Dear:

On January 28, 2022, the U.S. Centers for Disease Prevention and Control (CDC) updated its guidance on mask and respirator use to clarify that certain types of face masks are more likely to provide protection from SARS-CoV-2 (which causes COVID-19).[1] This announcement has focused attention on new strategies for SARS-CoV-2 protection, and mentions evidence showing that respiratory masks seem to primarily protect their wearers from infection, and that individuals who wish to wear masks to self-protect from SARS-CoV-2 should consider more protective and better-fitting options.

This has led to national and local discussions as to whether mandatory masking in public schools continues to provide enough of a meaningful benefit to overcome the serious drawbacks and harms we have observed among our children.[2,3] On February 8, Washington State Superintendent of Public Instruction Chris Reykdal indicated that he would support making masks optional in Washington State public schools.[4] Most recently, on February 16, it was reported that the CDC was preparing to update their guidance in order to relax Federal indoor mask mandates.[5]

[NAME] conducted a literature search to help us better understand how effective ongoing mask use is in schools and other crowded environments. What we found confirms that cloth or surgical masks (even properly fitted) do not adequately protect from infection in crowded settings where people are not known to be ill. However, masks with improved filtration capacity, like N95 masks, may be personally protective.

A large amount of research, going back for decades, evaluates how well masks work to protect against infection. For 40 years before SARS-CoV-2 became part of our daily lives, medical researchers investigated whether commonly used facial masks effectively blocked respiratory droplets and other particulate matter.[6-13] This research looked at the day-to-day use of masks in hospital, healthcare, household, and school settings, and used both observational approaches and experimental mask-wearing scenarios.[8,12-18] Researchers have also extensively studied whether influenza particles can transmit through cloth, surgical, or N95 masks.[14-33] This research includes randomized controlled trials and systematic literature reviews/meta-analyses—ie, the highest level of medical research available. Technical/mechanistic studies have also been conducted to subject masks to forced testing that simulates real-life environments.[34,35] During the original 2003 SARS outbreak, several small studies in Asia and Canada evaluated the protective effect of masks and other interventions against infection.[36-40] Last, since the COVID-19 outbreak, 2 randomized controlled trials[41,42] and a scoping review of COVID-19-specific interventions[43] have been published in major medical journals, as have several studies conducted by the CDC..[44-47]

[NAME] looked at all of these studies. What did they show?

The technical/mechanistic analyses conducted prior to COVID-19 showed that cloth and surgical masks were not effective, and found more positive results for N95 masks. Some studies found that N95 masks were protective for mask-wearers, but not others.[6,48] This research also showed

that mask materials had varying effectiveness and typically did not block small particulates that were similar in size to common pathogens (ie, <2.5 µm);[7,9-11] however, well-fitting face masks and respirators more effectively filter virus-sized particles in laboratory conditions.[34,35]

The studies evaluating whether masks protected against influenza consistently showed that mask use did not provide benefit and/or did not statistically significantly reduce confirmed influenza cases. This included research conducted in healthcare[8,12-18,23,26,27,30,33] and household, school, and other group settings.[15,17,22,24,26,29,32,33] In general, this research did not distinguish between N95 and other types of masks, but 4 analyses that specifically looked at N95 use found some degree of numerically and/or statistically significant benefit, either in general or in comparison to cloth surgical masks.[16,25-27] Two studies found benefit with mask-wearing, but this benefit only extended to the wearer of the mask.[20,25] Two studies found benefits with mask-wearing when mask use was implemented specifically and quickly in response to close contact with infected/symptomatic individuals.[25,28] Three studies found benefit with mask-wearing, but only when accompanied by regular handwashing.[19,21,28,31] Last, pooled data from a 2019 systematic literature review from the World Health Organization found a non-statistically significant effect for masks used with or without handwashing, but no evidence that masks alone were effective in reducing transmission.[49]

The few studies that evaluated whether masks provide protection against original SARS found that masks did protect their wearers. The following studies evaluated multiple non-pharmaceutical factors associated with SARS protection: 1 observational study from Canada,[37] 2 case control studies conducted in Vietnam and Singapore, and 1 community based-study in China.[38-40] Three of these studies were conducted in highly infective hospital settings;[37-39] all found that masks—in particular, N95 masks—provided significant protection for wearers who were in direct exposure exposed to individuals with SARS-like symptoms.[37-40]

An important thing to keep in mind when looking at the research above is that most of these studies were conducted in real-world settings, such as hospitals (where active infection would be common), and other relatively crowded environments.

