



COVID-19 Webinar: Impact & Vaccination of Children 6 Months & Up

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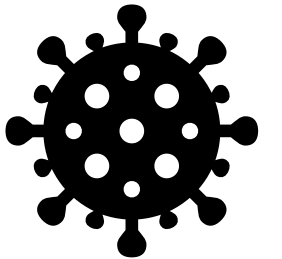
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VACCINATE.WV.GOV
#CommunityImmunityWV



Disclosures

I have no significant disclosures related to today's presentation.



Webinar Objectives



Summarize the impact of COVID-19 on children 6 months of age and older.



State the CDC's recommendations for COVID-19 vaccination of children 6 months of age and older.



Describe clinical considerations for administering the primary series to children 6 months of age and older.

Webinar Objectives



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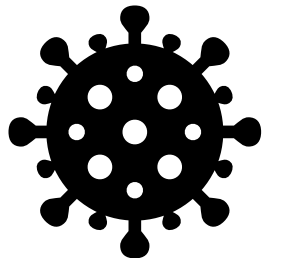
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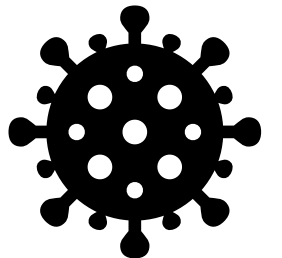
The impact of CoVID-19 on children

- Epidemiologic impacts
 - COVID-19 cases
 - COVID-19 associated mortality
 - COVID-19 related hospitalizations (morbidity)



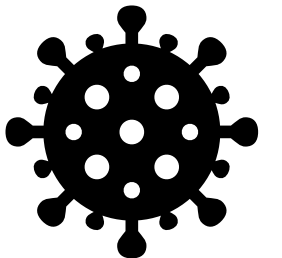
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 - Acute COVID-19 clinical spectrum of disease
 - Post-COVID-19 clinical sequelae
 - Multisystemic Inflammatory Syndrome of Children (MIS-C)
 - Long COVID



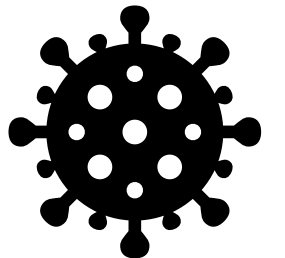
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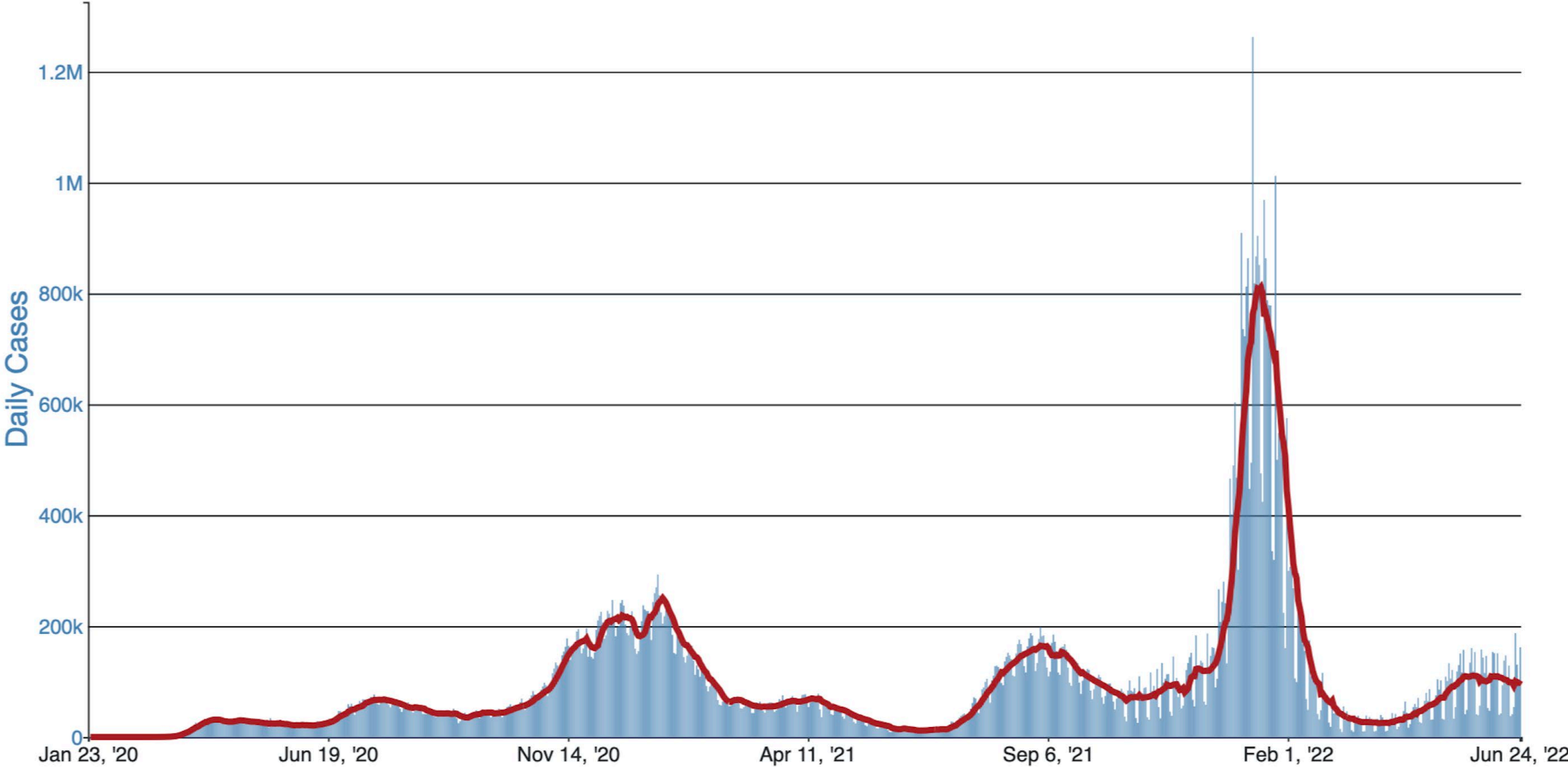
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COVID-19 epidemiology in total U.S. population

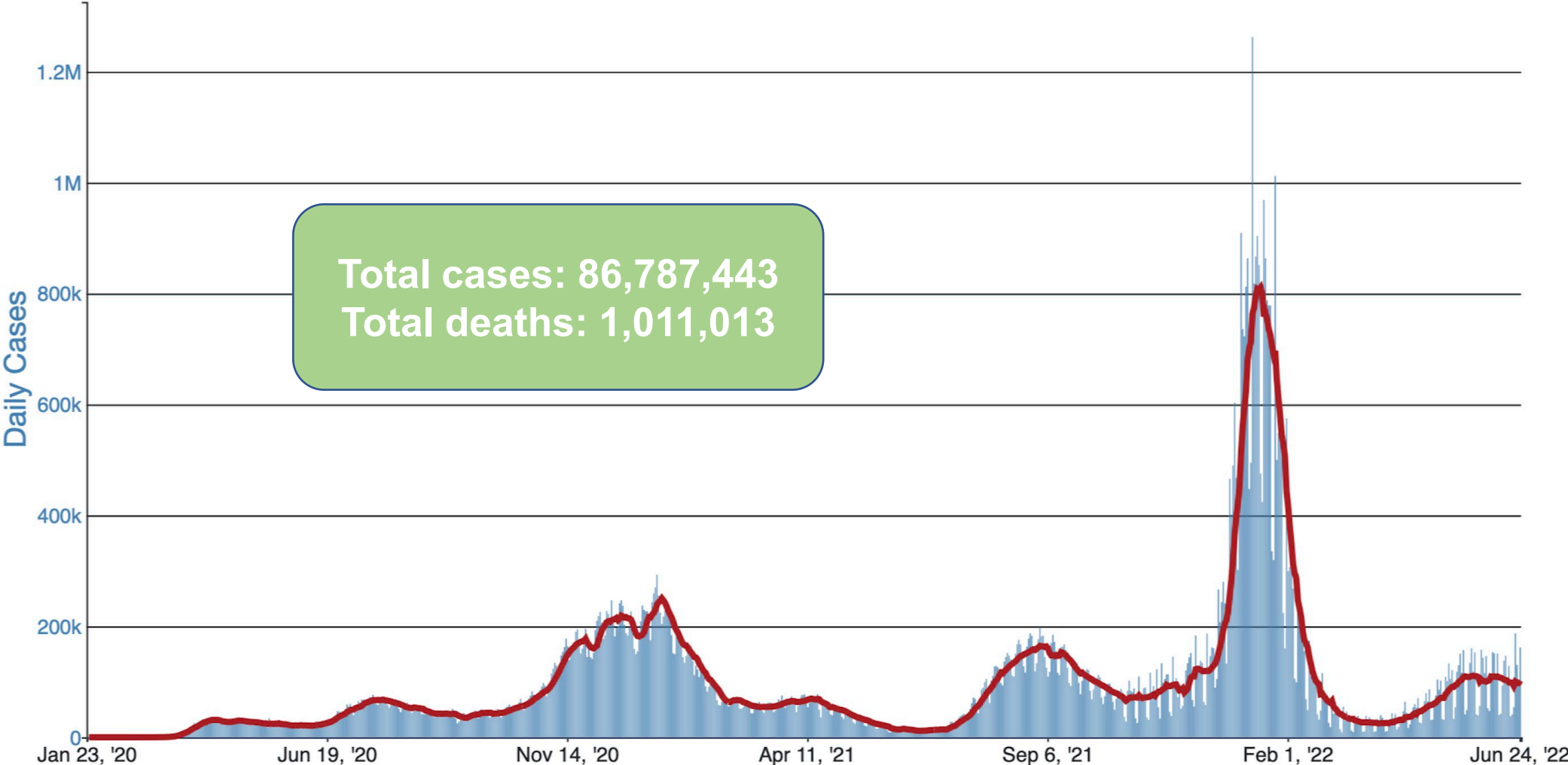
Daily Trends in Number of COVID-19 Cases in The United States Reported to CDC



