



Underlying Medical Conditions and Severe COVID-19: Evidence-based Information for Healthcare Providers

Clinician Outreach and Communication Activity (COCA) Webinar

Thursday, May 27, 2021

Closed Captioning

- All participants joining us today are in listen-only mode.
- Closed captioning is available for today's webinar.
- A transcript and closed caption video will be posted to this COCA Call's webpage at https://emergency.cdc.gov/COCA/Calls/2021/callinfo_052721.asp as soon as possible after today's live session.
- This information can also be found at <https://emergency.cdc.gov/coca>.

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Objectives

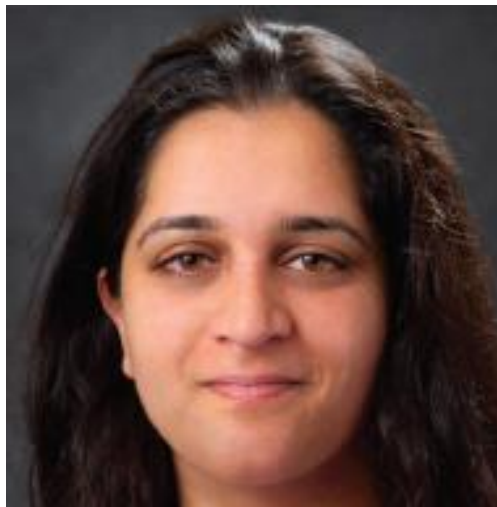
At the conclusion of today's session, the participant will be able to accomplish the following—

- Discuss methods used to review evidence of association between underlying conditions and severe COVID-19, including two large cohort studies.
- Describe the risk associated with specific underlying conditions from the two cohort studies and studies using other methods.
- List resources available for healthcare providers caring for patients with underlying medical conditions.

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.

Today's First Presenter



Sapna Bamrah Morris, MD, MBA
Clinical Disease Team Lead
Health Systems and Worker Safety Task Force
COVID-19 Response
Centers for Disease Control and Prevention

Today's Second Presenter



Kanta Sircar, PhD, MPH

Clinical Disease Team

COVID-19 Response

Centers for Disease Control and Prevention

Today's Third Presenter



John T. Brooks, MD, MPH
Chief Medical Officer
COVID-19 Response
Centers for Disease Control and Prevention

Underlying Medical Conditions and Severe COVID-19: Evidence-based Information for Healthcare Providers