Independent research conducted since 2020 that is specific to COVID-19 is not strong enough to show protective benefit for mask use. The scoping review found that N95 masks are more likely to offer protection compared with cloth or other masks.[43] Two randomized controlled trials were both large experimental studies that built mask use into daily life and used laboratory-confirmed SARS-CoV-2 diagnoses as the endpoint.[41,42] The first, conducted in Denmark, assigned a group of participants to wear a mask for 1 month when outside the home and around others, and their results were compared to a group that did not wear masks. Mask participants were given masks and instructions and were likely to adhere (93%) to using masks. Investigators found that the recommendation to wear surgical masks did not reduce the SARS-CoV-2 infection among wearers by more than 50% (note that this was the metric the study was powered to be accurate for).[42] The second study was conducted over 6 months at the village and household levels in Bangladesh. Participants were randomized to specific mask-wearing strategies (including cloth vs. washable/reusable surgical masks) and provided with the masks, training, and reminders. Mask-wearing adherence was 13.3% in control villages

and 42.3% in treatment villages. Investigators found a relative reduction of 11.2% in confirmed, symptomatic SARS-CoV-2 infections. This was a modest reduction: it translates to 0.76% of participants in no-mask villages becoming infected compared to 0.67% of those in villages that used surgical masks.[41] Importantly, neither of these studies included children nor required the masking of children.

The CDC Morbidity and Mortality Weekly Report (MMWR) has published a number of data analyses since the start of the epidemic. Overall, the CDC studies rely primarily on cloth and surgical mask use and have not been designed to directly analyze causation.[44-47]

- Jehn, et al (2021) analyzed the association between K–12 mask policies and school-associated COVID-19 outbreaks in Maricopa and Pima Counties, Arizona using state-based electronic disease surveillance data.[47] The odds of a school-associated outbreak—defined as ≥2 cases—was 3.5 times higher in schools with no mask requirement than in those with the requirement. But these findings have led to a substantial amount of expert pushback, with critique focusing on the very high levels of apparent mask efficacy observed in this study, in opposition to all prior research.

- Andrejko, et al (2021) conducted a test-negative case control study to evaluate the general impact of standard and N95 face mask use. Investigators found that always using a face mask or N95 in indoor public settings was associated with a 66% lower adjusted likelihood for a positive test result compared to never wearing a mask, and a separate analysis showed stronger likelihood results for N95 masks (83%). This study provides useful research to support the self-protective aspect of N95 masking. One important limitation of this study is its very low participant response rate (13.4% for cases and 8.9% for controls).[44]

- Budzyn, et al (2021) analyzed national phone survey data from multiple school districts to evaluate the county-level impact of uniform mask requirements in K-12 systems. A numerically small but statistically significant difference was seen with mask use: during the first week of school, cases in counties with mask requirements were 18.53 per 100,000 per day lower than the average daily reduction for counties without school mask requirements, at 34.85 per 100,000 per day. This translates to an absolute daily difference in cases avoided of 0.00016, or 1.6 of 10,000. The authors of this study also noted that, due to the study design type, causation could not be inferred.[45]

- Gettings, et al (2020) used survey data obtained from school district superintendents to evaluate the impact of mask use and ventilation improvements in reducing COVID-19 incidence in Georgia elementary schools. Results indicated no significant reduction in cases among children, but there was a statistically significant relative risk reduction of 37% among teachers and staff who wore masks.[46]

Based on the information above, we do not believe the available medical evidence for masking children in schools is strong enough to continue this practice. When children and young people

are infected with SARS-CoV-2, they tend to have a milder and shorter disease course than adults, and are at low risk for COVID-19 complications, including mortality.[50-53] Children are also less likely to spread COVID-19 than adults: A population-level study conducted in the Manitoba Province of Canada documented SARS-CoV-2 infectivity using medical samples from children and adults. Compared to adults, children with positive nasopharyngeal swabs were less likely to grow virus in culture, had higher cycle thresholds, and lower viral concentrations.[54] These results were confirmed by a Greek study conducted over 2 months to document the rate of COVID-19 infections in a series of 23 family clusters (109 people); researchers found that children were significantly less likely than adults to have a symptomatic COVID-19 infection and significantly more likely than adults to have a low viral load.[52]

There are documented physical and behavioral side effects of mask use that can affect children and adults. We did not conduct a comprehensive literature review regarding the harms of masks to wearers, but this information is readily available. A scoping literature review conducted by German physicians (2021) evaluated a range of published research in a number of medical fields, including neurology, dentistry, dermatology, sports medicine, and psychiatry. They found regular adverse effects with mask use, most often breathing difficulties, high temperatures, fatigue, and headache. Research has also documented blood oxygen reductions in adults and children wearing masks.[55,56] It has also been documented that, when worn throughout the day, face coverings like masks can lead to impaired speech and hinder language and socio-emotional development, particularly in younger children.[57,58] To quote Emily Oster, a professor of Economics at Brown University, "The concerns here stem from the observation that the bottom half of the face is important for reading emotions, learning to speak, and learning to read." Finally, children and adolescents may have some specific habits that turn masks into a source of potential contamination for themselves and others; this includes mask removal, handling, and reuse, and storage in places like pockets.[59] Insisting that children exercise with masks makes these problems worse.