https://covid.cdc.gov/covid-data-tracker/#trends_dailycases

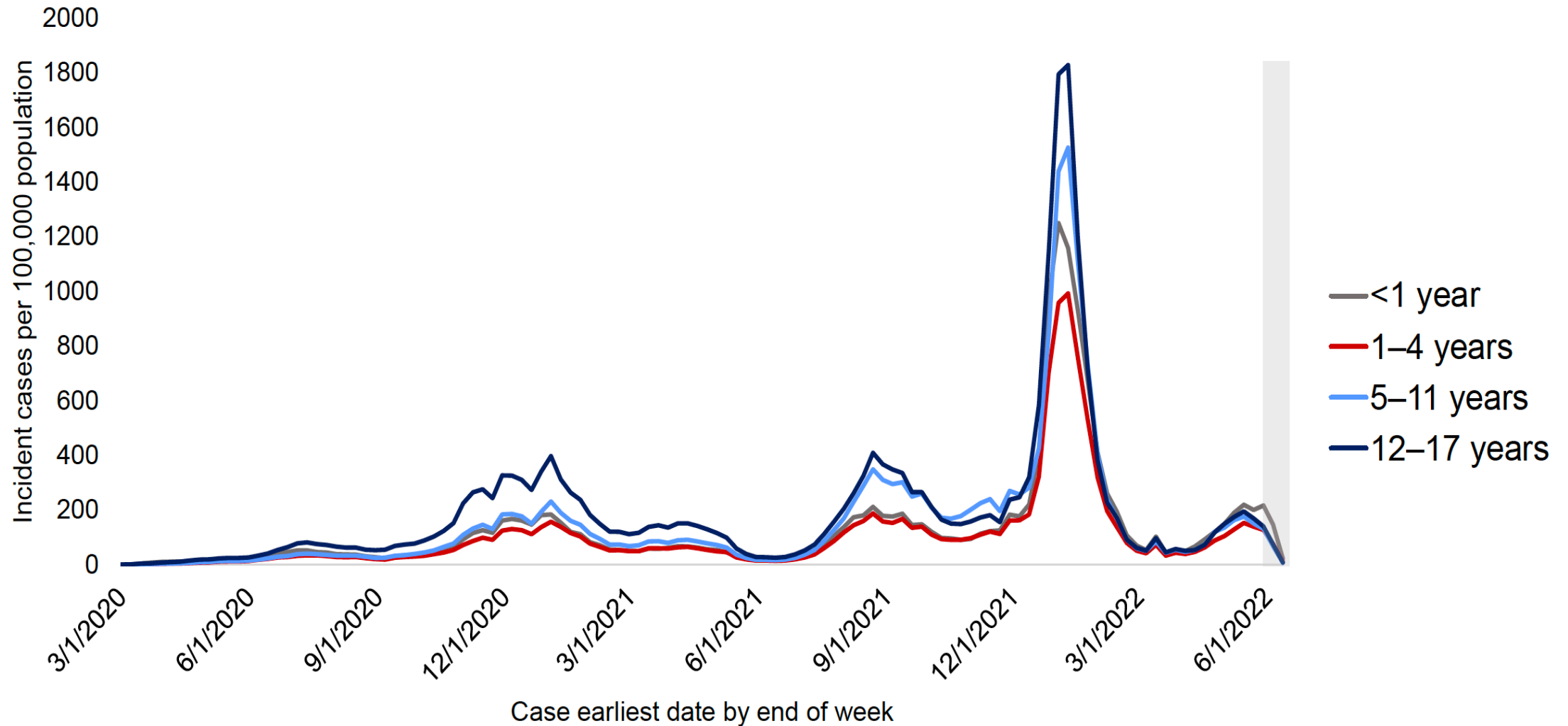
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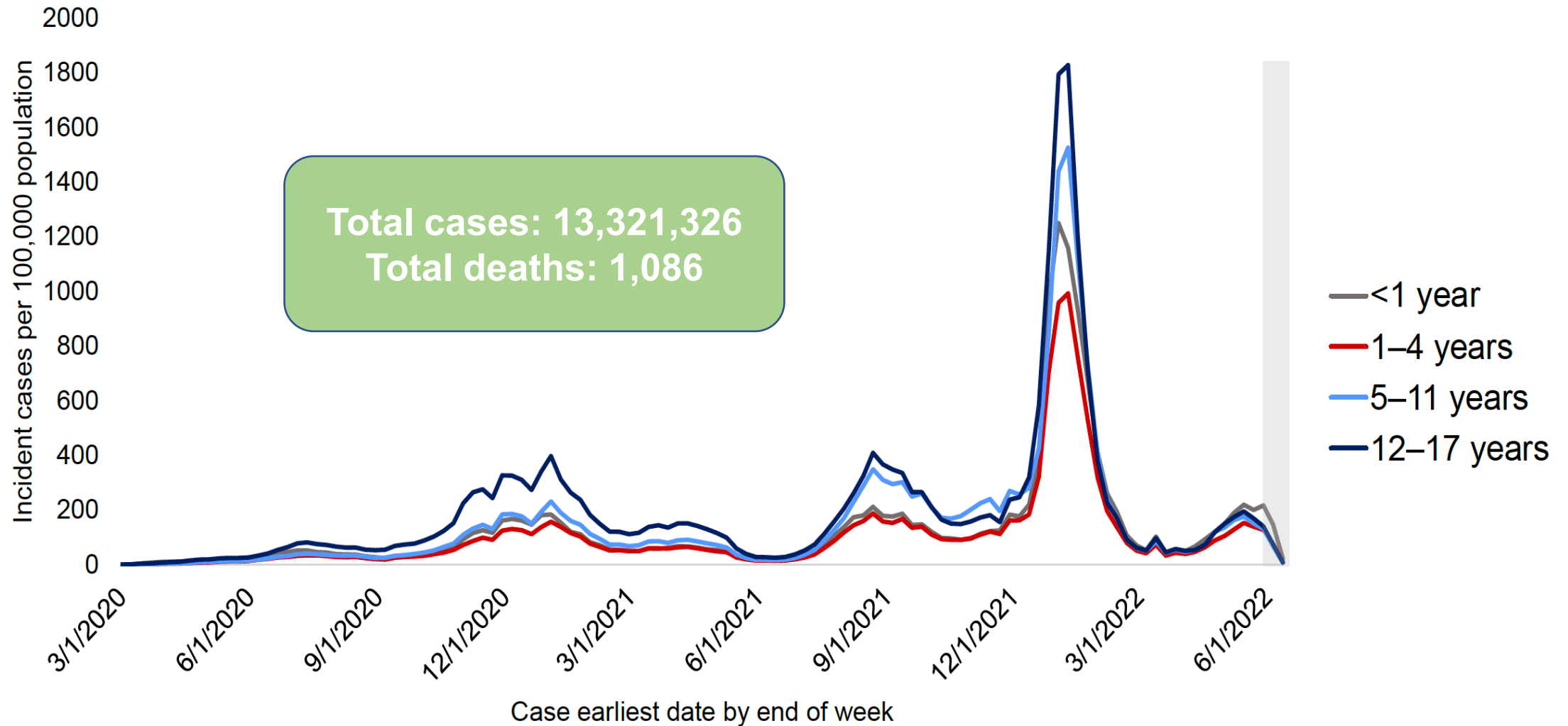


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COVID-19 epidemiology in U.S. children

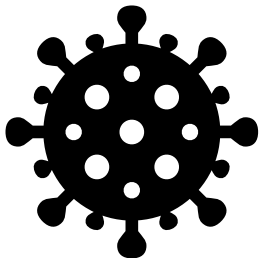


COVID-19 epidemiology in U.S. children



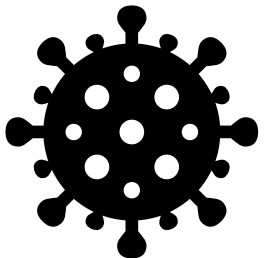
COVID-19 epidemiology in U.S. children

- Approximately 15 – 18% of total cumulative COVID-19 cases
- Approximately 0.1 – 0.3% of total cumulative COVID-19 deaths

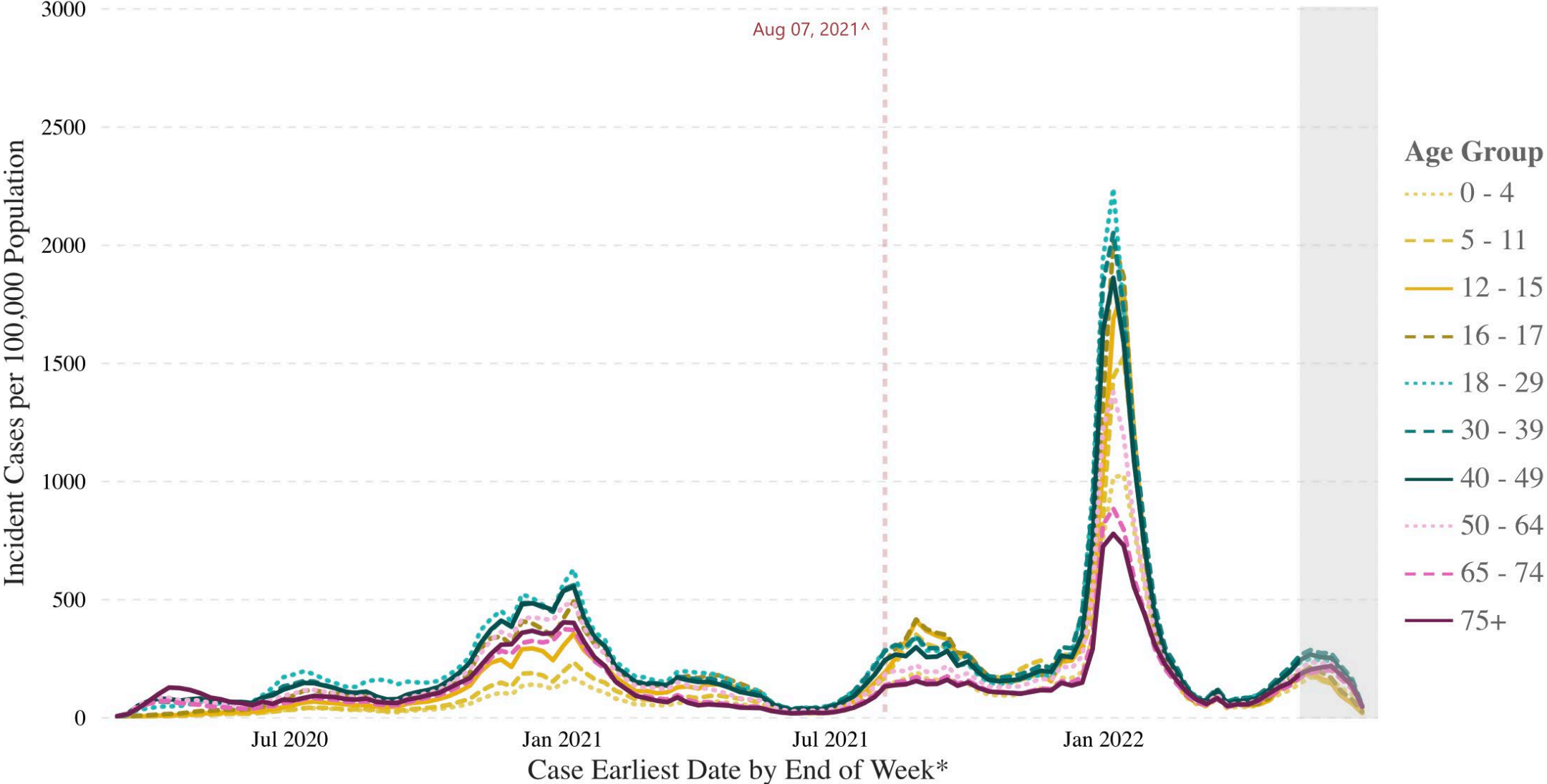


COVID-19 epidemiology in U.S. children

- Approximately 15 – 18% of total cumulative COVID-19 cases
- Approximately 0.1 – 0.3% of total cumulative COVID-19 deaths
- Frequencies & percentages vs. rates? Children <18 yrs. make up only 22.2% of the US population

