Epidemiologic Characteristics of Long COVID: Findings from the CDC

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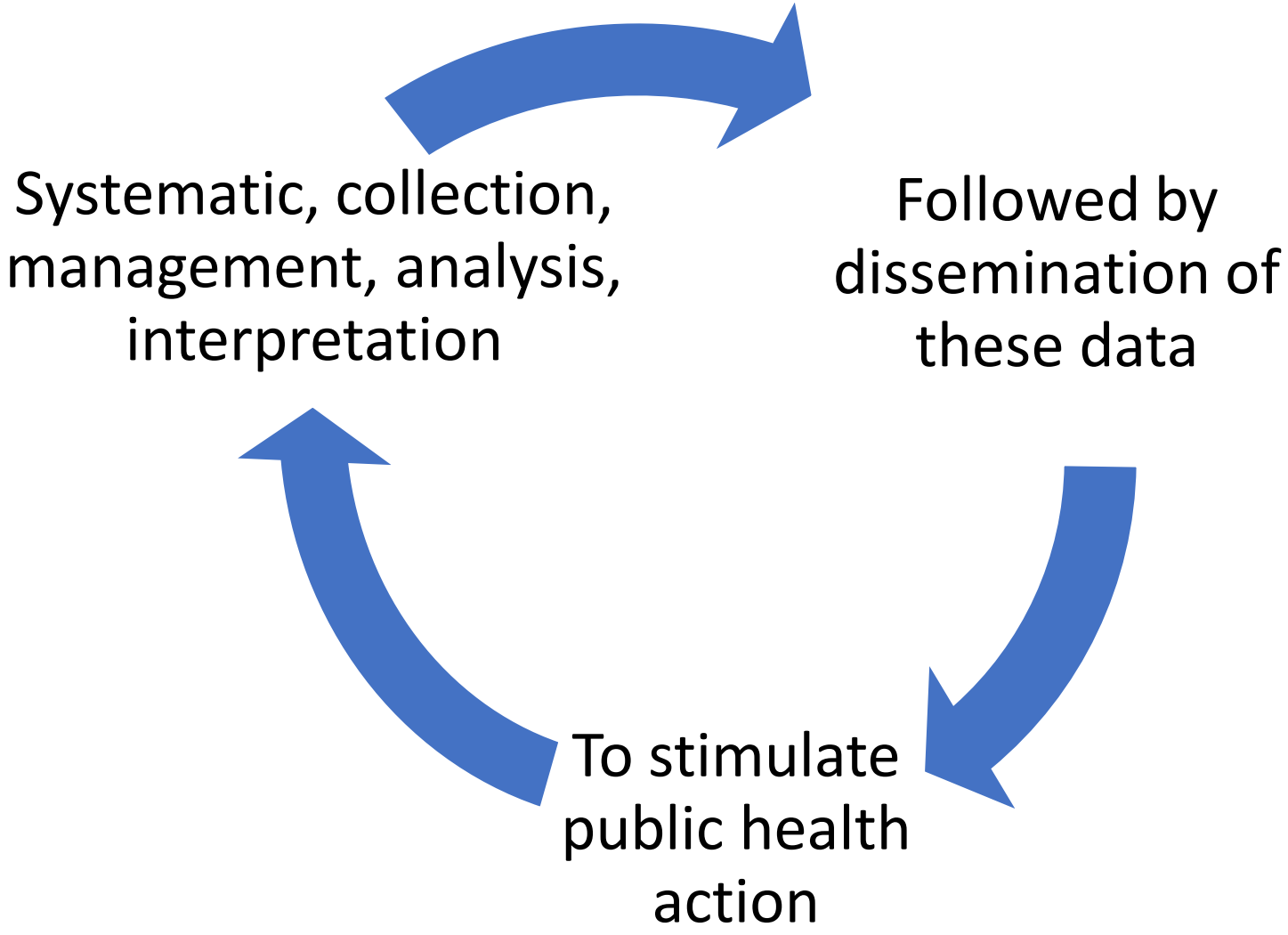
Public Health Surveillance: The Foundation for Decision Making in Public Health



A general framework for Post-COVID Conditions

Wide range of physical and mental health consequences, present for **four weeks and beyond after SARS-CoV-2 infection**

