluating and Caring for Patients with Post-COVID Conditions

Clinician Outreach and Communication Activity (COCA) Webinar

Thursday, June 17, 2021

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# Objectives

At the conclusion of today's session, the participant will be able to accomplish the following—

- Describe the symptoms and conditions associated with post-COVID conditions.
- Determine which clinical assessments and tests are needed for a patient, while reducing burden from excessive testing and medical encounters.
- Describe the medical home approach and how it can be used to optimize patient care.

# To Ask a Question

- Using the Zoom Webinar System
  - Click on the “Q&A” button
  - Type your question in the “Q&A” box
  - Submit your question
- If you are a patient, please refer your question to your healthcare provider.
- If you are a member of the media, please direct your questions to CDC Media Relations at 404-639-3286 or email [media@cdc.gov](mailto:media@cdc.gov).

# Today's Presenters

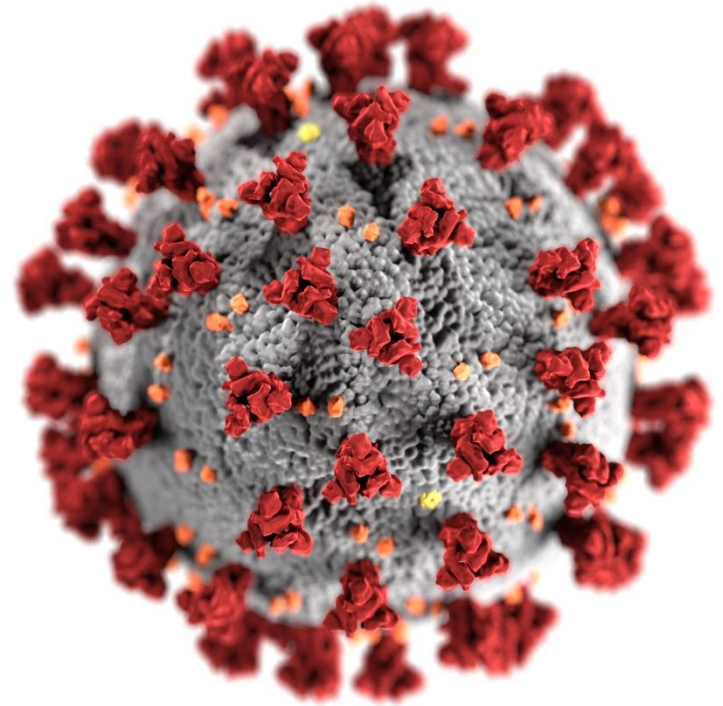
- **Jennifer R. Chevinsky, MD, MPH**  
Epidemic Intelligence Service Officer  
Post-COVID-19 Conditions Unit  
COVID-19 Response  
Centers for Disease Control and Prevention
- **Alex Vosooney, MD [No Slides]**  
Chair, Subcommittee on Clinical Recommendations and Policies  
American Academy of Family Physicians
- **Michael Saag, MD [No Slides]**  
Professor of Medicine  
Director, UAB Center for AIDS Research  
University of Alabama Birmingham

# Evaluating and Caring for Patients with Post-COVID Conditions

Jennifer Chevinsky, MD, MPH

June 17, 2021

Clinician Outreach and Communication Activity  
COCA Call



[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

# Interim Guidance for Healthcare Professionals

Interim guidance was informed by individual expert opinion, large medical organizations, and patient groups.

- Background
- General considerations
- Suggested workup
- Management
- Clinical and public health recommendations
- Future directions