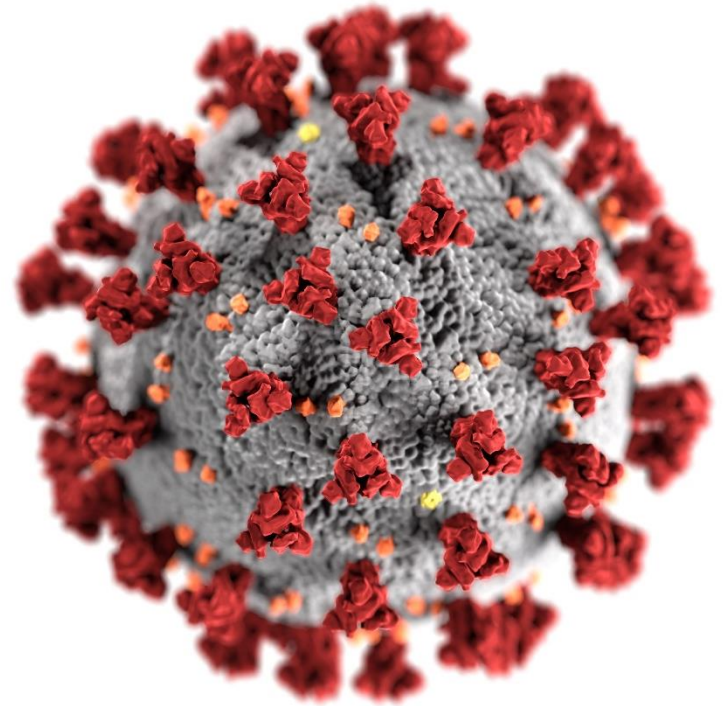
Kanta Sircar, PhD, MPH

John Brooks, MD, MPH

Sapna Bamrah Morris MD, MBA

May 27, 2021

Clinician Outreach and Communication Activity Call



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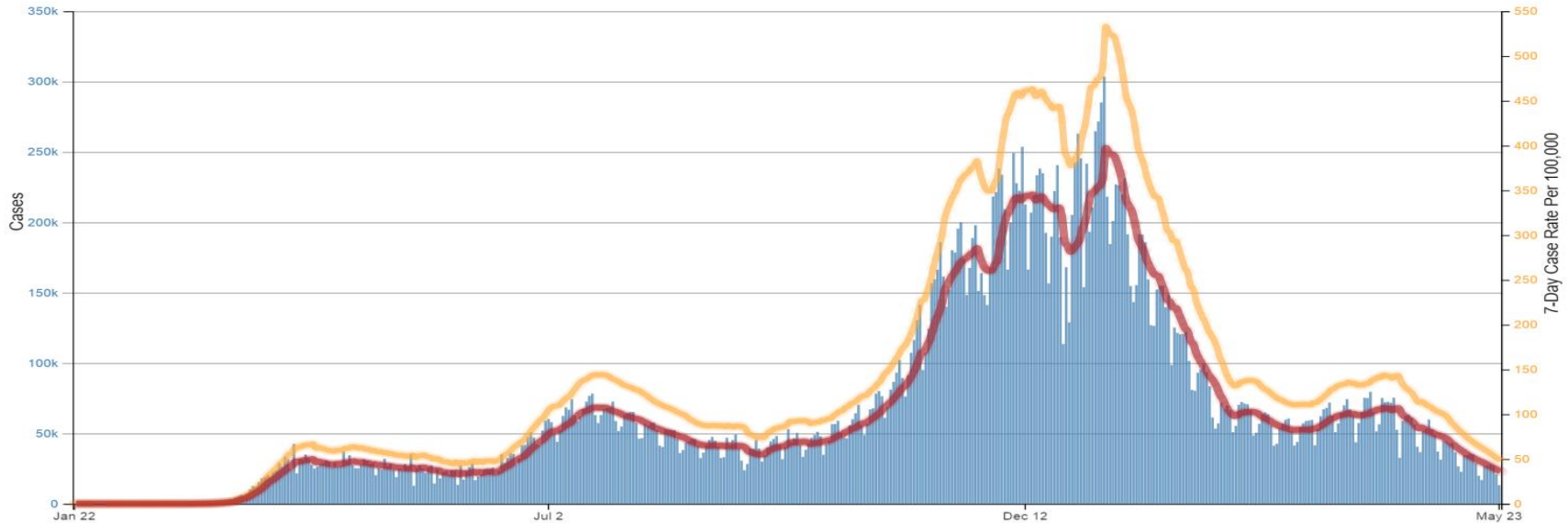
- Background
- Methods: reviewing the literature on underlying medical conditions
- Categorizing the evidence
- Findings from Two Large Cohort Studies
- Actions healthcare providers can take
- Additional resources



Background



Daily number of COVID-19 cases reported to CDC and 7-day cumulative incidence rate (per 100,000 Population), United States, Jan. 2020-May 2021



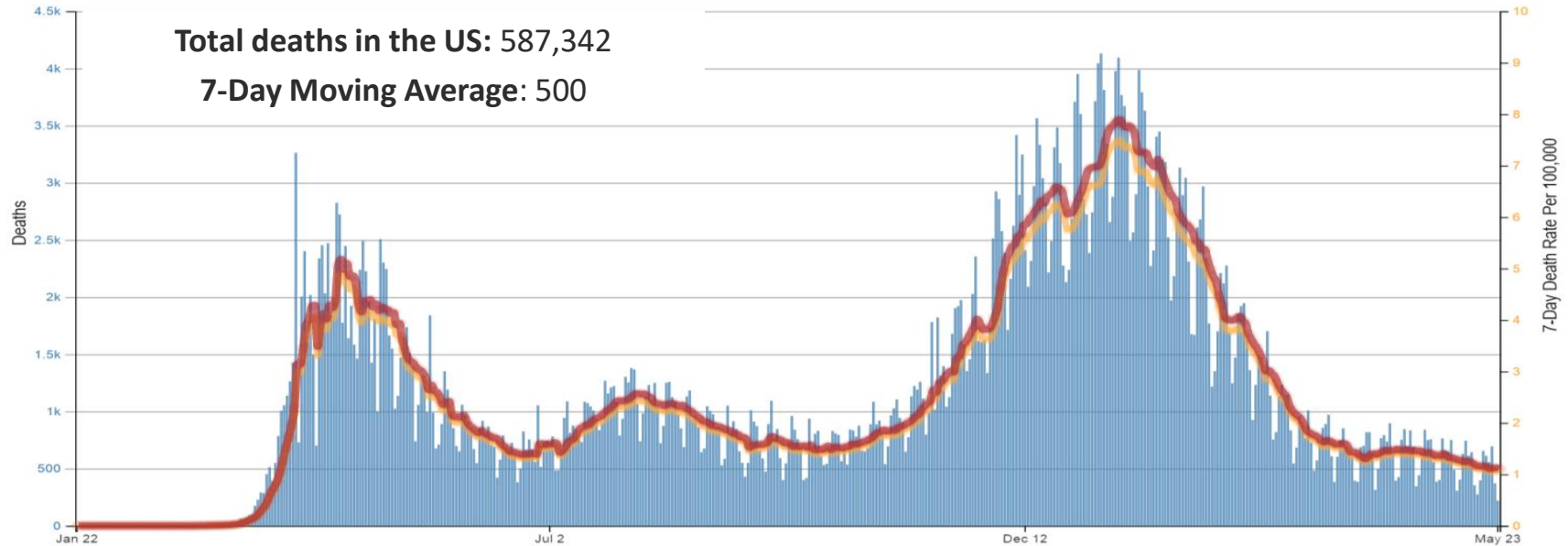
Blue bars — **number of** daily cases.