Post acute sequelae of SARS-CoV-2 infection

- System specific pathology (e.g. lung fibrosis, stroke)
- Clinically significant symptoms with unclear pathology (e.g. ME/CFS*-like, dysautonomia)
- On-going symptoms following MIS-C

General consequences of illness and hospitalization

- Post ICU syndrome
- Other complications of treatment or illness

Conditions frequently overlap
Patients may experience any combination

*ME/CFS: Myalgic Encephalomyelitis/Chronic Fatigue Syndrome

Estimating the Occurrence of Post-COVID Conditions

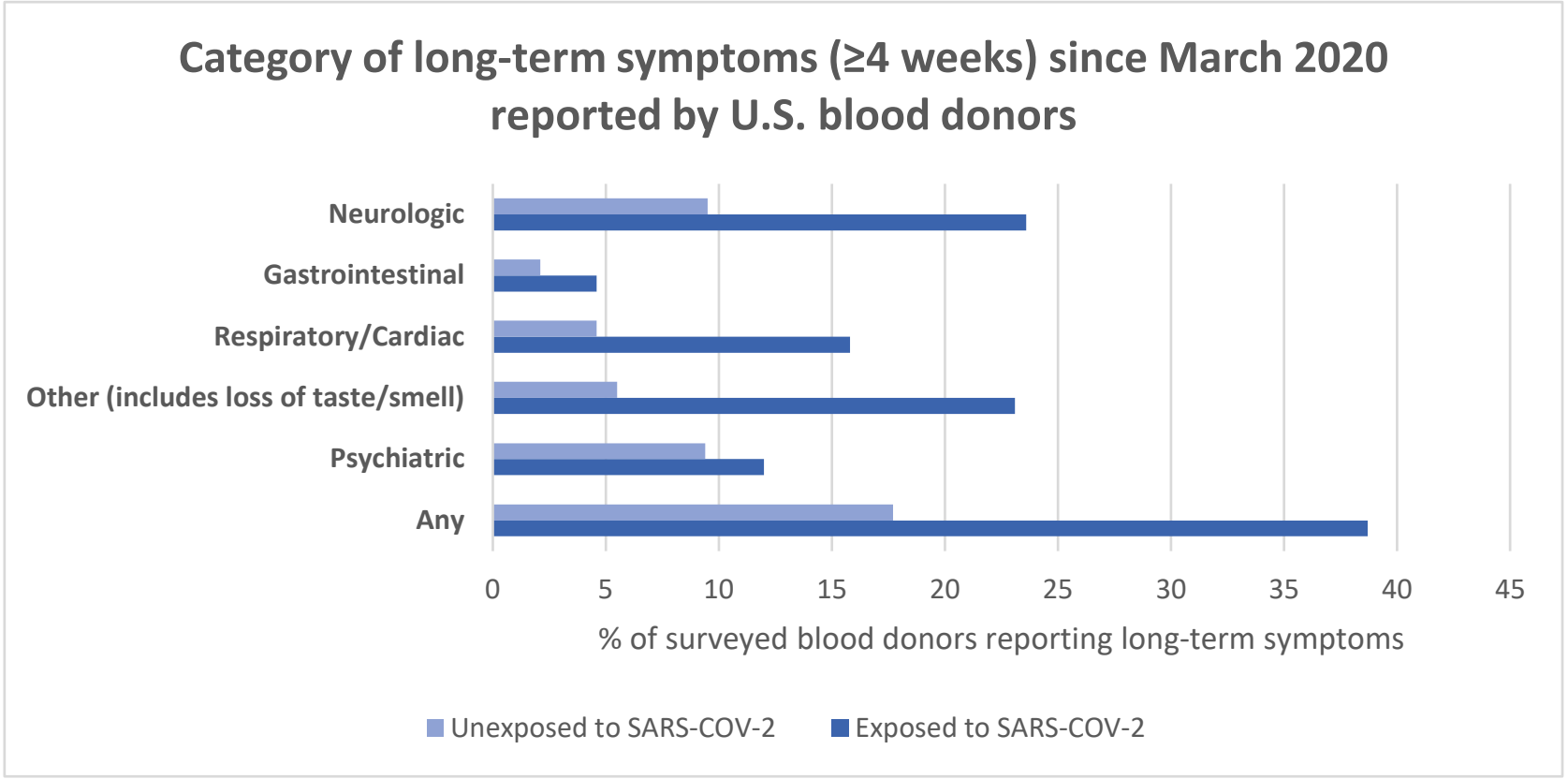
Percent of adults who ever had COVID-19 and currently report having Long COVID