It is possible for student masking to be optional and for school staff to be safe. We understand that some teachers and staff continue to feel unsafe and hesitant to support mask-optional school environments. However, the evidence in this letter supports recent policy interpretations that recognize mask-wearers as the primary individuals who are benefiting from mask use. Because of this, a roadmap for change is emerging, summarized in a new approach by experts like Dr. Monica Gandhi, an infectious disease specialist from the University of California San Diego. Dr. Gandhi recently stated that the prior adage, "'My mask protects you and your mask protects me" has become "obsolete" and now recommends personal choice in the form of "1-way masking."[60] With 1-way masking, masks are worn by choice in schools and other indoor settings by people who are vulnerable and/or want to avoid exposure.[61] The quality of the masks used, the ability of individuals to fit these masks appropriately to their face, and their ability to maintain an adequate supply of high-quality masks will all affect how well this approach works. According to the CDC and Dr. Gandhi, the following masks are good choices: 1) N95; 2) KN95; 3) FFP2; 4) KF94; 5) double mask (cloth + surgical); 6) cloth mask with filter pocket (with the filter replaced every 3 days).[1,61] School districts could provide staff with the training and support needed to make this transition, and school budgets could be adjusted to provide staff with high-quality masks.

Thank you for your attention. One very important note–all of the medical literature cited in the preceding letter has been published (ie, it's not in pre-publication, this is all peer-reviewed material).

Sincerely yours,

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References

1. Types of masks and respirators. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/types-of-masks.html. Published January 28, 2022. Accessed February 15, 2022.
2. Doron S, Branch-Elliman W, Perkins E. Opinion: Schools can safely make masks optional with the CDC's new guidelines. The Washington Post. https://www.washingtonpost.com/opinions/2022/01/25/schools-safely-make-masks-optional-new-cdc-guidelines/. Published January 25, 2022. Accessed February 15, 2022.
3. McCarthy C. Boston-area doctors urge making masks in schools optional. Boston 25 News. https://www.boston25news.com/news/massachusetts/boston-area-doctors-urge-making-masks-schools-optional/6WMD7KR34RGORD7NAGBQUN44AE/. Published January 26, 2022. Accessed February 15, 2022.
4. Reykdal supports making masks optional in schools. KING 5 News. https://www.king5.com/video/news/health/coronavirus/reykdal-on-masking-in-schools/281-f19a5598-9010-4535-bc84-6e7e7e35ba34. Published February 8, 2022. Accessed February 15, 2022.
5. Lovelace Jr. B, Przybyla H. CDC expected to update mask guidance as early as next week. NBC News. https://www.nbcnews.com/health/health-news/cdc-masks-cdc-expected-update-mask-guidance-early-week-rcna16331. Published February 16, 2022. Accessed February 16, 2022.
6. Chen CC, Willeke K. Aerosol penetration through surgical masks. *Am J Infect Control*. 1992;20(4):177-184. doi:10.1016/s0196-6553(05)80143-9
7. Mueller AV, Eden MJ, Oakes JM, Bellini C, Fernandez LA. Quantitative method for comparative assessment of particle removal efficiency of fabric masks as alternatives to standard surgical masks for PPE. *Matter*. 2020;3(3):950-962. doi:10.1016/j.matt.2020.07.006
8. Offeddu V, Yung CF, Low MSF, Tam CC. Effectiveness of masks and respirators against respiratory infections in healthcare workers: a systematic review and meta-analysis. *Clin Infect Dis*. 2017;65(11):1934-1942. doi:10.1093/cid/cix681
9. Rogers KB. An investigation into the efficiency of disposable face masks. *J Clin Pathol*. 1980;33(11):1086-1091. doi:10.1136/jcp.33.11.1086
10. Shakya KM, Noyes A, Kallin R, Peltier RE. Evaluating the efficacy of cloth facemasks in reducing particulate matter exposure. *J Expo Sci Environ Epidemiol*. 2017;27(3):352-357. doi:10.1038/jes.2016.42
11. Tuomi T. Face seal leakage of half masks and surgical masks. *Am Ind Hyg Assoc J*. 1985;46(6):308-312. doi:10.1080/15298668591394879
12. Vincent M, Edwards P. Disposable surgical face masks for preventing surgical wound infection in clean surgery. *Cochrane Database Syst Rev*. 2016;4:CD002929. doi:10.1002/14651858.CD002929.pub3
13. Lipp A, Edwards P. Disposable surgical face masks: a systematic review. *Can Oper Room Nurs J*. 2005;23(3):20-21, 24-25, 33-28. https://www.ncbi.nlm.nih.gov/pubmed/16295987. Published 2005/11/22.
14. Bin-Reza F, Lopez Chavarrias V, Nicoll A, Chamberland ME. The use of masks and respirators to prevent transmission of influenza: a systematic review of the scientific evidence. *Influenza Other Respir Viruses*. 2012;6(4):257-267. doi:10.1111/j.1750-2659.2011.00307.x
15. Saunders-Hastings P, Crispo JAG, Sikora L, Krewski D. Effectiveness of personal protective measures in reducing pandemic influenza transmission: a systematic review and meta-analysis. *Epidemics*. 2017;20:1-20. doi:10.1016/j.epidem.2017.04.003
16. Smith JD, MacDougall CC, Johnstone J, Copes RA, Schwartz B, Garber GE. Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis. *CMAJ*. 2016;188(8):567-574. doi:10.1503/cmaj.150835
17. Cowling BJ, Zhou Y, Ip DK, Leung GM, Aiello AE. Face masks to prevent transmission of influenza virus: a systematic review. *Epidemiol Infect*. 2010;138(4):449-456. doi:10.1017/S0950268809991658
18. MacIntyre CR, Seale H, Dung TC, et al. A cluster randomised trial of cloth masks compared with medical masks in healthcare workers. *BMJ Open*. 2015;5(4):e006577. doi:10.1136/bmjopen-2014-006577
19. Aiello AE, Murray GF, Perez V, et al. Mask use, hand hygiene, and seasonal influenza-like illness among young adults: a randomized intervention trial. *J Infect Dis*. 2010;201(4):491-498. doi:10.1086/650396