Red line — daily average (the sum of cases over the last 7 days divided by 7) used to reduce reporting differences.

Orange line — cases in the last 7 days per 100,000 population, **allowing for comparisons between areas with different population sizes.**



Daily number of COVID-19 death reported to CDC and 7-day cumulative incidence rate (per 100,000 Population), United States, Jan. 2020-May 2021



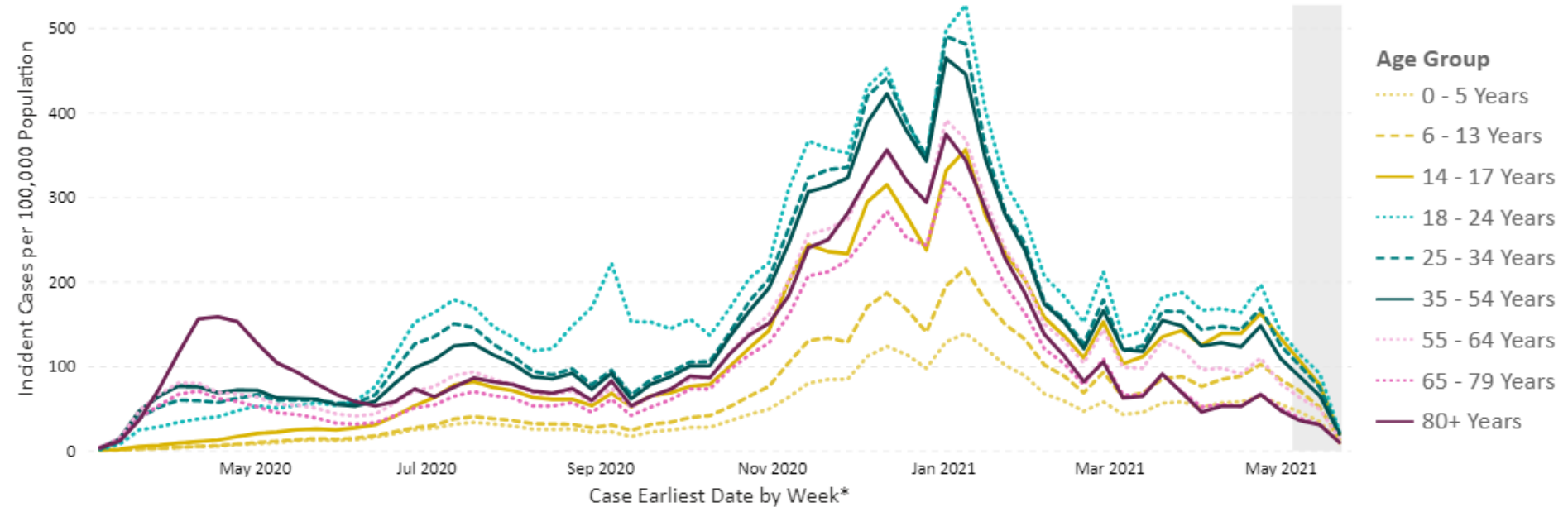
Blue bars — **number of** daily deaths.

Red line — daily average (the sum of deaths over the last 7 days divided by 7) used to reduce reporting differences.

Orange line — deaths in the last 7 days per 100,000 population, allowing for comparisons between areas with different population sizes.