- **10.2% of U.S. adults who ever had COVID-19 currently report Long COVID**
- Differs by demographics
  - **Higher among females** compared to males (12.7% v 7.4%)
  - **Lower** among Non-Hispanic Asian (5.9%), compared to non-Hispanic White (10.8%), non-Hispanic Black (10.4%), and Hispanic (8.5%)
- **Almost 1 in 4 adults with Long COVID report significant activity limitations**

Data source: April 26-May 8, 2023 [Long COVID - Household Pulse Survey - COVID-19 (cdc.gov)]

Report of long-term symptoms among U.S. blood donors based on serologic or reported history of SARS-CoV-2

- 39% of blood donors with confirmed serologic or reported history of SARS-CoV-2 reported any long-term symptoms compared to 18% of those without evidence of prior infection

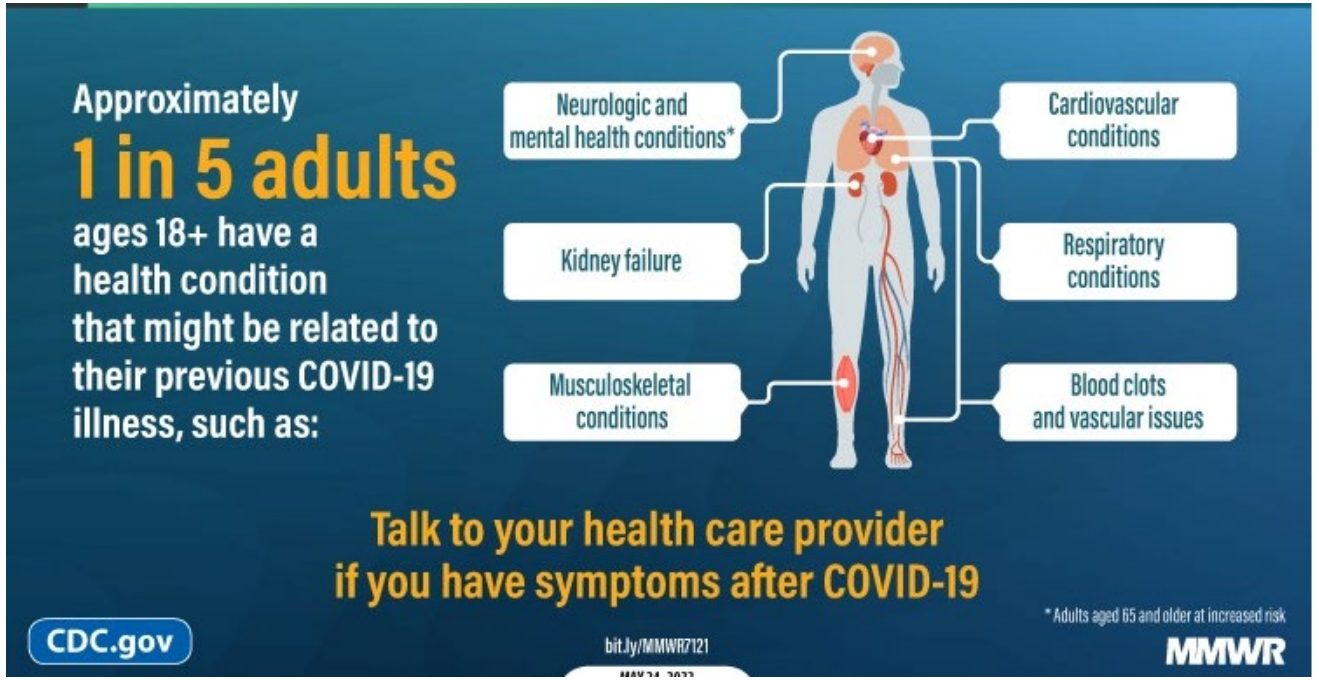


Unexposed: no self report of SARS-CoV-2 infection and N-non-reactive (n = 92,448)
Exposed: self report of SARS-CoV-2 infection and/or N reactive (n = 94,460)

American Red Cross Blood Donor Survey March –April 2022, Unpublished data CDC.