20. Chokephaibulkit K, Assanasen S, Apisarnthanarak A, et al. Seroprevalence of 2009 H1N1 virus infection and self-reported infection control practices among healthcare professionals following the first outbreak in Bangkok, Thailand. *Influenza Other Respir Viruses*. 2013;7(3):359-363. doi:10.1111/irv.12016
21. Cowling BJ, Chan KH, Fang VJ, et al. Facemasks and hand hygiene to prevent influenza transmission in households: a cluster randomized trial. *Ann Intern Med*. 2009;151(7):437-446. doi:10.7326/0003-4819-151-7-200910060-00142
22. Cowling BJ, Fung RO, Cheng CK, et al. Preliminary findings of a randomized trial of non-pharmaceutical interventions to prevent influenza transmission in households. *PLoS One*. 2008;3(5):e2101. doi:10.1371/journal.pone.0002101
23. Larson EL, Ferng YH, Wong-McLoughlin J, Wang S, Haber M, Morse SS. Impact of non-pharmaceutical interventions on URIs and influenza in crowded, urban households. *Public Health Rep*. 2010;125(2):178-191. doi:10.1177/003335491012500206
24. MacIntyre CR, Cauchemez S, Dwyer DE, et al. Face mask use and control of respiratory virus transmission in households. *Emerg Infect Dis*. 2009;15(2):233-241. doi:10.3201/eid1502.081167
25. Jaeger JL, Patel M, Dharan N, et al. Transmission of 2009 pandemic influenza A (H1N1) virus among healthcare personnel-Southern California, 2009. *Infect Control Hosp Epidemiol*. 2011;32(12):1149-1157. doi:10.1086/662709
26. Long Y, Hu T, Liu L, et al. Effectiveness of N95 respirators versus surgical masks against influenza: a systematic review and meta-analysis. *J Evid Based Med*. 2020;13(2):93-101. doi:10.1111/jebm.12381
27. Radonovich LJ, Jr., Simberkoff MS, Bessesen MT, et al. N95 respirators vs medical masks for preventing influenza among health care personnel: a randomized clinical trial. *JAMA*. 2019;322(9):824-833. doi:10.1001/jama.2019.11645
28. Suess T, Remschmidt C, Schink SB, et al. The role of facemasks and hand hygiene in the prevention of influenza transmission in households: results from a cluster randomised trial; Berlin, Germany, 2009-2011. *BMC Infect Dis*. 2012;12:26. doi:10.1186/1471-2334-12-26
29. Xiao J, Shiu EYC, Gao H, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings-Personal protective and environmental measures. *Emerg Infect Dis*. 2020;26(5):967-975. doi:10.3201/eid2605.190994
30. Zhang Y, Seale H, Yang P, et al. Factors associated with the transmission of pandemic (H1N1) 2009 among hospital healthcare workers in Beijing, China. *Influenza Other Respir Viruses*. 2013;7(3):466-471. doi:10.1111/irv.12025
31. Aiello AE, Perez V, Coulborn RM, Davis BM, Uddin M, Monto AS. Facemasks, hand hygiene, and influenza among young adults: a randomized intervention trial. *PLoS One*. 2012;7(1):e29744. doi:10.1371/journal.pone.0029744
32. Barasheed O, Almasri N, Badahdah AM, et al. Pilot randomised controlled trial to test effectiveness of facemasks in preventing influenza-like illness transmission among Australian hajj pilgrims in 2011. *Infect Disord Drug Targets*. 2014;14(2):110-116. doi:10.2174/1871526514666141021112855
33. Jefferson T, Del Mar CB, Dooley L, et al. Physical interventions to interrupt or reduce the spread of respiratory viruses. *Cochrane Database Syst Rev*. 2020;11:CD006207. doi:10.1002/14651858.CD006207.pub5
34. Brooks JT, Beezhold DH, Noti JD, et al. Maximizing fit for cloth and medical procedure masks to improve performance and reduce SARS-CoV-2 transmission and exposure, 2021. *MMWR Morb Mortal Wkly Rep*. 2021;70(7):254-257. doi:10.15585/mmwr.mm7007e1
35. Pan J, Harb C, Leng W, Marr LC. Inward and outward effectiveness of cloth masks, a surgical mask, and a face shield. *Aerosol Science and Technology*. 2021;55(6):718-733. doi:10.1080/02786826.2021.1890687
36. Liang M, Gao L, Cheng C, et al. Efficacy of face mask in preventing respiratory virus transmission: a systematic review and meta-analysis. *Travel Med Infect Dis*. 2020;36:101751. doi:10.1016/j.tmaid.2020.101751
37. Loeb M, McGeer A, Henry B, et al. SARS among critical care nurses, Toronto. *Emerg Infect Dis*. 2004;10(2):251-255. doi:10.3201/eid1002.030838
38. Nishiura H, Kuratsuji T, Quy T, et al. Rapid awareness and transmission of severe acute respiratory syndrome in Hanoi French Hospital, Vietnam. *Am J Trop Med Hyg*. 2005;73(1):17-25. https://www.ncbi.nlm.nih.gov/pubmed/16014825. Published 2005/07/15.