COVID-19 weekly cases (per 100,000 population), by age group, United States, March 2020–May 2021



Percentage of records reporting: Age = 99.31%

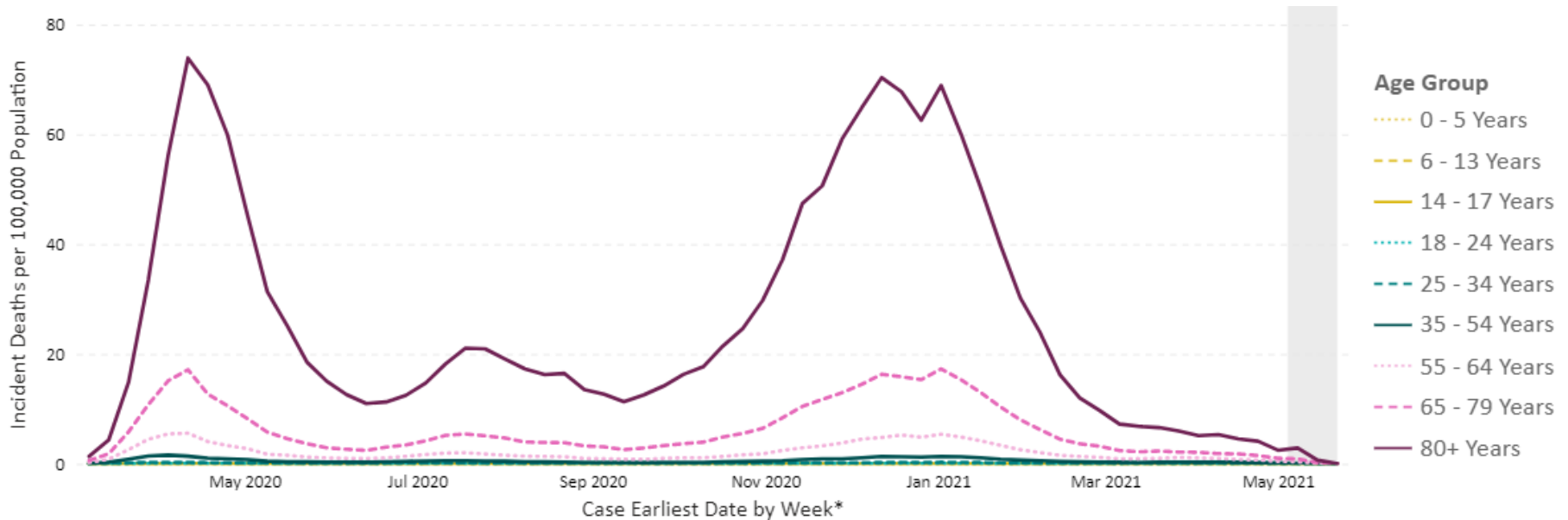
US territories are included in case and death counts but not in population counts. Potential two-week delay in case reporting to CDC denoted by gray box.

*Case Earliest Date is the earliest of the clinical date (related to illness or specimen collection and chosen by a defined hierarchy) and the Date Received by CDC.

Last Updated: May 24, 2021

Source: CDC COVID-19 Case Line-Level Data, 2019 US Census, HHS Protect; Visualization: Data, Analytics & Visualization Task Force and CDC CPR DEO Situational Awareness Public Health Science Team

COVID-19 weekly deaths (per 100,000 population), by age group, United States, March 2020–May 2021



Percentage of records reporting: Death = 61.89%, Age = 99.99%

US territories are included in case and death counts but not in population counts. Potential two-week delay in case reporting to CDC denoted by gray box.

*Case Earliest Date is the earliest of the clinical date (related to illness or specimen collection and chosen by a defined hierarchy) and the Date Received by CDC.