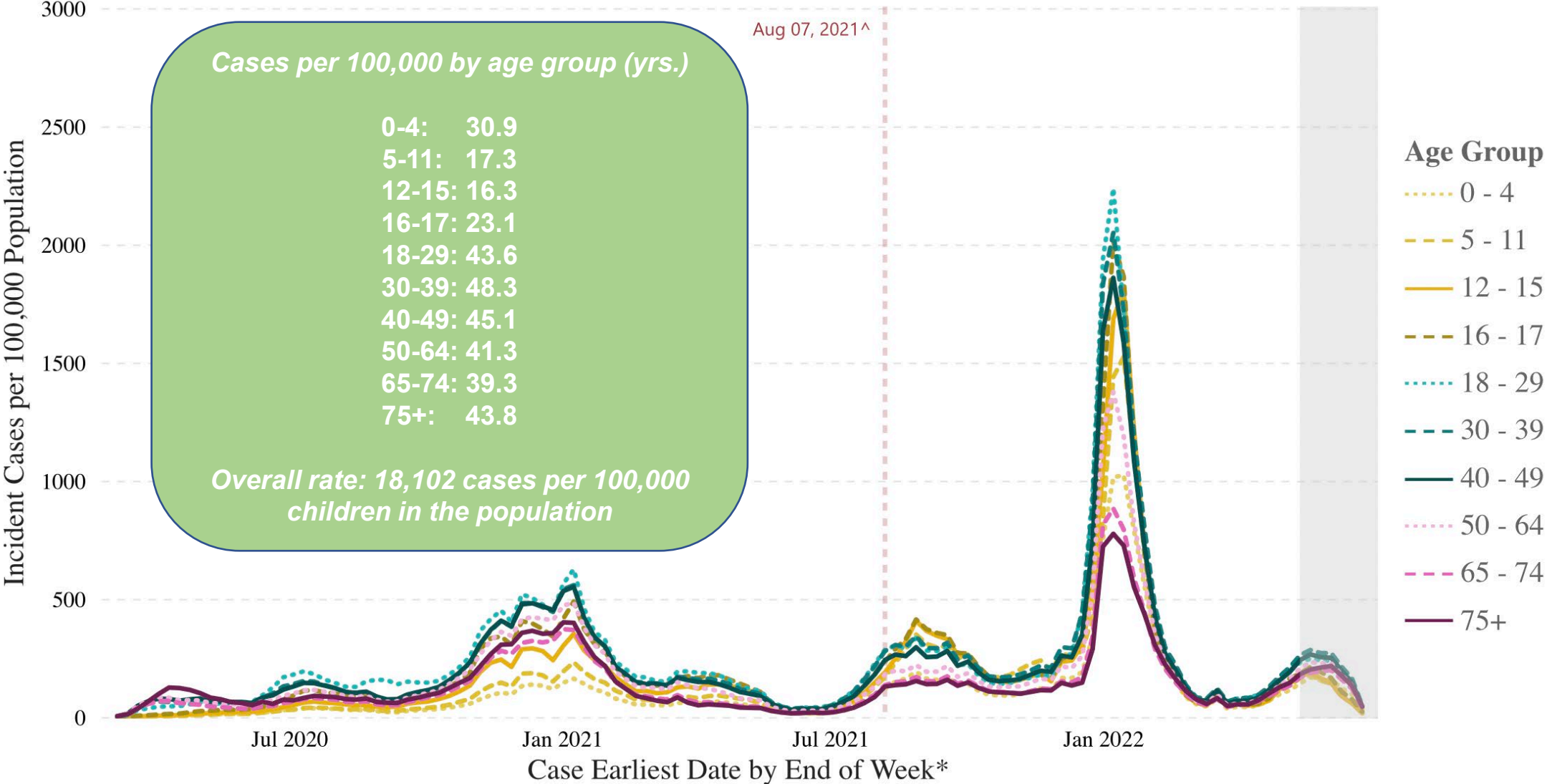


COVID-19 epidemiology in total U.S. population



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COVID-19 epidemiology in total U.S. population



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COVID-19 epidemiology in U.S. children

Ranking COVID-19 among CODs

Age (years)	COVID-19 rank among causes of death (COD)
<1	4
1 – 4	5
5 – 9	5
10 – 14	4
15 – 19	4

Oliver S. Evidence to Recommendation Framework: Moderna COVID-19 vaccine in children ages 6 months – 5 years & Pfizer-BioNTech COVID-19 vaccine in children ages 6 months – 4 years, June 2022. Based on death certificate data from the National Center for Health Statistics. COVID-19 based on cumulative total incidence of COVID-19 deaths from March 1, 2020-April 30, 2022.

Source: Flaxman S, Whittaker C, Semenova E et al. Covid-19 is a leading cause of death in children and young people ages 0-19 years in the United States. medRxiv 2022.05.23.22275458; doi: <https://doi.org/10.1101/2022.05.23.22275458>

COVID-19 epidemiology in U.S. children

Ranking COVID-19 among CODs / Age: <1 yr

Rank	Causes of Death	Crude rate per 100,000	Deaths (n)
1	Certain conditions originating in the perinatal period	272.1	10,294
2	Congenital malformations, deformations & chromosomal abnormalities	113.7	4,301
3	Accidents (unintentional injuries)	33.5	1,266
4	COVID-19 (cumulative)	7.2	269
5	Cardiac diseases	7.1	268

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COVID-19 epidemiology in U.S. children

Ranking COVID-19 among CODs / Age: 1 – 4 yrs

Rank	Causes of Death	Crude rate per 100,000	Deaths (n)
1	Accidents (unintentional injuries)	7.3	1,149
2	Congenital malformations, deformations & chromosomal abnormalities	2.6	416
3	Malignant neoplasms	1.8	285
4	Assault (homicides)	1.8	284
5	COVID-19 (cumulative)	0.9	134

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COVID-19 epidemiology in U.S. children

Vaccine preventable diseases: deaths / yr in U.S. before recommended vaccines

	Hepatitis A ¹	Meningococcal (ACWY) ²	Varicella ³	Rubella ⁴	Rotavirus ⁵	COVID-19 ⁶
Age (years)	<20	11 – 18	5 – 9	All ages	<5	0.5 – 4
Time period	1990 – 1995	2000 – 2004	1990 – 1994	1966 – 1968	1985 – 1991	Jan 2020 – May 2022
Average deaths per year	3	8	16	17	20	86

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¹Vogt TM , Wise ME, Bell BP, Finelli L. Declining hepatitis A mortality in the United States during the era of hepatitis A vaccination. *J Infect Dis*2008; 197:1282–8.

²National Notifiable Diseases Surveillance System with additional serogroup and outcome data from Enhanced Meningococcal Disease Surveillance for 2015-2019.

³Meyer PA, Seward JF, Jumaan AO, Wharton M. Varicella mortality: trends before vaccine licensure in the United States, 1970-1994. *J Infect Dis.* 2000;182(2):383-390. doi:10.1086/315714

⁴Roush SW , Murphy TV; Historical comparisons of morbidity and mortality for vaccine-preventable diseases in the United States. *JAMA* 2007; 298:2155–63.

⁵Glass RI, Kilgore PE, Holman RC, et al. The epidemiology of rotavirus diarrhea in the United States: surveillance and estimates of disease burden. *J Infect Dis.* 1996 Sep;174 Suppl 1:S5-11.

⁶<https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-Counts-by-Age-in-Years/3apk-4u4f/data>. Accessed 5/14/22

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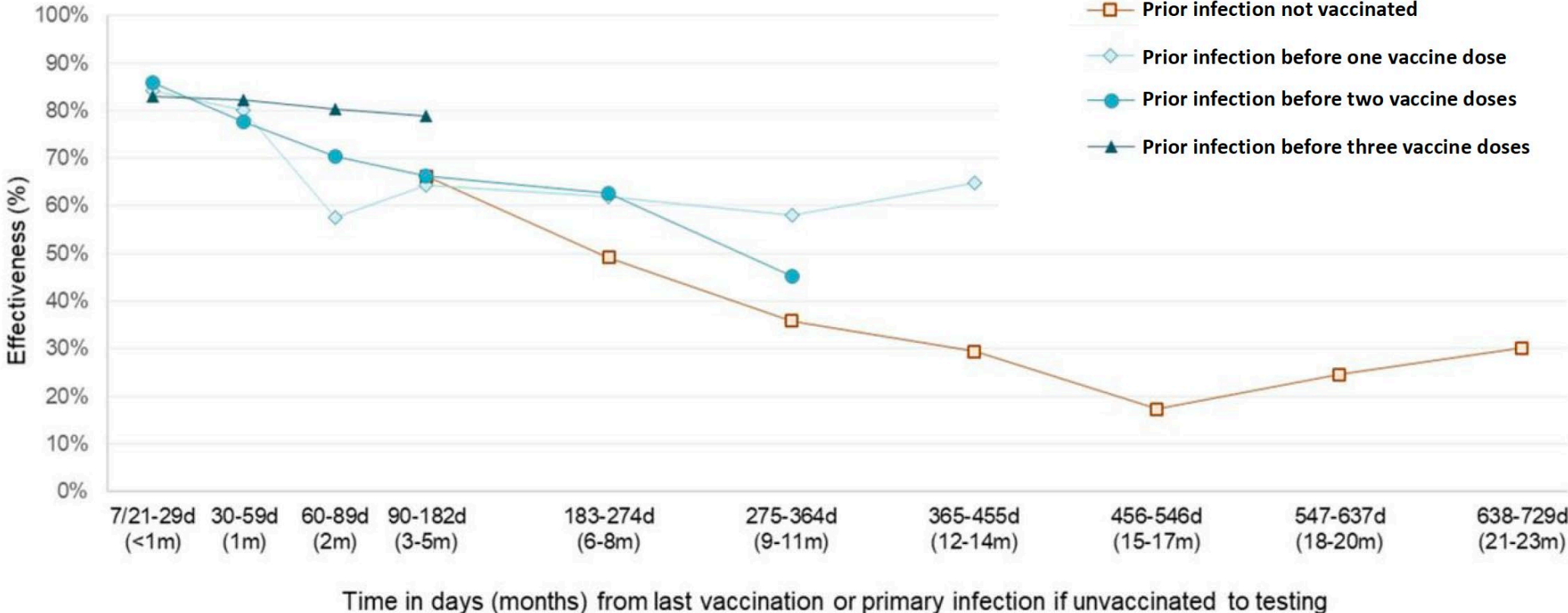
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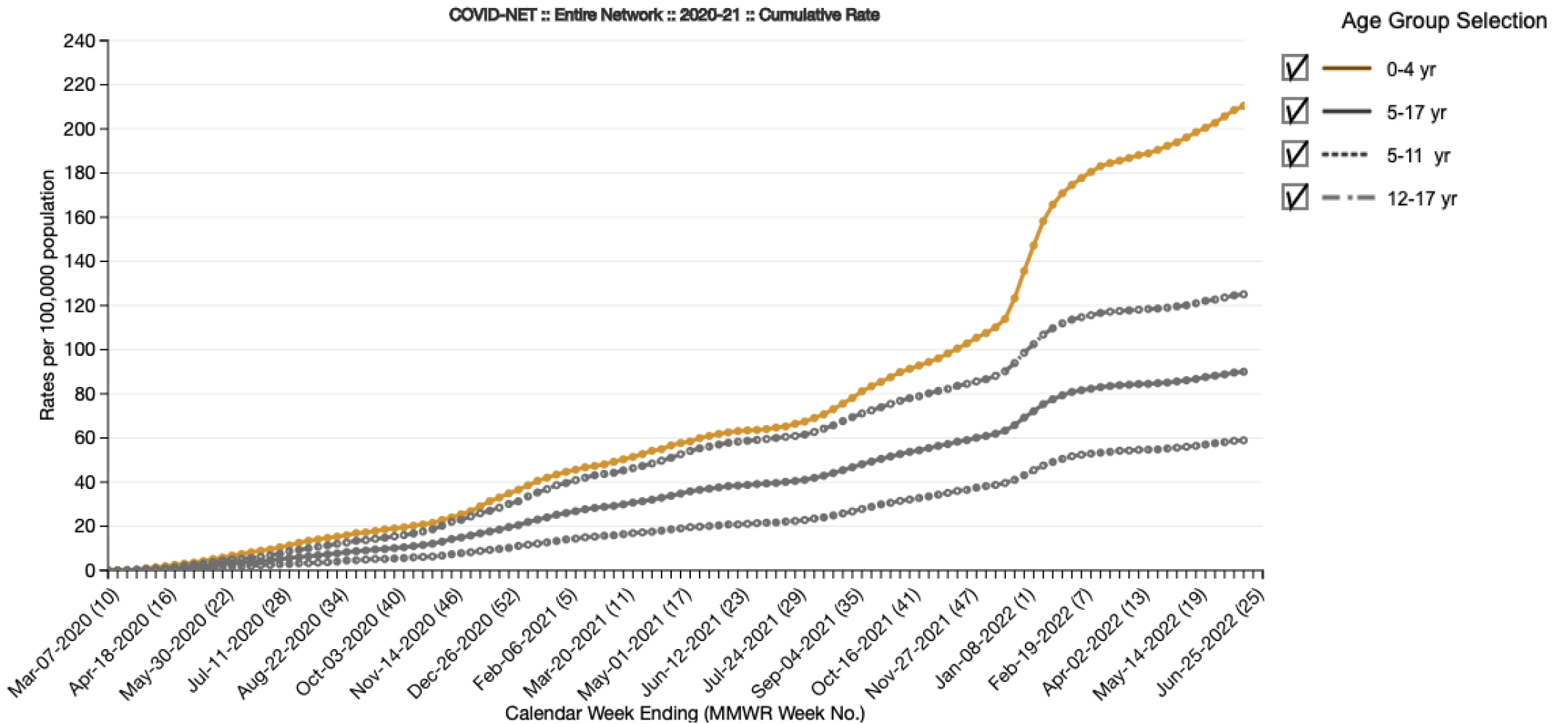
Reinfection: frequency greater in unvaccinated population