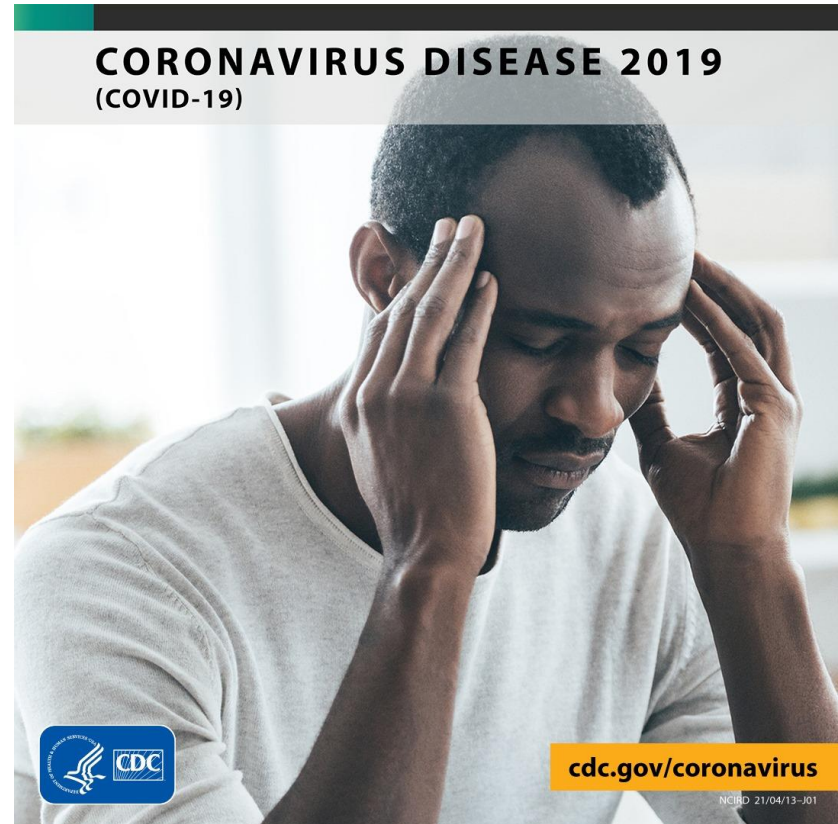


# Background



# Post-COVID Conditions is an umbrella term

- “**Post-COVID conditions**” is an umbrella term for the wide range of physical and mental health consequences experienced by some patients that are present four or more weeks after SARS-CoV-2 infection, including by patients who had initial mild or asymptomatic acute infection.



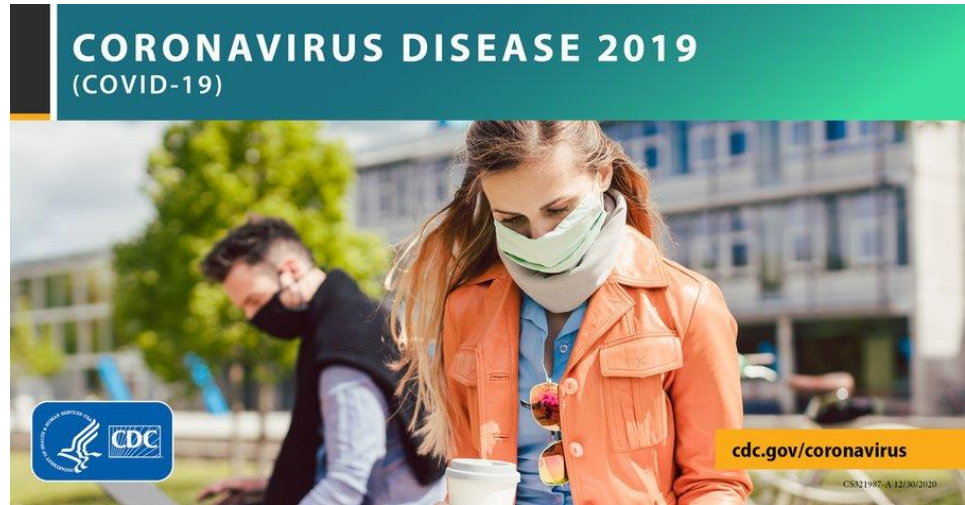
# Post-COVID conditions are heterogenous

- Several patterns have been identified
  - Persistent symptoms
  - New-onset late sequelae
  - Evolution of symptoms/conditions
- Attributable to different underlying pathophysiologic processes
- Presentation could be complicated by a number of factors
- May share similarities with other post-viral conditions