Last Updated: May 24, 2021

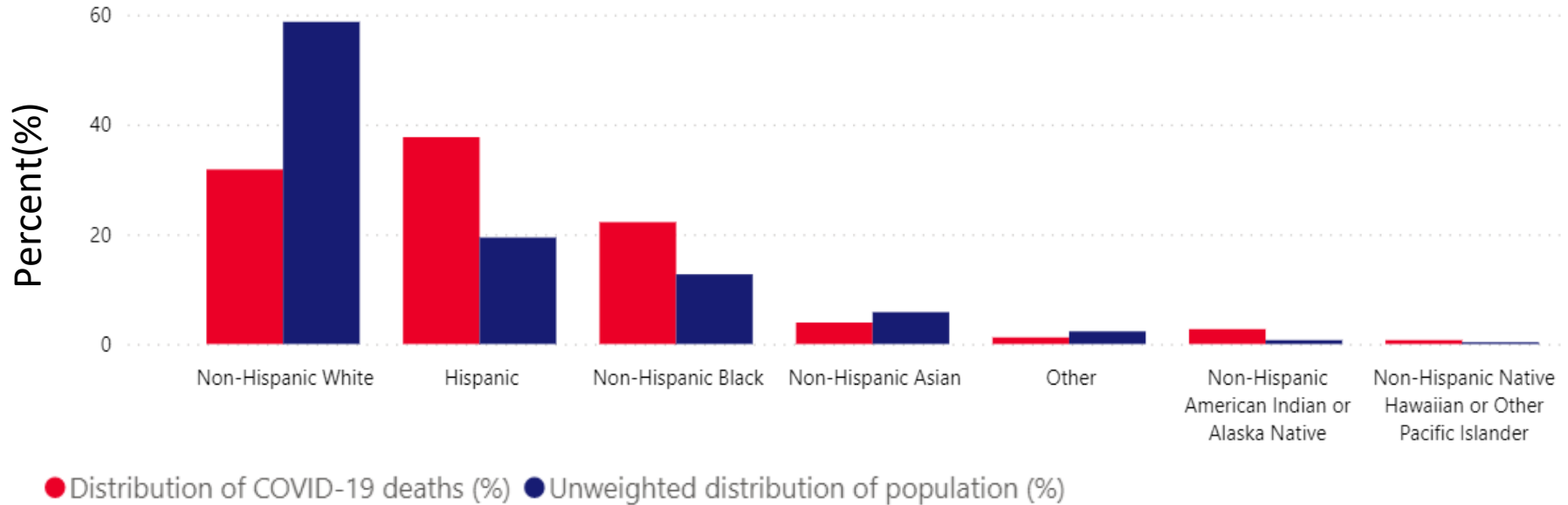
Source: CDC COVID-19 Case Line-Level Data, 2019 US Census, HHS Protect; Visualization: Data, Analytics & Visualization Task Force and CDC CPR DEO Situational Awareness Public Health Science Team

Risk for COVID-19 cases, hospitalization, and death by age group

	0—4 years old	5—17 years old	18—29 years old	30—39 years old	40—49 years old	50—64 years old	65—74 years old	75—84 years old	85+ years old
Cases	<1x	Reference group	2x	2x	2x	2x	1x	1x	2x
Hospitalization	2x	Reference group	6x	10x	15x	25x	40x	65x	95x
Death	2x	Reference group	10x	45x	130x	440x	1300x	3200x	8700x



Proportion of age-standardized COVID-19 deaths and population by race/ethnicity (as of May 12, 2021)



https://www.cdc.gov/nchs/nvss/vsrr/covid19/health_disparities.htm

Methods

Reviewing the literature on underlying medical conditions





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Science Brief: Evidence used to update the list of underlying medical conditions that increase a person's risk of severe illness from COVID-19

Updated May 12, 2021

Languages ▾

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For more information, please see: [Underlying Medical Conditions Associated with High Risk for Severe COVID-19: Information for Healthcare Providers](#) and the [People with Certain Medical Conditions](#) webpage, which is intended for the general public.

Summary of Recent Changes



The association between underlying medical conditions and severe COVID-19 outcomes

- Patients who had COVID-19 and the presence or absence of underlying medical conditions
- Outcome data for severe COVID-19:
 - Hospitalization
 - Intensive care unit (ICU) admission
 - Invasive mechanical ventilation
 - Death



Categorizing the Evidence





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Table of Evidence

Evidence used to inform the list of underlying medical conditions that increase a person's risk of severe illness from COVID-19. In alphabetic order by section.

Tier	Condition	Evidence of Impact on COVID-19 Severity [Reference number]
Supported by meta-analysis/systematic review	Cancer	Systematic Review [1, 2] Cohort Study [3-5] Case Series [6-8] Case Control Study [9]
	Cerebrovascular disease	Meta-Analysis [10-13] Synthesis of Evidence [14] Cohort Study [15-17]
	Chronic kidney disease	Meta-Analysis [13, 18] Cohort Studies [16, 19-40], {41}* Case Series [42-44]
	COPD	Meta-Analysis [45-47] Systematic Review [48, 49]
	Diabetes mellitus, type 1	Meta-Analysis [50] Case Series [43] Cohort Study [15, 51-56]

Categorized supporting evidence for each underlying medical condition into four groups (presented in alphabetic order)