Oliver S. Evidence to Recommendation Framework: Moderna COVID-19 vaccine in children ages 6 months – 5 years & Pfizer-BioNTech COVID-10 vaccine in children ages 6 months – 4 years, June 2022.
Carazo S, Skowronski DM, Brisson M, et al. "Protection against Omicron re-infection conferred by prior heterologous SARS-CoV-2 infection, with and without mRNA vaccination" *medRxiv*, May 2022. <https://doi.org/10.1101/2022.05.12.22271152>
Data on hospitalizations: Plumb ID, Feldstein LR, Barkley E, et al. Effectiveness of COVID-19 mRNA Vaccination in Preventing COVID-19–Associated Hospitalization Among Adults with Previous SARS-CoV-2 Infection — United States, June 2021–February 2022. *MMWR Morb Mortal Wkly Rep* 2022;71:549-555. DOI: <https://dx.doi.org/10.15585/mmwr.mm7115e2>

COVID-19 epidemiology in U.S. children

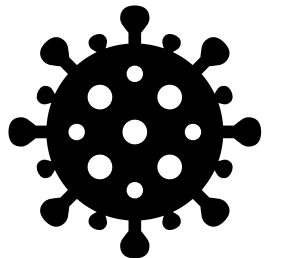
Laboratory-confirmed COVID-19-associated hospitalizations (cumulative rate)



Children with COVID-19 in the National COVID Cohort Collaborative (N3C)

January 1, 2020 – November 10, 2021

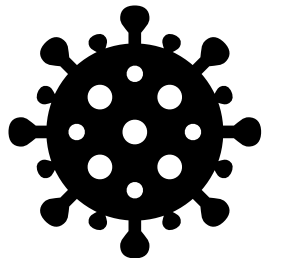
- 91,865 pediatric COVID-19 infections
- 5,213 (6%) were hospitalized
- 685 (13%) met criteria for severe disease
 - Mechanical ventilation (7%)
 - Vasopressor/inotropic support (7%)
 - ECMO (0.6%)
 - Death/discharge to hospice (1/1%)
- 699 deaths <18 years of age
 - 387 were 12 years old or older and qualified for a vaccine
 - 102 are between 5-11 years of age.
- Male gender, African American race, older age and several pediatric complex chronic conditions were associated to higher clinical severity ($p < 0.05$)



COVID-19 epidemiology in U.S. children

AAP Report: June 14, 2022

- Children account for 1.7 – 4.3% of total COVID-19 hospitalizations
- Among children with COVID-19 only 0.1 – 2% result in hospitalization
 - Of those, 32% had no underlying conditions

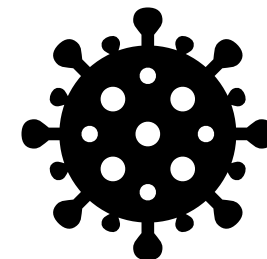


COVID-19 hospitalizations in U.S. children

Multireference summary

- Children requiring hospitalizations were more likely to have:
 - Cardiac or congenital heart disease
 - Chronic lung disease
 - Genetic syndromes (Trisomy 21)
 - Prematurity (<37 WGA)
 - Immunocompromised condition
 - Obesity (BMI>95th percentile)
 - Young age or older adolescence
 - Children of color
- Increased association of severe COVID-19 was observed among patients with 1 or more chronic conditions* vs those with none (adjusted odds ratio 3.27, CI 2.44-4.37)

* Chronic conditions defined by AHRQ Healthcare Cost and Utilization Project, Chronic Condition Indicators for ICD-10-CM.



West Virginia COVID-19

Overview

County Alert

7-Day Trend

Cumulative Summary

Breakthrough Data

Outbreaks

Hospital

Other Trends ▼

Vaccine Summary

[Click here to view variant data](#)

529,262

Total Number of
Cases

[Click here to view Breakthrough
Cases and Total Cases](#)

7,056

Deaths

[Click here to view Breakthrough
Deaths and Total Deaths](#)

611

New Cases Received Since Last
Update

2

Deaths Reported Since Last
Update

2,135

Current Active Cases

12.35%

Daily Percent
Positivity

[Click here to view breakdown](#)

8.16%

Cumulative Percent
Positivity

[Click here to view breakdown](#)

Note: Boost Doses % is calculated with respect to the number of people fully

Vaccine Doses Administered Into Arms of West Virginia Residents

Key Metric	Doses	Population	%
At Least One Dose	1,135,398	1,792,147	63.4%
Fully Vaccinated	981,644	1,792,147	54.8%
Boost Doses	515,868	981,644	52.6%
5+ At Least One Dose	1,135,398	1,699,122	66.8%
5+ Fully Vaccinated	981,644	1,699,122	57.8%
5+ Boost Doses*	515,868	981,644	52.6%
18+ At Least One Dose	1,039,613	1,432,580	72.6%
18+ Fully Vaccinated	900,065	1,432,580	62.8%
18+ Boost Doses	503,258	900,065	55.9%
50+ At Least One Dose	618,168	736,823	83.9%
50+ Fully Vaccinated	551,893	736,823	74.9%
50+ Boost Doses	382,540	551,893	69.3%
65+ At Least One Dose	334,977	367,011	91.3%
65+ Fully Vaccinated	302,141	367,011	82.3%
65+ Boost Doses	237,171	302,141	78.5%
Total Doses Administered to WV Residents	2,633,246		

Data Source: HHS, CDC and WV DHHR

Updated 10:00 AM 6/24/2022

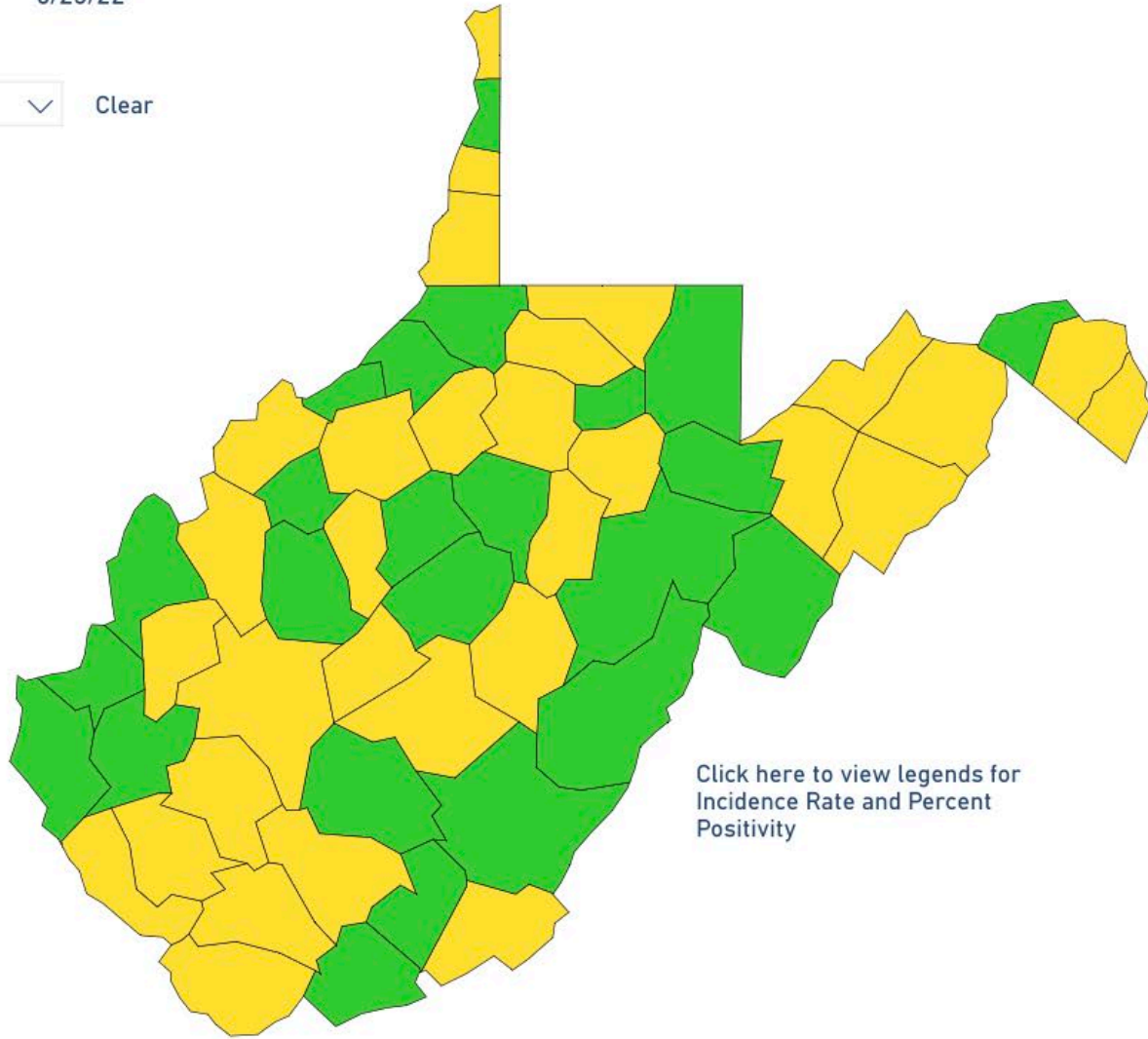
*Booster doses include ages 12 and older