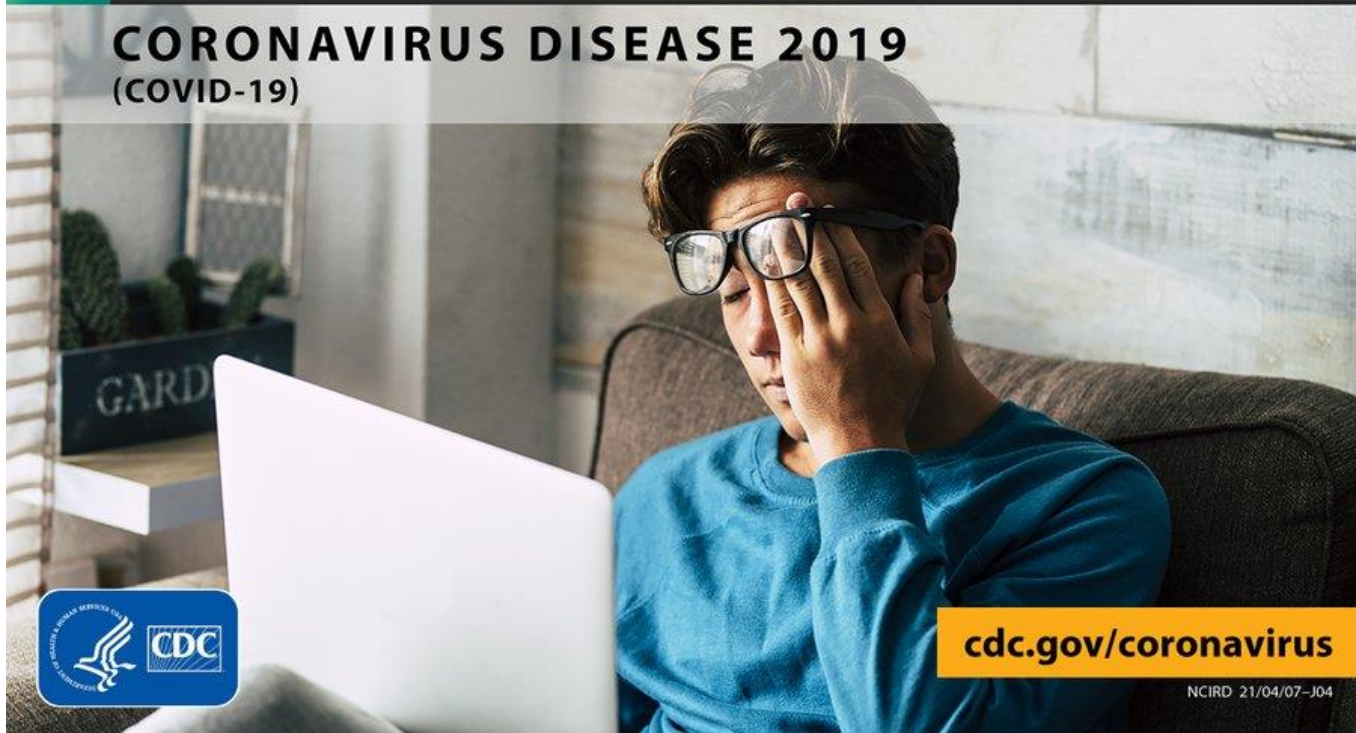


# Post-COVID conditions may affect millions of Americans

- Frequency varies widely in the literature
- Could also affect children and adolescents (in addition to adults)
- Challenges estimating prevalence in subgroups that could be at higher risk



# CORONAVIRUS DISEASE 2019 (COVID-19)



[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

NCIRD 21/04/07-J04

**Post-COVID conditions are associated with a spectrum of physical, social, and psychological consequences**



# General considerations



# Listen to and validate patients' experiences and partner with patients to identify achievable health goals

- Most post-COVID conditions can be diagnosed and managed by primary care
- Consider referral to multidisciplinary post-COVID care centers
- Many post-COVID conditions may be diagnosed based on history and physical exam
  - Potential harms could arise from excessive testing
- Consider conservative diagnostic approach in the first 4 to 12 weeks
- Symptoms persisting beyond three months should prompt further evaluation



# Suggested workup





# Commonly reported symptoms include dyspnea, fatigue, post-exertional malaise, and brain fog

## Common Post-COVID Symptoms

- Dyspnea or increased respiratory effort
- Fatigue
- Post-exertional malaise
- “Brain fog,” cognitive impairment
- Cough
- Chest pain
- Headache
- Palpitations and/or tachycardia
- Arthralgia
- Myalgia
- Paresthesia
- Abdominal pain
- Diarrhea
- Insomnia and other sleep difficulties
- Fever
- Lightheadedness
- Impaired daily function and mobility
- Pain
- Rash (e.g., urticaria)
- Mood changes
- Anosmia or dysgeusia
- Menstrual cycle irregularities