- Meta-analysis or systematic review
- Observational studies
- Case series or case reports
- Mixed evidence



Underlying medical conditions associated with severe COVID-19 illness — supported by meta-analysis or systematic review

- Cancer
- Cerebrovascular disease
- Chronic kidney disease*
- COPD (chronic obstructive pulmonary disease)
- Diabetes mellitus, type 1 or type 2*
- Heart condition (e.g., heart failure, coronary artery disease, or cardiomyopathies)
- Obesity (BMI ≥ 30 kg/m²)*
- Pregnancy and recent pregnancy*
- Smoking, current and former



*Pregnancy and recent pregnancy evidence now listed

Underlying medical conditions associated with severe COVID-19 illness — supported by observational studies

- Certain underlying conditions in children (e.g. congenital heart disease)
- Down syndrome
- HIV (human immunodeficiency virus)
- Neurologic conditions, including dementia
- Overweight (BMI ≥ 25 kg/m², but < 30 kg/m²)
- Other lung disease (including interstitial lung disease, pulmonary fibrosis, pulmonary hypertension)*
- Sickle cell disease
- Solid organ or blood stem cell transplantation
- Substance use disorder
- Use of corticosteroids or other immunosuppressive medication



*Pregnancy and recent pregnancy evidence now listed

Underlying medical conditions associated with severe COVID-19 illness — supported by case series or case reports

- Cystic fibrosis
- Thalassemia



Underlying medical conditions associated with severe COVID-19 illness — supported by mixed evidence

- Asthma
- Hypertension*
- Immune deficiencies
- Liver disease



*Pregnancy and recent pregnancy evidence now listed

Findings from Two Large Cohort Studies



U.S. national sample of patients with COVID-19 (Rosenthal et al., 2020)

- Large, geographically diverse, hospital-based, service-level, all-payer database
- Representing ~20% of all inpatient admissions in US
- 64,781 adult patients with COVID-19
- Multivariable logistic regression
- In-hospital death as the outcome