Individuals counted are West Virginia residents vaccinated in-state or out-of-state through State Allocations, Federal Pharmacy Program, Federal FQHC Program and Federal Entities

Map colors as of 6/23/22

County Filter

All



[Click here to view legends for Incidence Rate and Percent Positivity](#)

County	06/21/22	06/22/22	06/23/22
Barbour			
Lower of Two Indicators	15.21	19.26	22.30
Infection Rate	15.21	19.26	22.30
Percent Positivity	7.46	9.22	11.17
Berkeley			
Lower of Two Indicators	3.22	3.89	6.06
Infection Rate	8.75	11.63	16.06
Percent Positivity	3.22	3.89	6.06
Boone			
Lower of Two Indicators	3.07	6.12	21.75
Infection Rate	9.32	18.64	21.75
Percent Positivity	3.07	6.12	7.61
Braxton			
Lower of Two Indicators	1.90	2.80	3.48
Infection Rate	6.14	10.24	13.31
Percent Positivity	1.90	2.80	3.48
Brooke			
Lower of Two Indicators	1.64	2.49	4.33
Infection Rate	6.51	9.77	16.28
Percent Positivity	1.64	2.49	4.33
Cabell			
Lower of Two Indicators	2.38	3.74	4.38
Infection Rate	8.86	13.83	15.85
Percent Positivity	2.38	3.74	4.38
Calhoun			
Lower of Two Indicators	6.51	32.82	37.51
Infection Rate	30.95	32.82	37.51
Percent Positivity	6.51	10.29	13.45
Clay			
Lower of Two Indicators	2.82	2.94	14.10
Infection Rate	3.92	4.70	14.10
Percent Positivity	2.82	2.94	9.68
Doddridge			
Lower of Two Indicators	0.00	2.17	6.17

* Infection Rate Cases Excluded: recovered cases, cases residing in nursing homes, state or federal prisons and university/college isolation dorms

* Percent Positivity Rate Cases Excluded: recovered cases, cases residing in nursing homes, state or federal prisons and university/college isolation dorms

Cumulative View

County Filter:

Date Range:

[Click Here to View in Table Format](#)

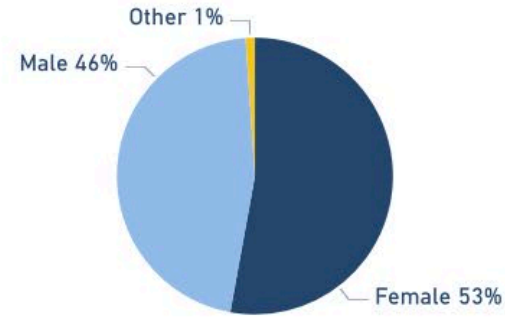
Confirmed Cases	416,579
Probable Cases	112,683
Confirmatory Lab Test	6,355,777
Deaths	7,056

Age Group	Percentage
0-4	3.20%
5-11	6.52%
12-15	5.04%
16-20	7.84%
21-25	8.21%
26-30	7.79%
31-40	14.52%
41-50	14.57%
51-60	13.11%
61-70	10.01%
71+	9.19%

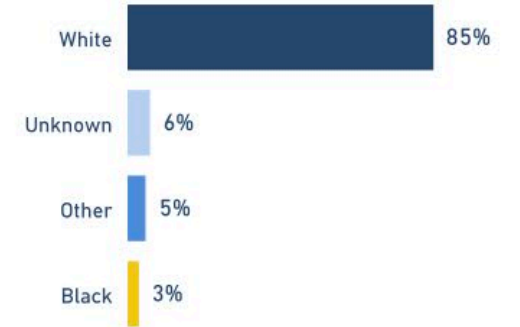
Age Group	Percentage
0-4	2.36%
5-11	4.27%
12-15	2.80%
16-20	6.78%
21-25	8.54%
26-30	7.60%
31-40	14.12%
41-50	14.25%
51-60	13.98%
61-70	11.33%
71+	13.96%

Demographics of Cases

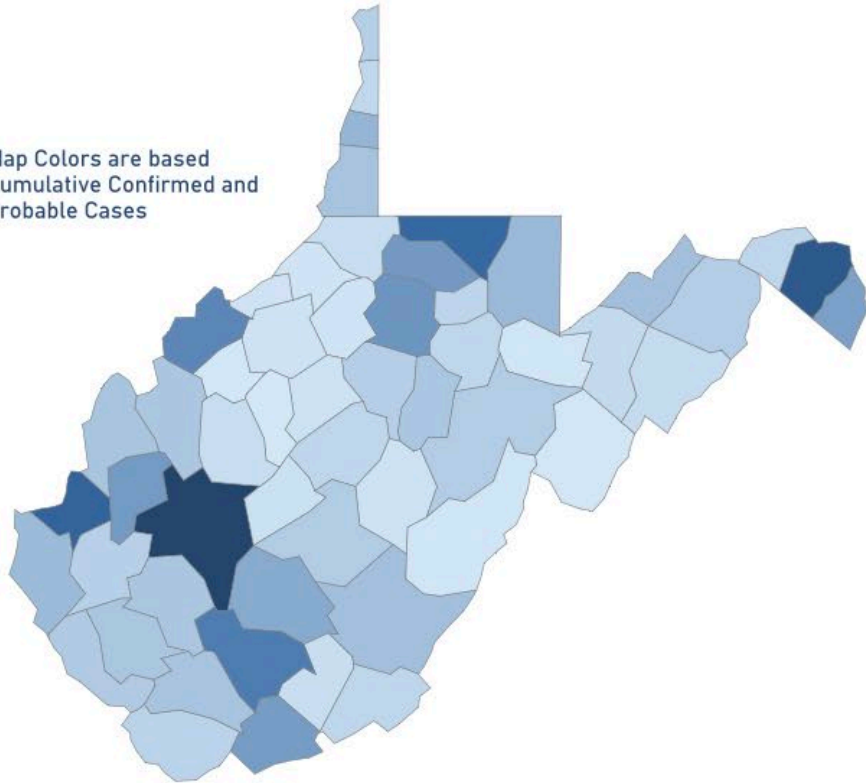
Cases by Sex



Cases by Race

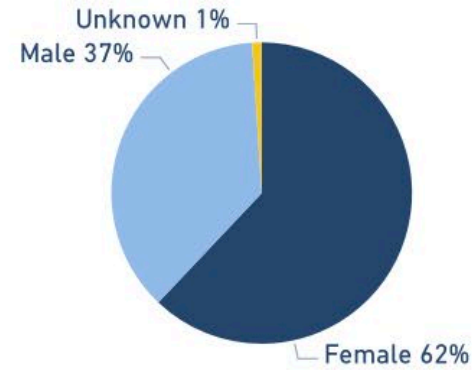


Map Colors are based on Cumulative Confirmed and Probable Cases

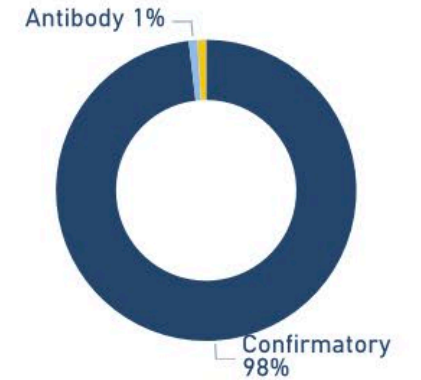


Demographics of People Tested

Lab Test by Sex



Type of Lab Test



West Virginia COVID-19

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Other Trends ▼

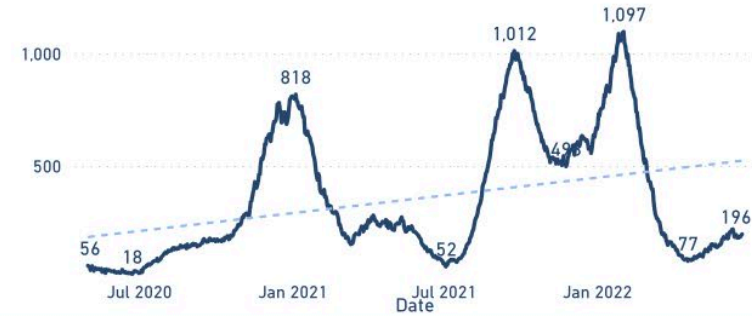
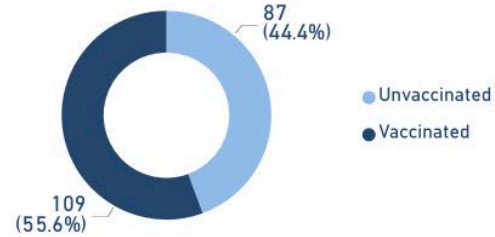
Vaccine Summary

Pediatric Confirmed Cases Hospitalized

1

Statewide Confirmed Cases Hospitalized

196

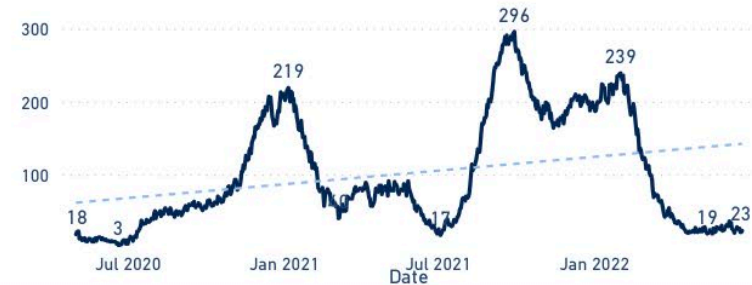
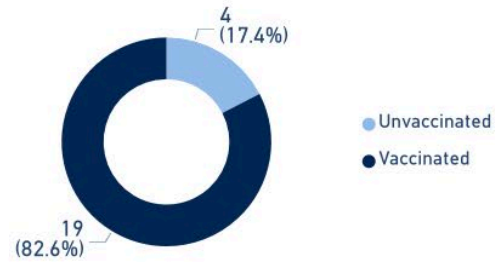


Pediatric Confirmed Cases Hospitalized (ICU)

0

Statewide Confirmed Cases Hospitalized (ICU)

23

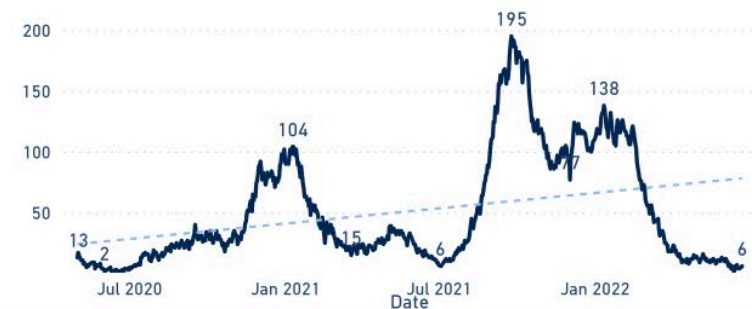
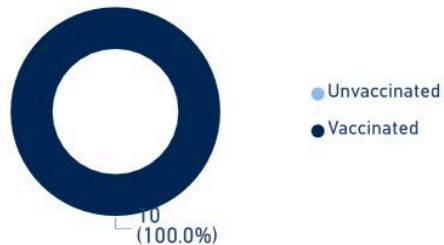


Pediatric Confirmed Cases Hospitalized on Vent

0

Statewide Confirmed Cases Hospitalized on Vent

6



Note: All data are provisional and subject to change based on information obtained during public health investigations.