# For clinical features warranting further evaluation, consider broad range of possible post-COVID conditions




| <b>Body System</b>    | <b>Conditions (subject to change and not mutually exclusive)</b>                                                                                                                     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cardiovascular</b> | Myocarditis, heart failure, pericarditis, orthostatic intolerance (e.g., postural orthostatic tachycardia syndrome [POTS])                                                           |
| <b>Pulmonary</b>      | Interstitial lung disease, reactive airway disease                                                                                                                                   |
| <b>Renal</b>          | Chronic kidney disease                                                                                                                                                               |
| <b>Dermatologic</b>   | Alopecia                                                                                                                                                                             |
| <b>Rheumatologic</b>  | Reactive arthritis, fibromyalgia, connective tissue disease                                                                                                                          |
| <b>Endocrine</b>      | Diabetes mellitus, hypothyroidism                                                                                                                                                    |
| <b>Neurologic</b>     | Transient ischemic attack/stroke, olfactory and gustatory dysfunction, sleep dysregulation, altered cognition, memory impairment, headache, weakness, neuropathy                     |
| <b>Psychiatric</b>    | Depression, anxiety, post-traumatic stress disorder (PTSD), psychosis                                                                                                                |
| <b>Hematologic</b>    | Pulmonary embolism, arterial thrombosis, venous thromboembolism, other hypercoagulability                                                                                            |
| <b>Urologic</b>       | Incontinence, sexual dysfunction                                                                                                                                                     |
| <b>Other</b>          | Weight loss, dysautonomia, allergies and mast cell activation syndrome, reactivation of other viruses, pain syndromes, hearing loss, vertigo, and progression of comorbid conditions |



# A thorough physical examination should be completed

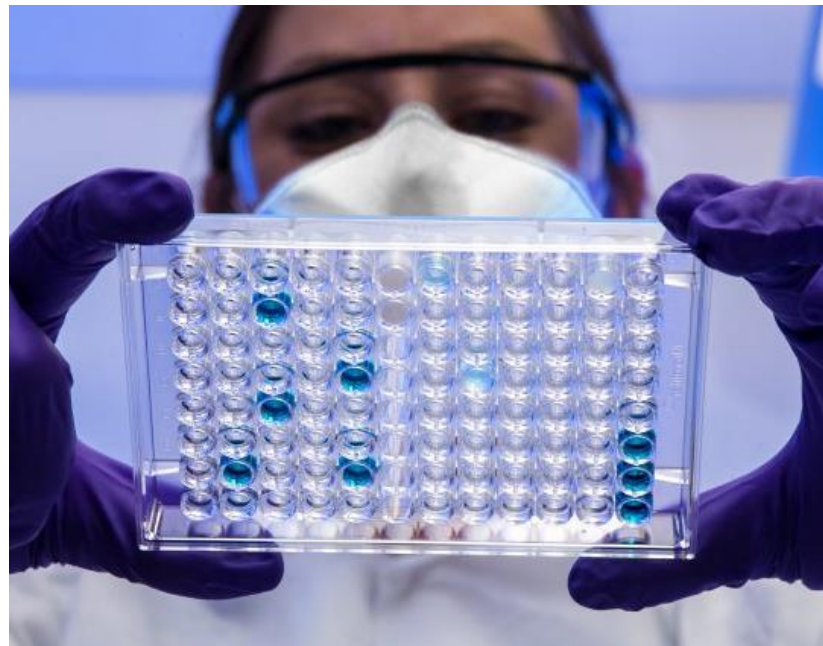
- Evaluate ambulatory pulse-oximetry with respiratory symptoms, fatigue, malaise
- Orthostatic vital signs with postural symptoms, dizziness, fatigue, cognitive impairment, malaise

A drop in systolic BP of  $\geq 20$  mm Hg, or in diastolic BP  $\geq 10$  mm Hg, or experiencing lightheadedness or dizziness is considered abnormal

| POSITION                                                                                        | TIME    | BP                         | ASSOCIATED SYMPTOMS |
|-------------------------------------------------------------------------------------------------|---------|----------------------------|---------------------|
| Lying Down<br> | 5 Mins. | BP ____ / ____<br>HR _____ |                     |
| Standing<br>  | 1 Min.  | BP ____ / ____<br>HR _____ |                     |
| Standing<br>  | 3 Mins. | BP ____ / ____<br>HR _____ |                     |

# At this time, no laboratory test can definitively distinguish post-COVID conditions from other etiologies

- A positive viral test is not required to establish a diagnosis of post-COVID conditions
- Lab testing should be guided by clinical findings
- A basic panel of lab tests might be considered between 4 and 12 weeks
- Consider additional testing if symptoms persist for 12 weeks or longer



| <b>Basic diagnostic tests to consider <math>\geq 4</math> weeks after SARS-CoV-2 infection (or sooner if clinically indicated)</b> |                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <u>Category</u>                                                                                                                    | <u>Laboratory tests</u>                                                                      |
| Blood count, electrolytes, and renal function                                                                                      | Complete blood count with possible iron studies to follow, basic metabolic panel, urinalysis |
| Liver function                                                                                                                     | Liver function tests or complete metabolic panel                                             |
| Inflammatory markers                                                                                                               | C-reactive protein, erythrocyte sedimentation rate, ferritin                                 |
| Thyroid function                                                                                                                   | TSH and free T4                                                                              |
| Vitamin deficiencies                                                                                                               | Vitamin D, vitamin B12                                                                       |