Post–COVID Conditions Among Adult COVID-19 Survivors Aged 18–64 and ≥65 Years

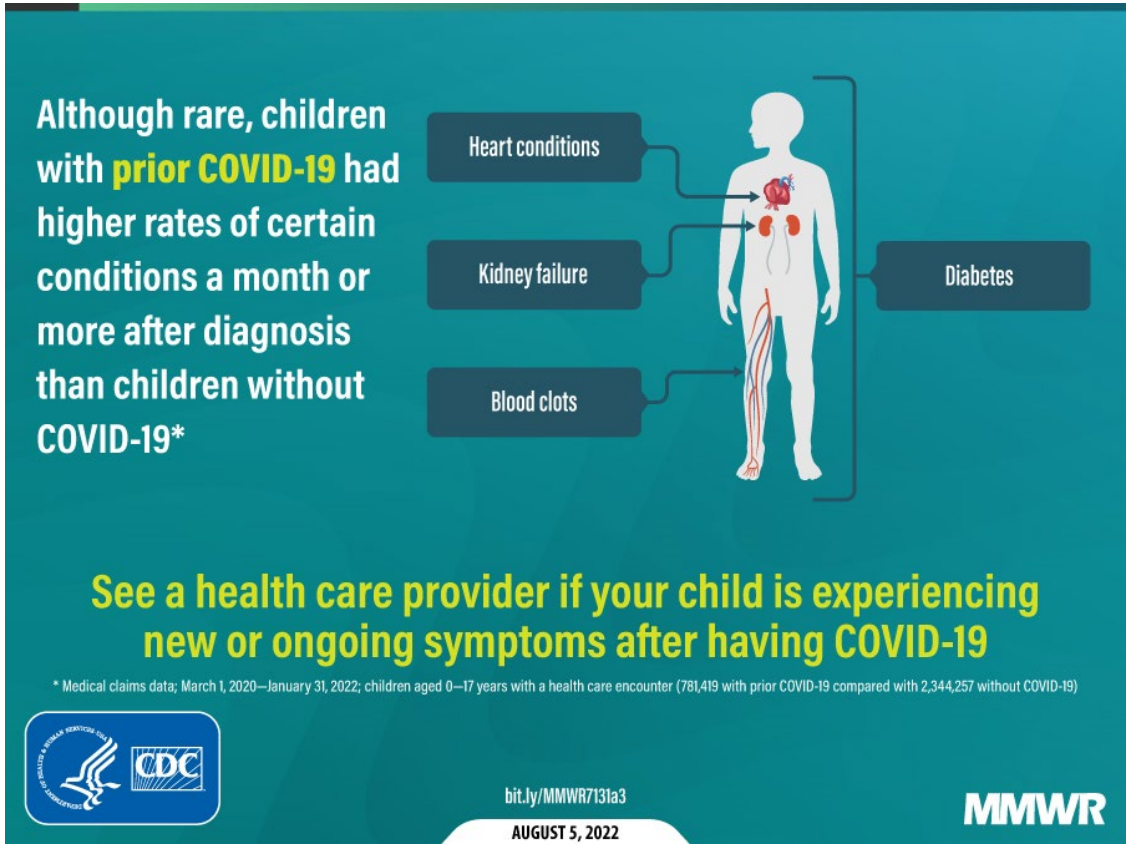
- Analysis of occurrence of 26 clinical conditions in EHRs during Mar 2020 – Nov 2021 (~63 million unique adult records)
- Patients followed for 30 – 365 days after their initial acute COVID index encounter
- 38% of case-patients and 16% controls experienced at least one incident condition



Bull-Otterson et al. Post-COVID Conditions Among Adult COVID-19 Survivors Aged 18–64 and ≥65 Years – United States, March 2020–November 2021. *MMWR* May 27, 2022.

Post-COVID-19 Symptoms and Conditions among Children and Adolescents

- Analysis of large medical claims database
  - 781,419 U.S. children with COVID-19 and 2,344,257 U.S. children without COVID-19 aged 0–17 years who presented for medical care.
- During March 1, 2020–January 31, 2022, **increased risk of four symptoms and eight conditions 31–365 days following COVID-19** among children aged 0–17 years.