Updated 6/24/2022

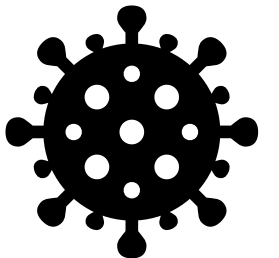
The epidemiologic impact of CoVID-19 on U.S. children

Summary

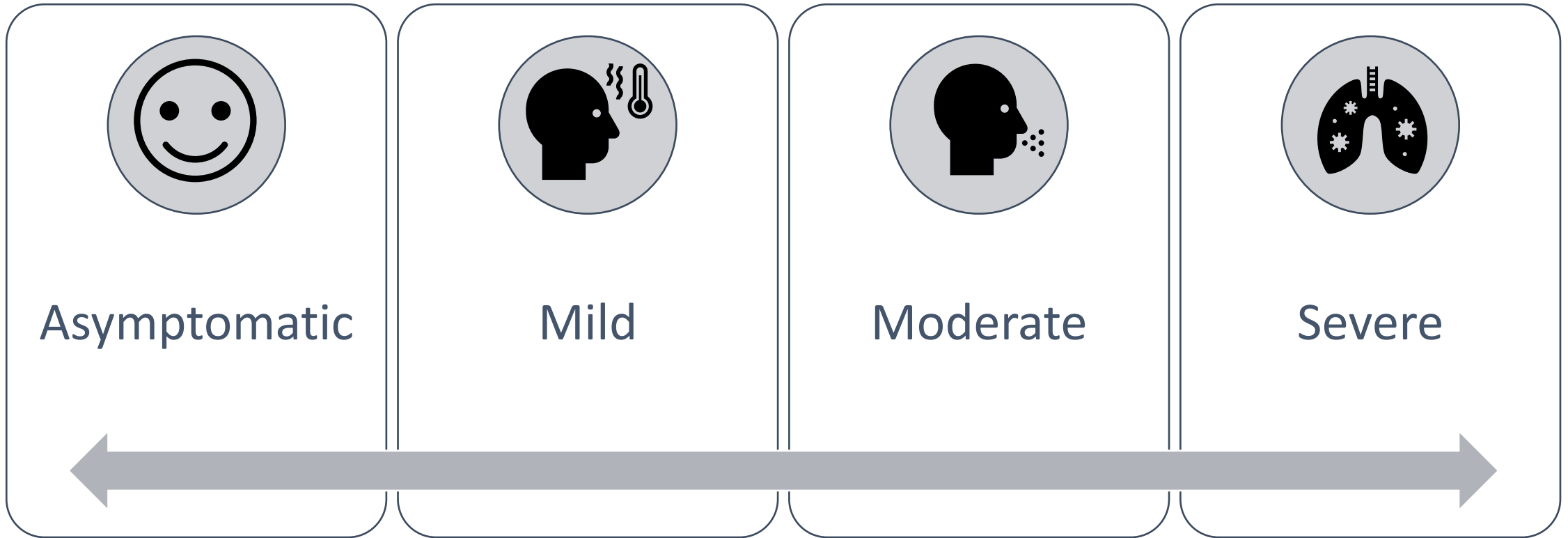
- COVID-19 has caused >2 million cases among children 6 months - 4 years
- This population is at risk of severe illness from COVID-19, especially with underlying medical co-morbidities and/or contributing sociodemographic factors
- Prior protection may not provide broad protection against newer COVID-19 variants
- COVID-19 continues to have a significant impact on children and families

The impact of CoVID-19 on children

- Epidemiologic impacts
 - COVID-19 cases
 - COVID-19 associated mortality
 - COVID-19 related hospitalizations (morbidity)
- Clinical impacts
 - Acute COVID-19 clinical spectrum of disease
 - Post-COVID-19 clinical sequelae
 - Multisystemic Inflammatory Syndrome of Children (MIS-C)
 - Long COVID
- Unmeasurable impacts