| <b>Specialized diagnostic tests* to consider <math>\geq 12</math> weeks after SARS-CoV-2 infection (or sooner if clinically indicated)</b> |                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <u>Category</u>                                                                                                                            | <u>Laboratory tests</u>                                                                                                  |
| Rheumatological conditions                                                                                                                 | Antinuclear antibody, rheumatoid factor, anti-cyclic citrullinated peptide, anti-cardiolipin, and creatine phosphokinase |
| Coagulation disorders                                                                                                                      | D-dimer, fibrinogen                                                                                                      |
| Myocardial injury                                                                                                                          | Troponin                                                                                                                 |
| Differentiate symptoms of cardiac versus pulmonary origin                                                                                  | B-type natriuretic peptide                                                                                               |

\* The specialized diagnostic tests should be ordered in the context of suggestive findings on history and physical examination

# Symptom inventories and assessment tools might be helpful for monitoring the status of post-COVID conditions

| Selected assessment tools                |                                                                                                    |
|------------------------------------------|----------------------------------------------------------------------------------------------------|
| Functional status and/or quality of life | Patient-Reported Outcomes Measurement Information System (PROMIS)<br>(e.g., Cognitive Function 4a) |
|                                          | Post-Covid-19 Functional Status Scale (PCFS)                                                       |
|                                          | EuroQoL-5D (EQ-5D)                                                                                 |
| Respiratory conditions                   | Modified Medical Research Council Dyspnea Scale (mMRC)                                             |
| Neurologic conditions                    | Montreal Cognitive Assessment (MoCA)                                                               |
|                                          | Mini Mental Status Examination (MMSE)                                                              |
|                                          | Compass 31 (for dysautonomia)                                                                      |
|                                          | Neurobehavioral Symptom Inventory                                                                  |
| Psychiatric conditions                   | General Anxiety Disorder-7 (GAD-7)                                                                 |
|                                          | Patient Health Questionnaire-9 (PHQ-9)                                                             |
|                                          | PTSD Symptom Scale (PSS)                                                                           |
|                                          | Screen for Posttraumatic Stress Symptoms (SPTSS)                                                   |
|                                          | PTSD Checklist for DSM-5 (PCL-5)                                                                   |
|                                          | Impact of Event Scale-Revised (IESR)                                                               |
|                                          | Hospital Anxiety and Depression Scale (HADS)                                                       |
| Other conditions                         | Wood Mental Fatigue Inventory (WMFI)                                                               |
|                                          | Fatigue Severity Scale                                                                             |
|                                          | Insomnia Severity Index (ISI)                                                                      |
|                                          | Connective Tissue Disease Screening Questionnaire                                                  |



# Symptom inventories and assessment tools might be helpful for monitoring the status of post-COVID conditions

| Selected functional and other testing |                                          |
|---------------------------------------|------------------------------------------|
| <b>Exercise capacity testing</b>      | 1-minute sit-to-stand test               |
|                                       | 2-minute step test                       |
|                                       | 10 Meter Walk Test (10MWT)               |
|                                       | 6-minute walk                            |
| <b>Balance and fall risk</b>          | BERG Balance Scale                       |
|                                       | Tinetti Gait and Balance Assessment Tool |
| <b>Other</b>                          | Tilt-table testing (e.g., for POTS)      |
|                                       | Orthostatic HR assessment                |

# More evidence is needed to support the utility of specific imaging tests for evaluation of post-COVID conditions

- Some imaging tests may have low yield
  - CT chest with normal chest x-rays and normal oxygen saturation
  - CT pulmonary angiogram without an elevated D-dimer and compatible symptoms
  - Brain MRI with brain fog
- More specialized imaging studies (e.g., cardiac MRI) might merit consultation with specialists





