

December 31, 2023

RE: Need for Multi-layered COVID Mitigation in Response to Serious U.S. COVID Surge

Dear Educators, Students, and Families:

This letter notifies you that the U.S. is experiencing a serious COVID surge, likely the 2nd largest of the pandemic. Schools will see extremely high transmission through mid-February if they do not implement their highest-level airborne COVID precautions. SARS-CoV-2, the virus that causes COVID, lingers in the air like smoke in poorly ventilated indoor spaces, and people become infected by breathing the virus from the air. Schools must take COVID mitigation seriously because each COVID reinfection increases the cumulative risk of hospitalization and long-term severe health outcomes, and children are the primary driver of infections in the home that can impact siblings, parents, and other relatives. These precautions are recommended:

- Educate staff, students, and families that the U.S. is in a severe COVID surge, that COVID transmits through the air, and that multi-layered mitigation is needed.
- Encourage the Winter 2023-24 COVID vaccination for staff, students, and families.
- Implement testing programs, with a minimum of opt-in weekly testing and preferably universal daily testing using high-quality rapid tests like FlowFlex.
- Implement robust isolation, quarantine, and symptom screening protocols.
- Require COVID+ staff and students to stay home until having two negative rapid tests 48 hours apart.
- Among those ages 2 and older, provide and require well-fitting high-quality masks indoors, including KN95, KF94, N95, or elastomeric masks.
- Use ventilation (open windows and HVAC) and filtration (HEPA and do-it-yourself [DIY] air cleaners) to surpass the ASHRAE 2023 Standards for indoor air cleaning to reduce the risk of airborne infection.
- Move in-person indoor activities outdoors and offer hybrid options.
- Allow flexibility for students and families shielding from COVID by having students stay home until transmission reduces or sufficient safeguards can be put in place.
- Offer students and parents substantial flexibility regarding precautions, illness, coping, medical care, hospitalization, and bereavement.

This letter should be shared with administrators and insurers. Schools and staff that ignore public health guidance may be vulnerable if their inaction leads to COVID infections and long-term harm. As a multidisciplinary scientist with expertise in psychology (PhD), medical science (MSCR), and health analytics (MBA) who has published >100 scientific papers, runs the top U.S. public COVID forecasting dashboard (pmc19.com/data), and has reviewed >\$100 million in scientific grant applications to fund the nation's leading health research, the severity of the surge is undeniable. Schools can provide a safe and effective learning environment by implementing multi-layered airborne COVID mitigation throughout the surge.

Sincerely,

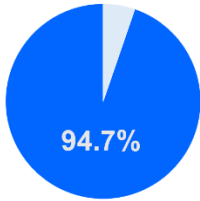
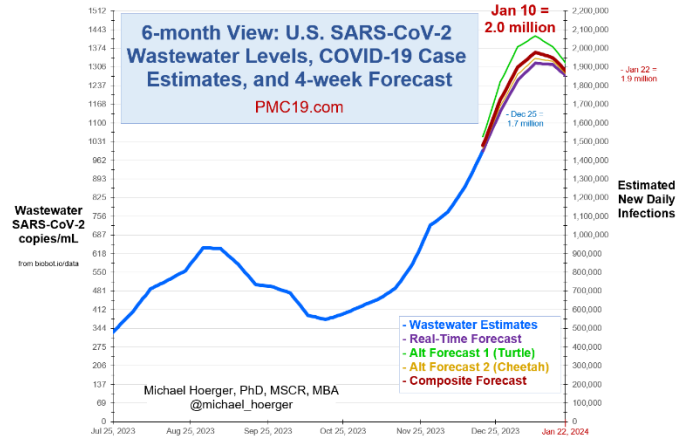
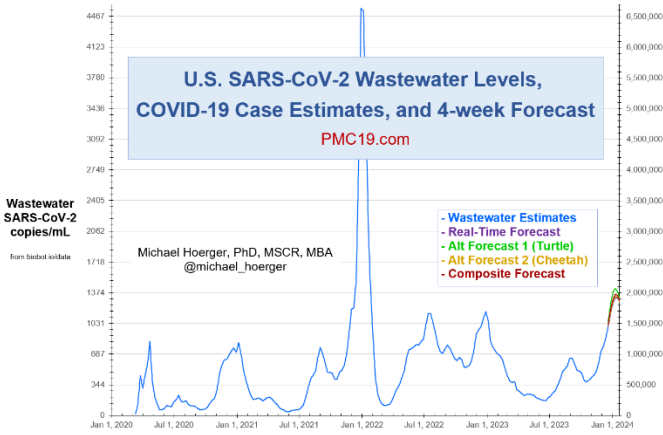
Michael Hoerger, PhD, MSCR, MBA

Director, Pandemic Mitigation Collaborative

Director, Health Psychology Doctoral Program, and Associate Professor of Psychology, Psychiatry, and Oncology, Tulane University

APPENDIX

Current COVID Surge Graphs and Statistics from the Pandemic Mitigation Collaborative, PMC (full report available: pmc19.com/data)



There is more COVID-19 transmission today than during 94.7% of the pandemic.