Acute COVID-19 Clinical Spectrum of Disease

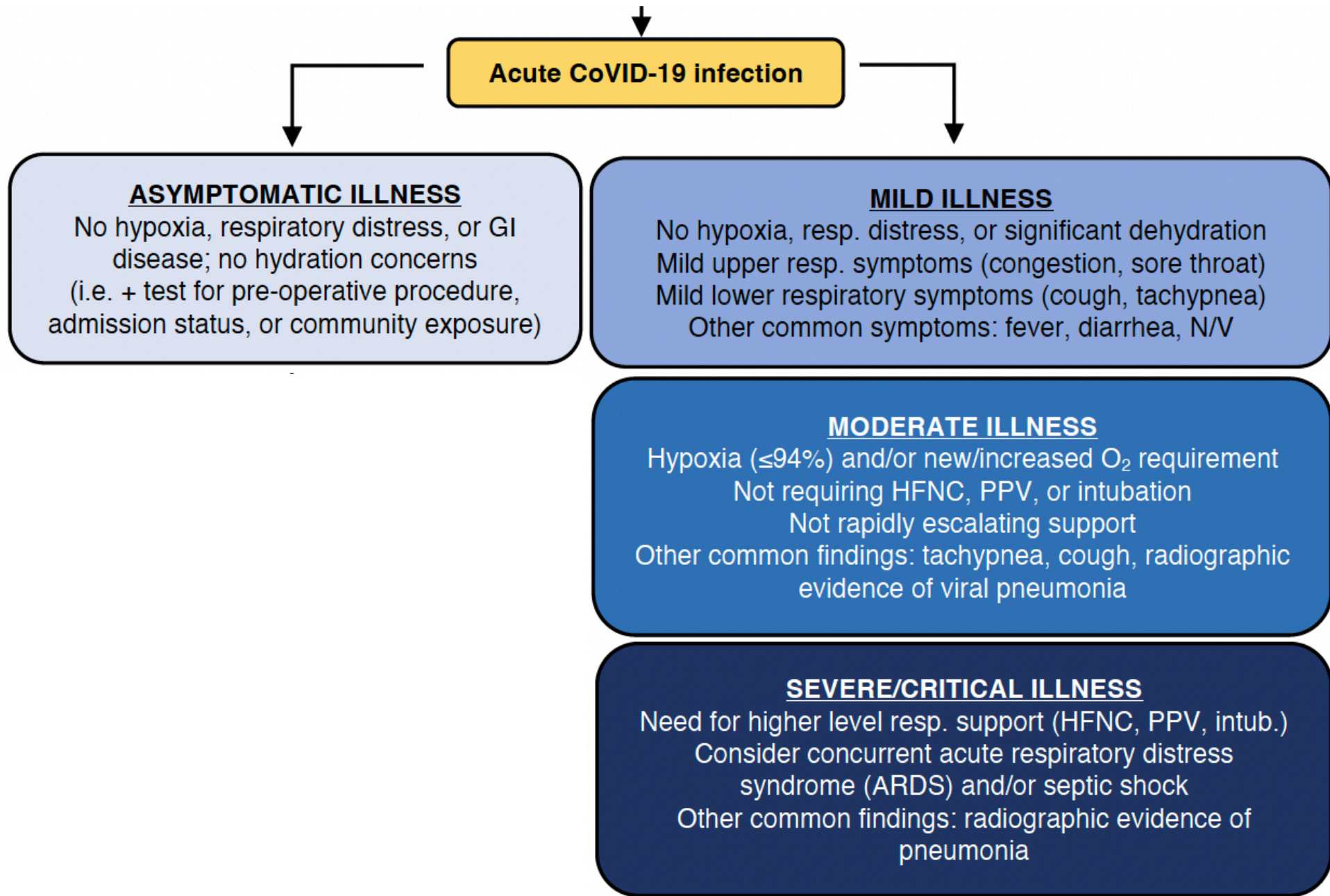


Viral incubation: 2 – 14 days

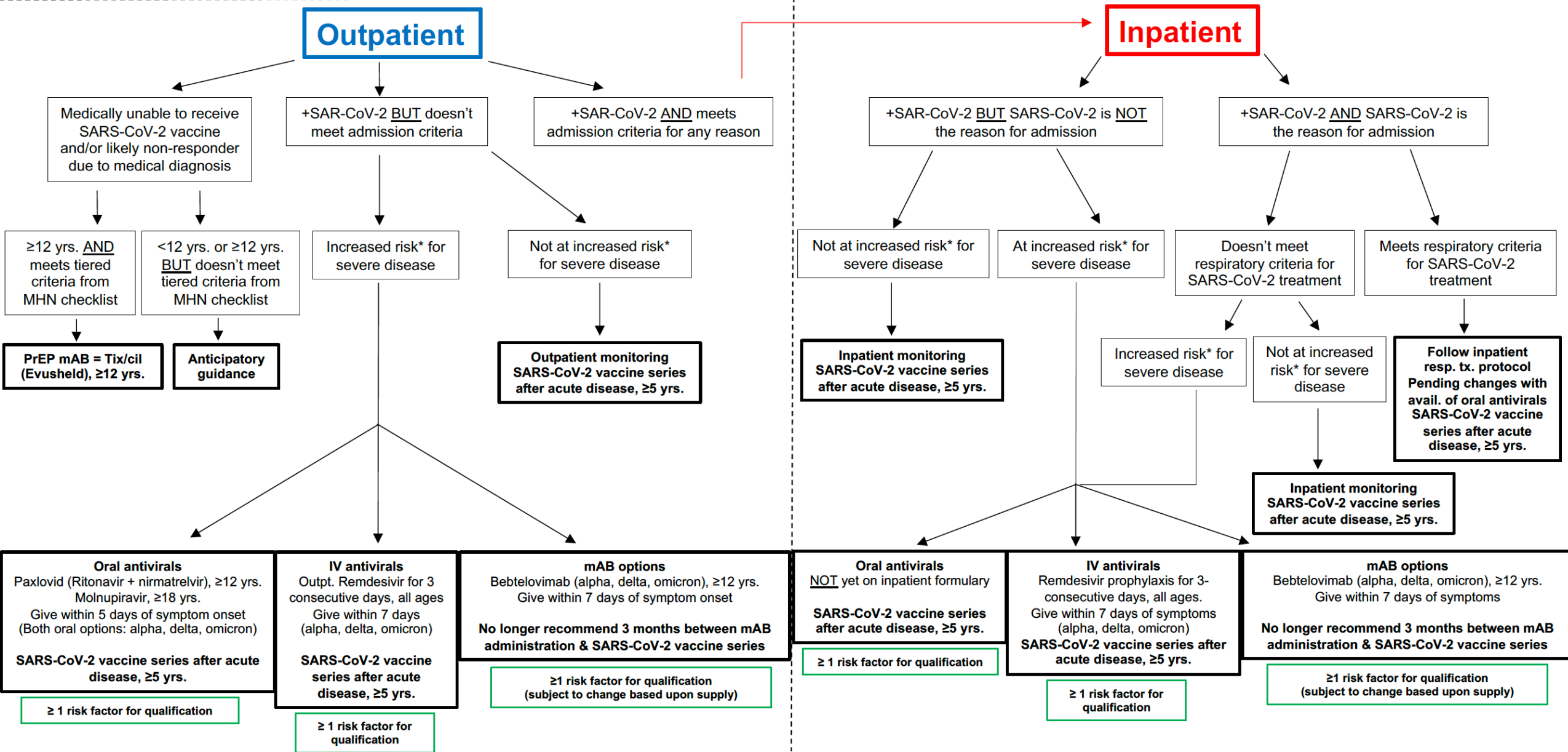
Majority of infections: asymptomatic

Most common symptomatic infections: cough & fever

Other symptoms of varying severity: fatigue, H/A, myalgia, dysgeusia, abdominal pain, diarrhea, N/V, reduced appetite



Marshall Pediatrics SARS-CoV-2 Management Guidelines



*Risk factors: younger age (<1 year), BMI ≥85th percentile for age/gender per CDC growth charts, hemodynamically significant congenital/acquired heart disease (e.g. cyanotic heart disease, severe pulmonary hypertension, acyanotic heart disease on medication to control heart failure), chronic respiratory disease that requires daily meds for control (e.g. asthma, COPD, CF, ILD, pulmonary HTN), medical-related tech dependence (e.g. tracheostomy, gastrostomy) and/or PPV (not related to COVID-19), immunosuppressive disease or immunosuppressive treatment, neurodevelopmental (e.g. cerebral palsy), genetic and/or metabolic disorders, chronic kidney disease, diabetes mellitus (type 1 & type 2), sickle cell disease, hypertension, and at-risk populations due to long-standing systemic health and social inequalities.

Post-COVID-19 clinical sequelae

Multisystem inflammatory syndrome of children (MIS-C)

Criteria	RCPCH†	CDC	WHO‡
Age	All children (age not defined)	<21 years	0–19 years
Fever	Persistent fever ($\geq 38.5^{\circ}\text{C}$)	Temperature $\geq 38.0^{\circ}\text{C}$ for ≥ 24 hours <i>or</i> subjective fever for ≥ 24 hours	Fever for ≥ 3 days
Clinical symptoms	Both of the following: 1. single or multiorgan dysfunction; <i>and</i> 2. additional features	Both of the following: 1. severe illness (hospitalized); <i>and</i> 2. ≥ 2 organ systems involved	At least 2 of the following: 1. rash, conjunctivitis, and mucocutaneous inflammation; 2. hypotension or shock; 3. cardiac involvement; 4. coagulopathy; 5. acute GI symptoms
Inflammation	All 3 of the following: 1. neutrophilia; <i>and</i> 2. increased CRP; <i>and</i> 3. lymphopenia	Laboratory evidence of inflammation including, but not limited to, 1 or more of the following: 1. \uparrow CRP; 2. \uparrow ESR; 3. \uparrow fibrinogen; 4. \uparrow procalcitonin; 5. \uparrow D-dimer; 6. \uparrow ferritin; 7. \uparrow LDH; 8. \uparrow IL-6; 9. neutrophilia; 10. lymphopenia; 11. hypoalbuminemia	Elevated inflammation markers, including any of the following: 1. \uparrow ESR; 2. \uparrow CRP; 3. \uparrow procalcitonin
Link to SARS-CoV-2	Positive or negative by PCR	Current or recent findings of the following: 1. positive by PCR; 2. positive by serology; 3. positive by antigen test; <i>or</i> 4. COVID-19 exposure within prior 4 weeks	Evidence of COVID-19 by the following: 1. positive by PCR; 2. positive by antigen test; 3. positive by serology; <i>or</i> 4. likely COVID-19 contact
Exclusion	Other infections	No alternative diagnosis	No obvious microbial cause

Post-COVID-19 clinical sequelae

MIS-C imaging considerations

CXR:

- Patchy asymmetric infiltrates
- Pleural effusion

CT Chest:

- Patchy asymmetric infiltrates
- Pleural effusion
- Coronary artery abnormalities if with contrast

Echo/EKG:

- Myocarditis
- Valvulitis
- Pericardial effusion
- Coronary dilation/aneurysm

Abd US:

- Colitis
- Ileitis
- Lymphadenopathy
- Ascites
- Hepatosplenomegaly

MARSHALL PEDIATRICS & HOOPS FAMILY CHILDREN'S HOSPITAL MIS-C CASE DEFINITION

1. <21 years of age presenting with fever*, lab evidence of inflammation**, and evidence of clinically severe illness requiring hospitalization with multisystem (≥ 2) organ involvement (cardiac, respiratory, renal, heme, GI, neuro, derm, etc.) involvement***, **AND**
2. No alternative diagnosis, **AND**
3. + CoVID-19/SARS-CoV-2 PCR or serology or known CoVID-19 exposure (>15 minutes, <6 ft apart) within 4 weeks.

*Fever & **lab evidence of inflammation descriptions

***Fever:** $>38.0^{\circ}\text{C}$ (100.4°F) for ≥ 24 hours, or report of subjective fever lasting ≥ 24 hours.

****Lab evidence of inflammation:** includes but not limited to one or more of the following: an elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), fibrinogen, procalcitonin, d-dimer, ferritin, lactic acid dehydrogenase (LDH), or interleukin 6 (IL-6), elevated neutrophils, reduced lymphocytes and low albumin.

***Examples of organ system dysfunction

Constitutional: fatigue, malaise

HEENT: conjunctivitis + "integumentary/skin" findings

Cardiac: shock, elevated troponins/BNP, abnormal EKG (ST/T wave changes), abnormal echo, new arrhythmia

Respiratory: pneumonia, ARDS, pulmonary embolism

GI: abdominal pain, diarrhea

Liver: elevated bilirubin, elevated transaminases, coagulopathy

GU: sterile pyuria, hematuria

Neurologic: aseptic meningitis, CVA

Hematologic: coagulopathy, elevated D-dimer, thrombophilia and/or thrombocytopenia, elevated ferritin

Integumentary/skin: polymorphic rash, petechia/purpura (any location)

Diagnosis: Complete/incomplete Kawasaki Disease (KD)

Clinically more consistent with KD (Fever persistent 4-5 days)

Consider the following management recs:

1. IVIG 2g/kg.
2. Aspirin 30-50 mg/kg/day divided q6hr while febrile, decrease to 3-5 mg/kg (max 81 mg) daily once patient defervesces.
3. For high-risk KD patients (CAA at diagnosis, age <6 months, IVIG resistance, CRP >13 mg/dL), consider adding prednisone 1 mg/kg BID with a tapering course over ~3 weeks.
4. Additional immunomodulators as needed in conjunction with Peds Rheumatology consultation.

Review illness severity & consider acute CoVID-19 vs. MIS-C. vs. other***

Clinically more consistent with acute CoVID-19 infection, follow "*Management Guidelines for Acute CoVID-19/SARS-CoV-2 Infection*" pathway (see other handout)

Clinically more consistent with MIS-C based upon exposure timeline, clinical signs/symptoms, etc.

Diagnosis: MIS-C

Differential of "other**" etiologies:**

1. Viral infection (e.g. adenovirus, EBV)
2. Kawasaki Disease (KD)
3. Toxic Shock Syndrome (TSS)
4. Septic Shock
5. Rheumatic fever +/- heart disease
6. Vasculitis
7. Fulminant myocarditis

Evaluation considerations:

ADDITIONAL WORK-UP

Lab & considerations (if not already obtained):

Tier 1: CBC/d, CMP, CRP, ESR, CoVID-19/SARS-CoV-2 PCR & antibodies (IgM & IgG; LabCorp test code: 164068).

Tier 2 (evidence of shock and/or significant Tier 1 lab derangement): BNP, troponin, procalcitonin, ferritin, PT, PTT, D-dimer, fibrinogen, type & screen, LDH, triglycerides, respiratory viral PCR (if not already obtained), ASO + Anti-DNase B, rapid *Strep*/throat cx, U/A with microscopy/cx, blood cx; others per clinical dispo.

Imaging considerations with Tier 1 and/or 2 labs (if not already obtained):

EKG, echocardiogram, CXR

SUBSPECIALTY CONSULTATION CONSIDERATIONS

1. Pediatric Infectious Diseases
2. Pediatric Cardiology
3. Pediatric Hematology/Oncology

*Consider additional Pediatric Intensive Care Unit (PICU) & Immunology & Rheumatology involvement on a case-by-case basis.

More consistent with KD

Hospitalized MIS-C Management Considerations

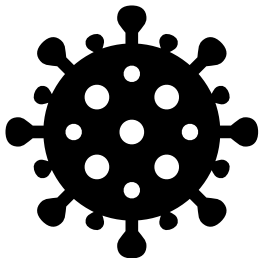
1. Consider IVIG 2 g/kg IV x1 OR 1 g/kg daily x2 days in the setting of cardiac dysfunction such as depressed LV function.
2. Consider corticosteroids (methylprednisolone 1-2 mg/kg/day) as first-line therapy in patients with concerning features (ill appearance, highly elevated BNP, unexplained tachycardia) who have not yet developed shock or organ threatening disease OR as adjunctive therapy for patients with milder forms of MIS-C who are persistently febrile and symptomatic despite a single dose of IVIG. If refractory, consider dosing intensification: methylprednisolone 10-30 mg/kg/day.
3. Consider Peds Immunology/Peds Rheumatology involvement for severe/refractory disease, including potential use of immunomodulating medications if necessary: Anakinra (interleukin-1 inhibitor), canakinumab (interleukin-1 inhibitor), Tocilizumab (interleukin-6 inhibitor).
4. For patients with moderate or greater systolic dysfunction, consider full anticoagulation with heparin, Lovenox, or coumadin in conjunction with Peds Hematology/Oncology consultation.
5. All MIS-C cases are reportable to CDC. Visit <https://www.cdc.gov/mis/hcp/index.html> for forms, located under heading, "Case Report Form."