# Suggested management



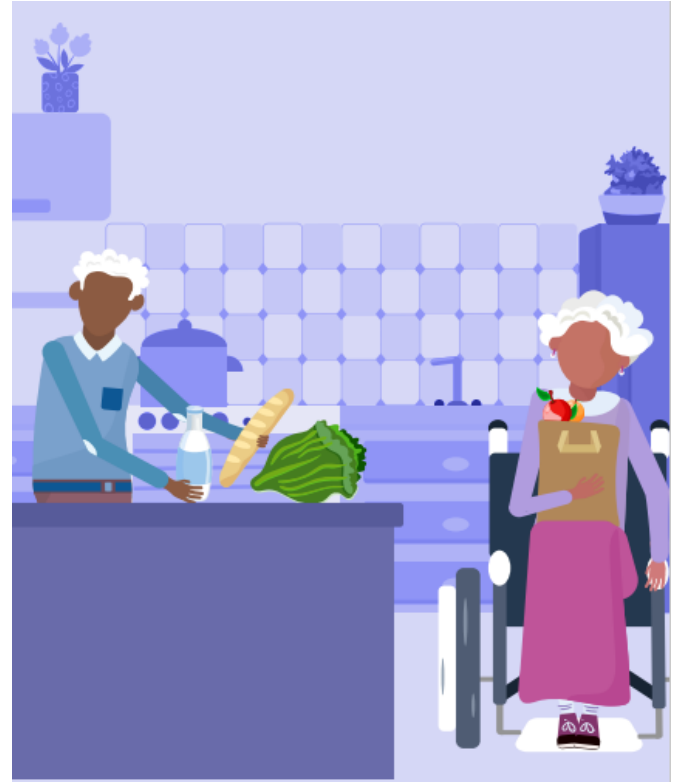
# For most patients, the goal of medical management is to optimize function and quality of life

- Creating a comprehensive rehabilitation plan may be helpful for some patients
- Many post-COVID conditions can be improved through already established symptom management approaches
- Evidence indicates that holistic support for the patient throughout their illness course can be beneficial



# Some patient groups may require special considerations

- Racial and ethnic minority populations
- People with disabilities
- People experiencing homelessness
- People in correctional facilities
- People with pre-existing substance use disorder
- People who live in rural areas
- People with other barriers to accessing health care



# Clinical and public health recommendations



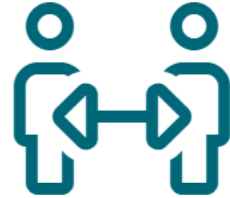
# Documentation of post-COVID conditions is critical for accurate public health surveillance

- The World Health Organization (WHO) has developed coding guidance for health care encounters related to post-COVID conditions:
  - **U09.9 Post COVID-19 condition, unspecified**
- Not currently available in the United States and is under review by the U.S. ICD-10 Coordination and Maintenance Committee
- In the meantime, CDC recommends:
  - **B94.8 Sequelae of other specified infectious and parasitic diseases**



# People with post-COVID conditions should continue to follow CDC's COVID-19 prevention measures

**COVID-19 vaccination should be offered to all eligible people, regardless of their history of SARS-CoV-2 infection**



# Patients with post-COVID conditions might benefit from a review of their current preventive care practices

- Discussions regarding nutrition, physical activity, sleep, stress management, interpersonal relationships, and chronic disease management
- Age-appropriate preventive health screenings and vaccinations may have been delayed due to the pandemic



# Future directions





# Knowledge of post-COVID conditions is likely to change rapidly with ongoing research

- Research is underway to define the long-term phases of COVID-19
- CDC has partnered with NIH, aligning efforts within the federal government to support the post-acute sequelae of SARS-CoV-2 infection (PASC) initiative
- CDC will continue to work in collaboration with federal, state, local, academic, and community partners
- With extensive research underway, it is likely that evidence-based treatment practices will evolve over time



# Resources

- **CDC webpages on post-COVID:**

- For the general public: <https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects.html>
- For clinicians: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-conditions.html>

- **NIH Workshop on Post-Acute Sequelae of COVID-19**

- Day 1: <https://videocast.nih.gov/watch=38878>
- Day 2: <https://videocast.nih.gov/watch=38879>



# Acknowledgements



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## External Experts:

- Post-COVID Condition Experts: Kathleen Bell MD, Jean Marie Connors MD, Jill Foster MD, Dixie Harris MD, Jonathan Himmelfarb MD, Judith James MD PhD, Nomi Levy-Carrick MD MPhil, Mitchell Miglis MD, Allison Navis MD, Jennifer Possick MD, Wendy S. Post MD MS, Peter Rowe MD, Bazak Sharon MD
- Medical associations: American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Academy of Physical Medicine & Rehabilitation
- Patient advocacy organizations: Body Politic, Patient-Led Research Collaborative, Survivor Corps