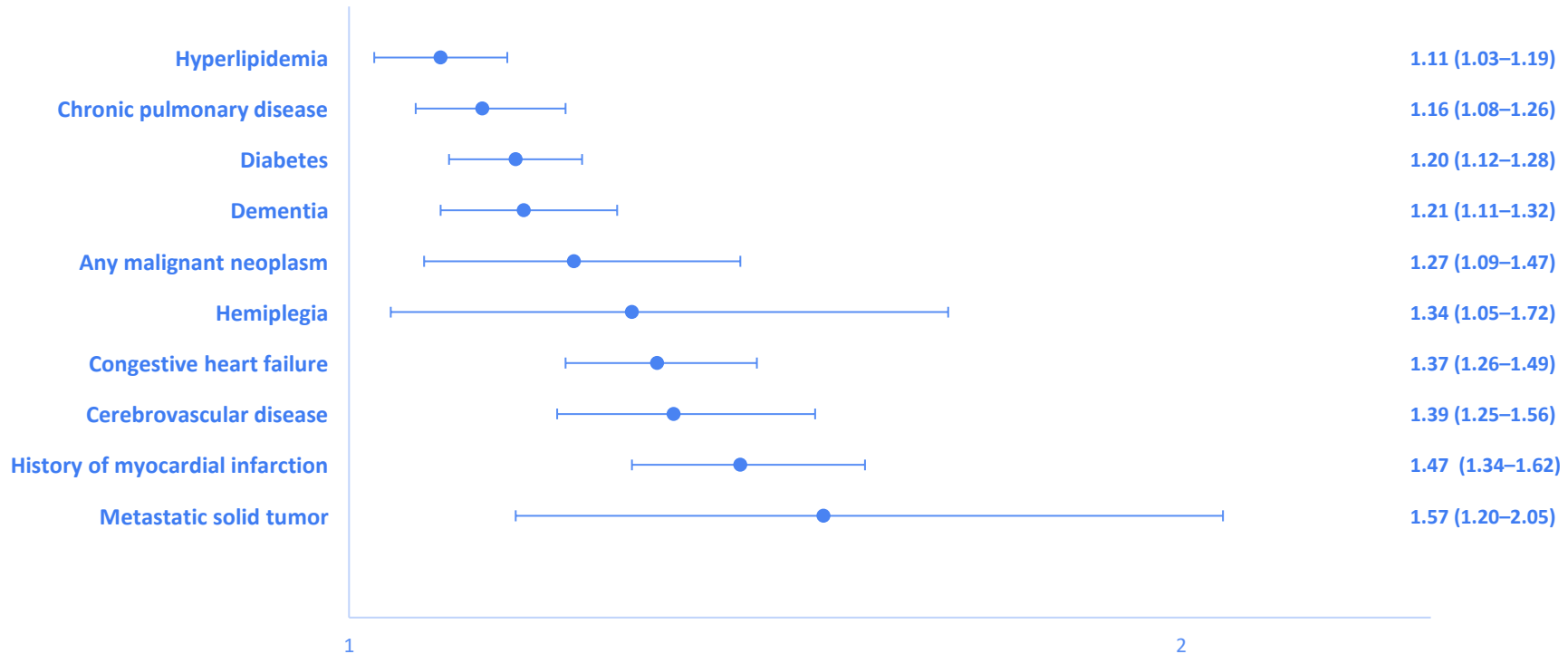


England, U.K. study of patients with COVID-19 (Williamson et al., 2020)

- Cohort study to examine factors associated with COVID-19-related death
- 17,278,392 adults in England
- 10,926 COVID-19 related deaths
- Adjusted cox proportional hazard model
 - Age, sex, race
 - Underlying conditions



Risk of in-hospital mortality for COVID-19 patients with select conditions (Rosenthal et al.)



Adjusted Hazard Ratio (HR) for Select Conditions — Williamson et al.

Condition	Hazard Ratio (95% CI)
Diabetes (versus none)	
With HbA1c <58 mmol/mol (<7.5%)	1.31 (1.24–1.37)
With HbA1c ≥58 mmol/mol (≥7.5%)	1.95 (1.83–2.08)
With no recent HbA1c measure	1.90 (1.72–2.09)
Cancer (nonhematological, versus none)	
Diagnosed <1 year ago	1.72 (1.50–1.96)
Diagnosed 1–4.9 years ago	1.15 (1.05–1.27)
Diagnosed ≥5 years ago	0.96 (0.91–1.03)

Adjusted HR for Select Conditions — Williamson et al.

Condition	Hazard Ratio (95% CI)
Reduced kidney function (versus normal function)	
eGFR 30–60	1.33 (1.28–1.40)
eGFR <30	2.52 (2.33–2.72)

Number of underlying medical conditions among COVID-19 patients ages ≥18 year (Rosenthal et al.)

Underlying conditions	Survived (n=57,496)	Diseased (n=7,355)	p
Charlson Comorbidity index score, mean (SD)	1.1 (1.8)	3.1 (2.5)	<0.01*
Charlson comorbidities			<0.001**
0	97.2% (n=31 650)	2.8% (n=928)	
1 to 4	83.0% (n=21 876)	17.0% (n=4475)	
5 or more	66.6% (n=3900)	33.4% (n=1952)	

*Wilcoxon sum rank test

** Chi square test

Rosenthal, N et al. Risk Factors Associated with In-Hospital Mortality in a US National Sample of Patients With COVID-19. *JAMA Network Open*.2020;3(12):e2029058.
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/underlyingconditions.html>



Actions Healthcare Providers Can Take





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Underlying Medical Conditions Associated with High Risk for Severe COVID-19: Information for Healthcare Providers

Updated May 13, 2021 [Print](#)

On This Page

[Purpose](#)[Key findings from two large studies](#)[Background](#)[Summary of conditions with evidence](#)[Actions providers can take](#)[Additional resources](#)

Purpose

This webpage provides an evidence-based resource for healthcare providers caring for patients with underlying medical conditions who are at higher risk of developing severe outcomes of COVID-19. Severe outcomes are defined as hospitalization, admission to the intensive care unit (ICU), intubation or mechanical ventilation, or death. This page summarizes data from preprinted and published studies that were included in a literature review conducted by subject-matter experts. The summary of information reflects current evidence regarding underlying medical conditions and is intended to help healthcare providers make informed decisions about patient care and increasing the awareness of risk among their patients.





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People with Certain Medical Conditions

Updated May 13, 2021

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Vaccine Information for People with [Certain Medical Conditions](#).



This information is intended for a general audience. Healthcare providers should see [Underlying Medical Conditions Associated with High Risk for Severe COVID-19](#) for more detailed information.