CURRENT ESTIMATES FOR December 25, 2023	
Wastewater Levels (copies/mL)	1137
New Daily Cases	1,855,000
% of Population Infectious	3.46% (1 in 29 people)
New Daily Long COVID Cases	83,000 to 331,000

WEEKLY ESTIMATES FOR December 25, 2023	
New Weekly Cases	11,600,000
New Weekly Long COVID Cases	579,000 to 2,317,000

2023 CUMULATIVE ESTIMATES AS OF December 25, 2023	
Total 2023 Cases To Date	241,874,380
Total 2023 Long COVID Cases To Date	12,084,000 to 48,335,000

4-WEEK FORECAST FOR January 22, 2024	
Wastewater Levels (copies/mL)	1,293 (14% higher)
New Daily Cases	1,881,000
% of Population Infectious	3.94% (1 in 25 people)
New Daily Long COVID Cases	94,000 to 376,000

How Does Risk Increase with More Social Contacts?			
Number of People	Chances Anyone is Infectious	Number of People	Chances Anyone is Infectious
1	3.5%	25	58.6%
2	6.8%	30	65.3%
3	10.0%	35	70.9%
4	13.1%	40	75.6%
5	16.2%	50	82.8%
6	19.1%	75	92.9%
7	21.9%	100	97.1%
8	24.8%	150	99.5%
9	27.2%	200	>99.9%
10	29.7%	300	>99.9%
15	41.1%	400	>99.9%
20	50.6%	500	>99.9%

Risk Based on Classroom Size (derived from PMC data)

Estimated Chances Someone in a U.S. Classroom is Infectious by Week & by Region (pmc19.com model)

Estimates by Date, U.S. Average

Class Size	Jan 1	Jan 8	Jan 15	Jan 22
8	27.1%	28.4%	28.4%	27.5%
16	46.8%	48.7%	48.8%	47.4%
24	61.2%	63.3%	63.4%	61.8%
32	71.7%	73.7%	73.8%	72.3%
40	79.4%	81.2%	81.2%	79.9%
50	86.1%	87.6%	87.6%	86.6%
75	94.8%	95.6%	95.7%	95.1%
100	98.1%	98.5%	98.5%	98.2%
200	99.9%	99.9%	99.9%	99.9%
300	99.9%	99.9%	99.9%	99.9%
500	99.9%	99.9%	99.9%	99.9%

Estimates by Region, Jan 1 Only

Class Size	Northeast & Midwest		South & West	
	(Jan 1, Steady)		(Jan 1, Still Rising)	
8	36.0%		18.4%	
16	59.0%		33.4%	
24	73.8%		45.7%	
32	83.2%		55.7%	
40	89.2%		63.9%	
50	93.8%		72.0%	
75	98.5%		85.2%	
100	99.6%		92.1%	
200	99.9%		99.4%	
300	99.9%		99.9%	
500	99.9%		99.9%	

Estimated on Dec 31, 2023, using the PMC forecasting model with Biobot data most recently updated in their Dec 25, 2023 dashboard Pandemic Mitigation Collaborative (PMC), Michael Hoerger, PhD, MSCR, MBA @michael_hoerger

Simplified Recommendations for Classroom Air Cleaning to Reduce the Risk of Far-Field Airborne Infectious Disease Transmission, Derived from ASHRAE Standards 241 & 62.1

- Mike Hoerger, PhD, MSCR, MBA (Aug 1, 2023)

Educational Facilities	cfm/person (ft ³ / minute per person)	ACH (air changes per hour) for Full-Capacity Rooms
Libraries	40	2.7
Art classroom	40	5.3
Wood and metal shop	40	5.3
Computer lab	40	6.7
Media center	40	6.7
Science labs	40	6.7
University and college labs	40	6.7
Daycare, ages 4 and under	40	6.7
Classroom, ages 5-8	40	6.7
Classroom, ages 9+	40	9.3
Music, theater, and dance	40	9.3
Lecture classroom	40	17.3
Multiuse assembly	40	26.7
Lecture hall, fixed seats	50	50.0

Note. cfm/person based on ASHRAE Standard 241. ACH derived from typical full-capacity person density estimates from ASHRAE Standard 62.1. Use the most comparable educational facility. If half or one-quarter capacity, prorate the ACH estimate accordingly. Calculations focus on reducing risk primarily of far-field transmission in rooms with well-mixed air, and masks remain needed to avoid near-field transmission.

Additional References

Dr. Hoerger's COVID mitigation articles for healthcare and the service industry, references equally applicable to other high-transmission settings like schools

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COVID Transmits Predominantly Through the Air

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Need for Multi-layered Mitigation

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- NY Times: <https://www.nytimes.com/2020/12/05/health/coronavirus-swiss-cheese-infection-mackay.html>
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CDC Strongly Recommends Widespread Use of the Updated COVID Vaccine

- <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html>

CDC Strongly Recommends Robust Protocols Surrounding Testing, Isolation, and Quarantine

- <https://www.cdc.gov/coronavirus/2019-ncov/your-health/isolation.html>

High-Quality Rapid Tests Like FlowFlex Still Work Extremely Well for Detecting High Levels of Contagiousness

- Example: 94.7% sensitivity overall, 98.2% sensitivity for highly-contagious cases (Ct<25), see Table 3. Byrne, R. L., Aljayyousi, G., Greenland-Bews, C., Kontogianni, K., Wooding, D., Williams, C. T., ... & Cubas-Atienzar, A. I. (2023). Comparison of the analytical and clinical sensitivity of thirty-four rapid antigen tests with the most prevalent SARS-CoV-2 variants of concern during the COVID-19 pandemic in the UK. *medRxiv*, 2023-07. <https://www.medrxiv.org/content/10.1101/2023.07.24.23293072v2>
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Masks Help Keep Virus Out of the Air and Reduce the Chances of Inhaling it and Becoming Infected, Especially When High-quality and Well-fitting

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Air Cleaning Reduces the Risk of Infection

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Repeat Infections Increase the Cumulative Risk of Serious Long-term Negative Health Outcomes

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School-based Transmission Among Children is the Primary Driver of Parental COVID Deaths, Which Will Fuel Negative Long-term Life Outcomes for Children

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