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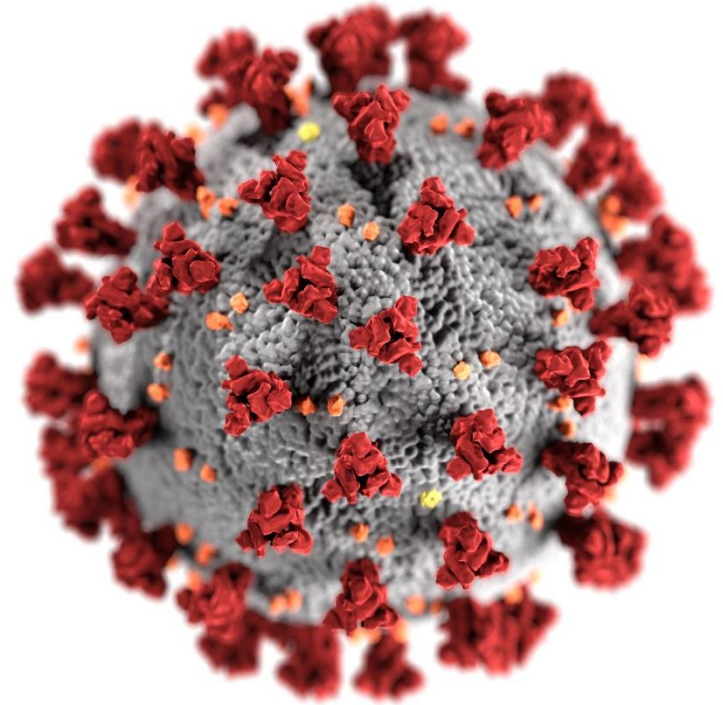
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# Disclaimer

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC).



[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

**Alex Vosooney, MD [No Slides]**

Chair, Subcommittee on Clinical Recommendations and Policies  
American Academy of Family Physicians

## **Michael Saag, MD [No Slides]**

Professor of Medicine

Director, UAB Center for AIDS Research

University of Alabama Birmingham

# To Ask a Question

- Using the Zoom Webinar System
  - Click on the “Q&A” button
  - Type your question in the “Q&A” box
  - Submit your question
- If you are a patient, please refer your question to your healthcare provider.
- If you are a member of the media, please direct your questions to CDC Media Relations at 404-639-3286 or email [media@cdc.gov](mailto:media@cdc.gov).

# Continuing Education

- All continuing education for COCA Calls is issued online through the CDC Training & Continuing Education Online system at <https://tceols.cdc.gov/>.
- Those who participate in today's COCA Call and wish to receive continuing education please complete the online evaluation by **July 19, 2021**, with the course code **WC2922-061721**. The access code is **COCA061721**.
- Those who will participate in the on-demand activity and wish to receive continuing education should complete the online evaluation between **July 20, 2021**, and **July 20, 2023**, and use course code **WD2922-061721**. The access code is **COCA061721**.
- Continuing education certificates can be printed immediately upon completion of your online evaluation. A cumulative transcript of all CDC/ATSDR CEs obtained through the CDC Training & Continuing Education Online System will be maintained for each user.

# Today's COCA Call Will Be Available On-Demand

- **When:** A few hours after the live call
- **What:** Video recording
- **Where:** On the COCA Call webpage at [https://emergency.cdc.gov/coca/calls/2021/callinfo\\_061721.asp](https://emergency.cdc.gov/coca/calls/2021/callinfo_061721.asp)

## Upcoming COCA Calls & Additional COVID-19 Resources

- Continue to visit <https://emergency.cdc.gov/coca> to get more details about upcoming COCA Calls, as we intend to host more COCA Calls to keep you informed of the latest guidance and updates on COVID-19.
- Subscribe to receive notifications about upcoming COCA calls and other COCA products and services at [emergency.cdc.gov/coca/subscribe.asp](https://emergency.cdc.gov/coca/subscribe.asp)
- Share call announcements with colleagues
- Sign up to receive weekly ***COVID-19 Science Updates*** by visiting [cdc.gov/library/covid19/scienceupdates.html?Sort=Date%3A%3Adesc](https://cdc.gov/library/covid19/scienceupdates.html?Sort=Date%3A%3Adesc)



# COCA Products & Services



The logo for COCA Call features a blue horizontal bar with the text "COCA Call" in white. To the left of the bar are four square icons: a white eye in a blue circle, a white stethoscope in a red circle, a white syringe in a green circle, and a white biohazard symbol in an orange circle.

**COCA Call**  
CDC Clinician Outreach  
and Communication Activity

COCA Call Announcements contain all information subscribers need to participate in COCA Calls. COCA Calls are held as needed.



The logo for COCA Learn features a green horizontal bar with the text "COCA Learn" in white. To the left of the bar are four square icons: a white eye in a blue circle, a white stethoscope in a red circle, a white syringe in a green circle, and a white biohazard symbol in an orange circle.