Actions Healthcare Providers Can Take

Encourage patients to:



Get vaccinated



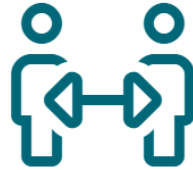
Adhere to treatment regimens



Keep appointments for routine care

Actions Healthcare Providers Can Take

Contact CDC: 1-800-CDC-INFO



Additional Resources



CDC Webpages on Underlying Conditions

- CDC webpages on underlying conditions:

- For the general public: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>
- For clinicians:
 - <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/underlyingconditions.html>
 - <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/underlying-evidence-table.html>



Additional Resources for Healthcare Providers

- NIH Treatment Guidelines:
<https://www.covid19treatmentguidelines.nih.gov/therapeutic-management/>
- CDC Clinical Care Guidelines:
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care.html>
- CDC's COVID-19 Data Tracker:
https://covid.cdc.gov/covid-data-tracker/?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcases-updates%2Fcases-in-us.html#cases_casesper100klast7days
- CDC's COVID-19 Vaccination Guidelines:
<https://www.cdc.gov/vaccines/covid-19/index.html>



Additional Resources for Healthcare Providers

- CDC's Demographic Trends of COVID-19 Cases and Deaths:
<https://covid.cdc.gov/covid-data-tracker/#demographics>
- CDC's Health Equity Webpage:
<https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/index.html>
- State Health Department Contacts:
<https://www.cdc.gov/publichealthgateway/healthdirectories/index.html>



References

CDC Science Brief: Evidence used to update the list of underlying medical conditions that increase a person's risk of severe illness from COVID-19: [Scientific Evidence for Conditions that Increase Risk of Severe Illness | COVID-19 | CDC](#)



Thank you



To Ask a Question

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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_052721.asp

Upcoming COCA Calls / Additional COVID-19 Resources

Next Scheduled COCA Call

- Thursday, June 3 (2:00-3:00 PM ET): Evaluating and Caring for Patients with Post COVID Conditions (https://emergency.cdc.gov/coca/calls/2021/callinfo_060321.asp)
 - Free CE will be offered
-
- Subscribe to receive notifications about upcoming COCA calls and other COCA products and services at emergency.cdc.gov/coca/subscribe.asp
 - Sign up to receive weekly **COVID-19 Science Updates** by visiting cdc.gov/library/covid19/scienceupdates.html?Sort=Date%3A%3Adesc

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		CDC Clinician Outreach and Communication Activity

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		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.

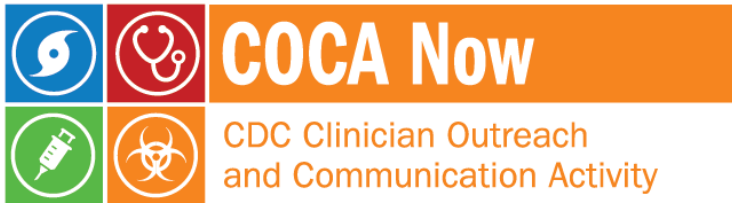
		Clinical Action
		CDC Clinician Outreach and Communication Activity

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.



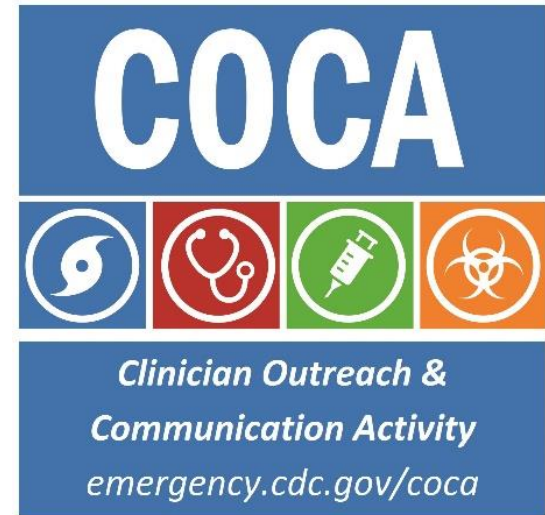
Informs clinicians of new CDC resources and guidance related to emergency preparedness and response. This email is sent as soon as possible after CDC publishes new content.



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.

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The screenshot shows the Facebook profile for COCA (CDC Clinician Outreach and Communication Activity). The profile picture features a group of diverse healthcare professionals. The cover photo shows a group of six healthcare workers smiling. The page includes a navigation menu on the left with options like Home, About, Posts, Photos, Events, and Community, along with a 'Create a Page' button. The main content area shows a 'Status' section with a text input field and a 'Posts' section featuring a recent event announcement: '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.' The right sidebar displays location information ('Government Organization in Atlanta, Georgia'), community statistics ('21,420 people like this', '21,217 people follow this'), and an 'About' section with a map showing the location in Atlanta.

Thank you for joining us today!



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