Post-COVID-19 clinical sequelae

MIS-C differential diagnosis considerations

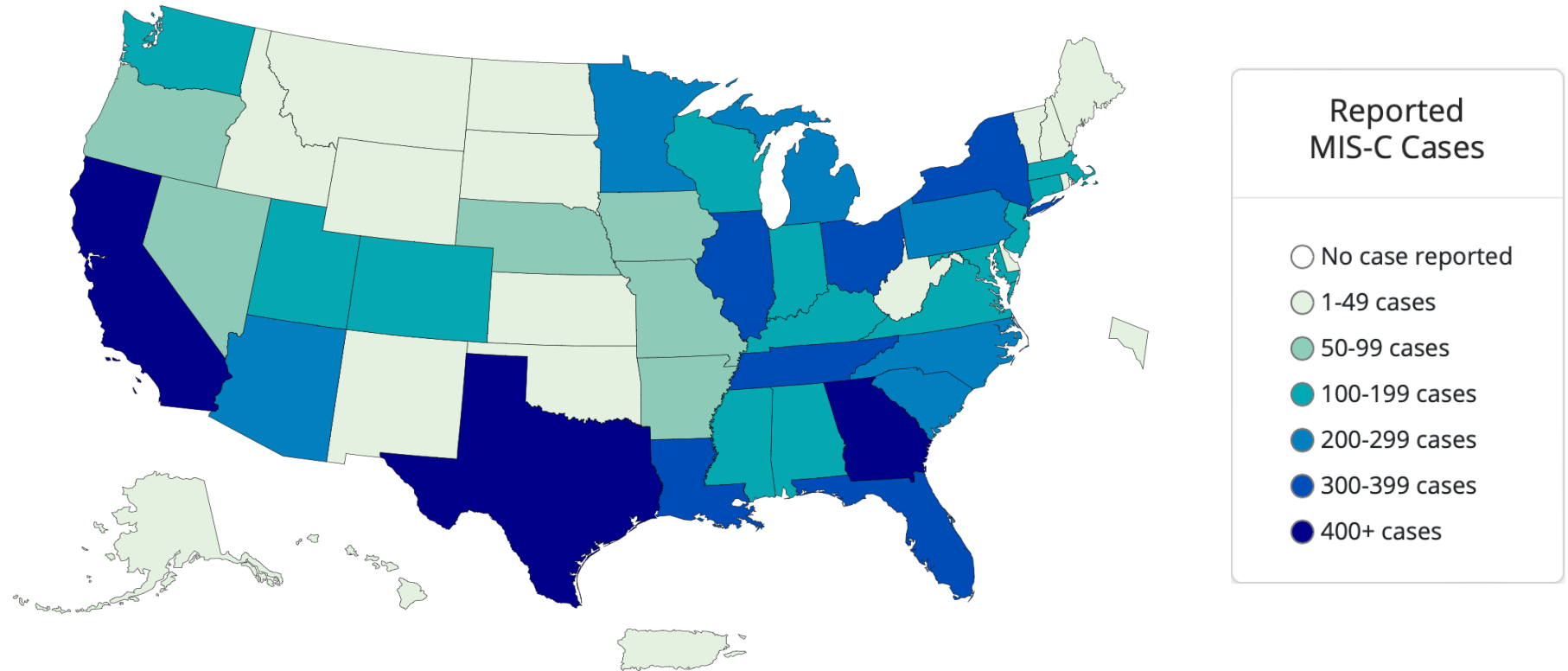
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Post-COVID-19 clinical sequelae

MIS-C epidemiology



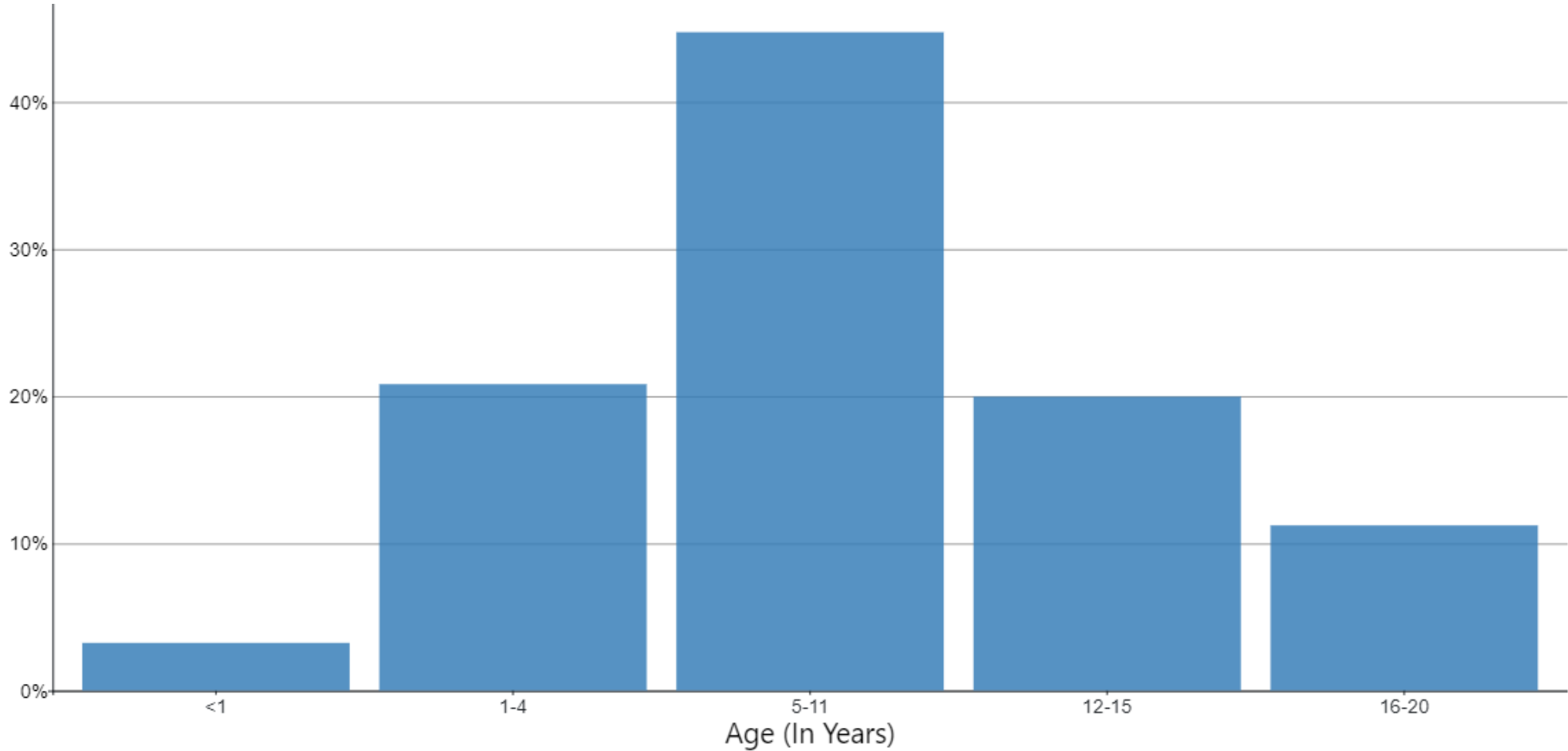
AS FSM GU MP PW RMI VI

TOTAL MIS-C PATIENTS MEETING CASE DEFINITION*	TOTAL MIS-C DEATHS MEETING CASE DEFINITION
8,525	69

*Additional patients are under investigation. After review of additional clinical data, patients may be excluded if there are alternative diagnoses that explained their illness.

Post-COVID-19 clinical sequelae

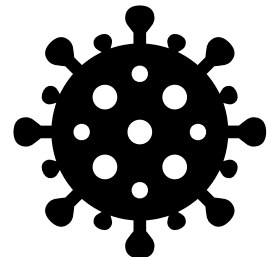
MIS-C epidemiology



Post-COVID-19 clinical sequelae

Long COVID

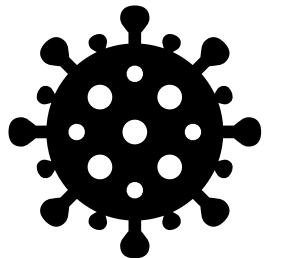
- Danilo Buonsenso, Gemelli University Hospital in Rome, led the first attempt to quantify long COVID in children
 - Interviewed 129 children aged 6–16 years, who had been diagnosed with COVID-19 between March and November 2020.
 - More than one-third had one or two lingering symptoms four months or more after infection, and a further one-quarter had three or more symptoms.
 - Insomnia, fatigue, muscle pain and persistent cold-like complaints were common — a pattern like that seen in adults with long COVID. Even children who'd had mild initial symptoms, or were asymptomatic, were not spared these long-lasting effects.
- Meta-analysis of 15 publications on long-term COVID symptoms (14-100 days post viral infection) showed the most common symptoms to be:
 - Fatigue (58%)
 - Headache (44%)
 - Attention disorder (27%)
 - Hair loss (25%)
 - Dyspnea (24%)



Post-COVID-19 clinical sequelae

Long COVID

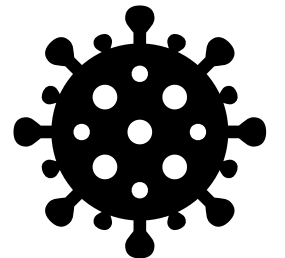
- In a cohort analysis of 1400 non-hospitalized patients in California.
 - 27% had symptoms persisting >60 days
 - 32% of those with persistent symptoms were asymptomatic at the onset of disease
- In a Swiss cohort of 109 seropositive children (6 months after testing) Most frequently reported symptoms for > 12 weeks were:
 - Tiredness (3%)
 - Difficulty concentrating = “brain fog” (2%)
 - Increased need for sleep (2%)



Post-COVID-19 clinical sequelae

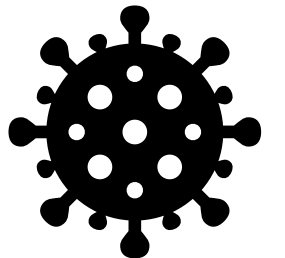
Long COVID

- Post-COVID conditions can include a wide range of ongoing health problems; these conditions can last weeks, months, or years.
- Post-COVID conditions are found more often in people who had severe COVID-19 illness, but anyone who has been infected with the virus that causes COVID-19 can experience post-COVID conditions, even people who had mild illness or no symptoms from COVID-19.
- People who are not vaccinated against COVID-19 and become infected may also be at higher risk of developing post-COVID conditions compared to people who were vaccinated and had breakthrough infections.
- There is no single test for post-COVID conditions. While most people with post-COVID conditions have evidence of infection or COVID-19 illness, in some cases, a person with post-COVID conditions may not have tested positive for the virus or known they were infected.
- Younger children, notably nonverbal children, are difficult to assess for symptoms



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Webinar Objectives



Summarize the impact of COVID-19 on children 6 months of age and older.



State the CDC's recommendations for COVID-19 vaccination of children 6 months of age and older.



Describe clinical considerations for administering the primary series to children 6 months of age and older.