**COCA Learn**  
CDC Clinician Outreach  
and Communication Activity

Monthly newsletter that provides information on CDC training opportunities, conference and training resources, the COCA Partner Spotlight, and the Clinician Corner.



The logo for Clinical Action features a red horizontal bar with the text "Clinical Action" in white. To the left of the bar are four square icons: a white eye in a blue circle, a white stethoscope in a red circle, a white syringe in a green circle, and a white biohazard symbol in an orange circle.

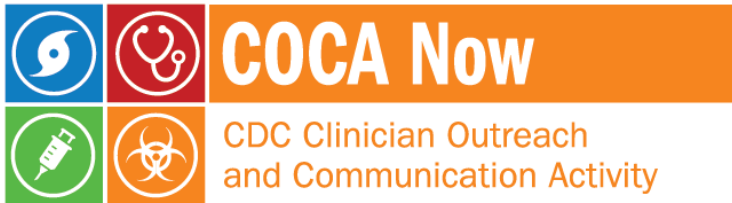
**Clinical Action**  
CDC Clinician Outreach  
and Communication Activity

As-needed messages that provide specific, immediate action clinicians should take. Contains comprehensive CDC guidance so clinicians can easily follow recommended actions.

# COCA Products & Services



Monthly newsletter providing updates on emergency preparedness and response topics, emerging public health threat literature, resources for health professionals, and additional information important during public health emergencies and disasters.



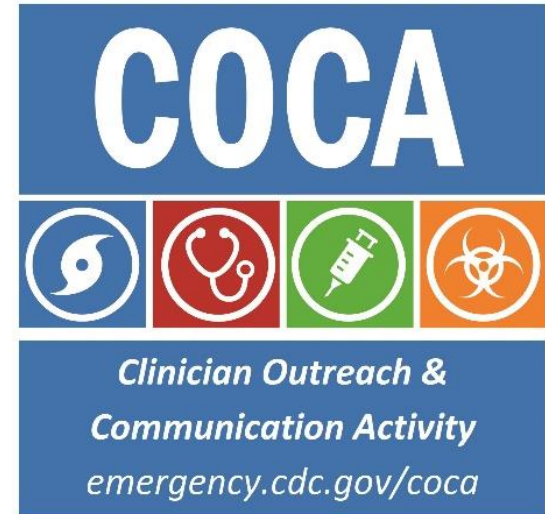
Informs clinicians of new CDC resources and guidance related to emergency preparedness and response. This email is sent as soon as possible after CDC publishes new content.



CDC's primary method of sharing information about urgent public health incidents with public information officers; federal, state, territorial, and local public health practitioners; clinicians; and public health laboratories.

# Join COCA's Mailing List

- **Receive information about:**
  - Upcoming COCA Calls
  - Health Alert Network (HAN) messages
  - CDC emergency response activations
  - Emerging public health threats
  - Emergency preparedness and response conferences
  - Training opportunities



[emergency.cdc.gov/coca/subscribe.asp](https://emergency.cdc.gov/coca/subscribe.asp)

# Join Us On Facebook!



The screenshot shows the Facebook profile for COCA (CDC Clinician Outreach and Communication Activity). The profile picture features a group of six diverse healthcare professionals. The cover photo shows a group of healthcare workers, including a woman in a white lab coat holding a clipboard. The page name is "CDC Clinician Outreach and Communication Activity - COCA" with a verified badge and the handle "@CDCClinicianOutreachAndCommunicationActivity". The page is categorized as a "Government Organization in Atlanta, Georgia" and has 21,420 likes and 21,217 followers. A recent post from October 31, 2017, at 1:18pm, announces a free CE event for a COCA Call on November 7, 2017, at 2:00PM. The page also includes navigation tabs for Home, About, Posts, Photos, Events, and Community, and a "Create a Page" button.

**COCA**

CDC Clinician Outreach and Communication Activity - COCA ✓  
@CDCClinicianOutreachAndCommunicationActivity

Home  
About  
Posts  
Photos  
Events  
Community

Create a Page

Liked Following Share ... Sign Up

Government Organization in Atlanta, Georgia

Community See All

21,420 people like this

21,217 people follow this

About See All

COCA CDC Clinician Outreach and Communication Activity - COCA shared their event.  
October 31 at 1:18pm

Clinicians, you can earn FREE CE with this COCA Call! Join us for this COCA Call November 7, 2017 at 2:00PM.

**Thank you for joining us today!**



[emergency.cdc.gov/coca](https://emergency.cdc.gov/coca)