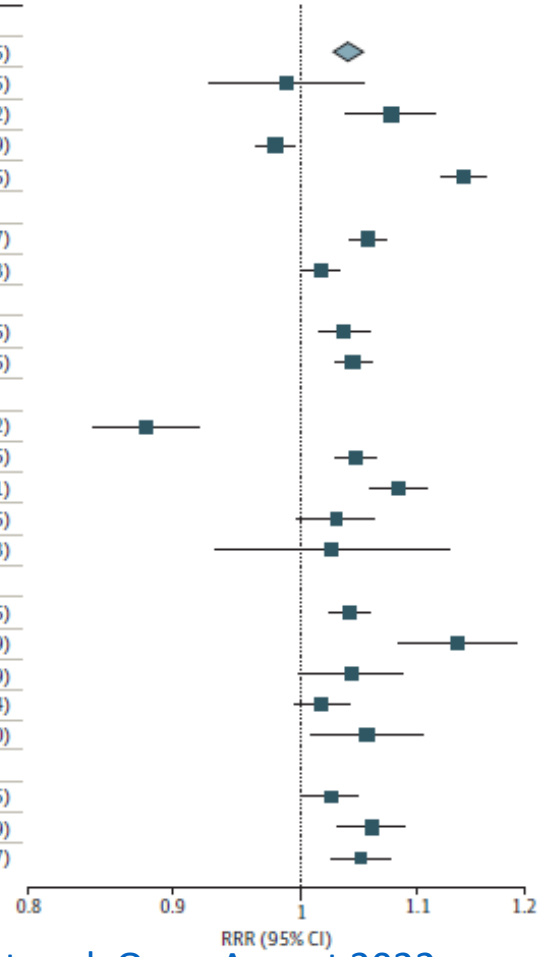


[Post–COVID-19 Symptoms and Conditions Among Children and Adolescents — United States, March 1, 2020–January 31, 2022 | MMWR (cdc.gov)]

Excess health care burden in the 6 months following SARS-CoV-2 infection

Figure 2. Health Care Utilization Associated With Positive SARS-CoV-2 Test Results vs Negative SARS-CoV-2 Test Results

Characteristic	RRR (95% CI)	*P* value
Setting		
Total	1.04 (1.03-1.05)	<.001
Inpatient	0.99 (0.93-1.05)	.70
ED	1.08 (1.04-1.12)	<.001
Outpatient	0.98 (0.96-0.99)	.01
Virtual	1.14 (1.12-1.16)	<.001
Time since index date, mo		
First 3	1.06 (1.04-1.07)	<.001
4-6	1.02 (1.00-1.03)	.03
Sex		
Male	1.03 (1.01-1.06)	.001
Female	1.04 (1.03-1.06)	<.001
Age, y		
0-17	0.88 (0.84-0.92)	<.001
18-49	1.04 (1.03-1.06)	<.001
50-64	1.08 (1.06-1.11)	<.001
65-84	1.03 (1.00-1.06)	.08
≥85	1.02 (0.93-1.13)	.61
Race and ethnicity		
Hispanic	1.04 (1.02-1.06)	<.001
Non-Hispanic Asian	1.14 (1.08-1.19)	<.001
Non-Hispanic Black	1.04 (1.00-1.09)	.06
Non-Hispanic White	1.02 (0.99-1.04)	.16
Multiple, other, or unknown[a]	1.05 (1.01-1.10)	.02
Comorbidity		
Hypertension	1.02 (1.00-1.05)	.04
Diabetes	1.06 (1.03-1.09)	<.001
Overweight or obesity	1.05 (1.02-1.07)	<.001



The difference-in-difference parameter was calculated as the adjusted increase in encounter rate from posttest vs pretest periods associated with SARS-CoV-2 positivity by fitting Poisson regression models with robust error variance. RRR indicates relative rate ratio.

[a] Includes individuals who identified as American Indian or other or multiple races and ethnicities.

- SARS-CoV-2 infection was associated with 4% increase in health care utilization in the 6 months following infection, including for 18 Post-COVID conditions

Tartof et al. JAMA Network Open August 2022

Summary

Important take home messages

- Post-COVID Conditions are common following SARS-CoV-2 infection
- Symptoms and conditions associated with Post-COVID Conditions are not unique to having had SARS-CoV-2 infection
- Important to capture both clinically diagnosed and patient reported symptoms and conditions, along with impact on activities and health care needs
- Public health approach to Long COVID is complex and challenged by lack of specific, consensus definition

For more information:
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