39. Teleman MD, Boudville IC, Heng BH, Zhu D, Leo YS. Factors associated with transmission of severe acute respiratory syndrome among health-care workers in Singapore. *Epidemiol Infect*. 2004;132(5):797-803. doi:10.1017/s0950268804002766
40. Wu J, Xu F, Zhou W, et al. Risk factors for SARS among persons without known contact with SARS patients, Beijing, China. *Emerg Infect Dis*. 2004;10(2):210-216. doi:10.3201/eid1002.030730
41. Abaluck J, Kwong LH, Styczynski A, et al. Impact of community masking on COVID-19: a cluster-randomized trial in Bangladesh. *Science*. 2022;375(6577):eabi9069. doi:10.1126/science.abi9069
42. Bundgaard H, Bundgaard JS, Raaschou-Pedersen DET, et al. Effectiveness of adding a mask recommendation to other public health measures to prevent SARS-CoV-2 infection in Danish mask wearers: a randomized controlled trial. *Ann Intern Med*. 2021;174(3):335-343. doi:10.7326/M20-6817
43. Garcia Godoy LR, Jones AE, Anderson TN, et al. Facial protection for healthcare workers during pandemics: a scoping review. *BMJ Glob Health*. 2020;5(5). doi:10.1136/bmjgh-2020-002553
44. Andrejko KL, Pry JM, Myers JF, et al. Effectiveness of face mask or respirator use in indoor public settings for prevention of SARS-CoV-2 infection - California, February-December 2021. *MMWR Morb Mortal Wkly Rep*. 2022;71(6):212-216. doi:10.15585/mmwr.mm7106e1
45. Budzyn SE, Panaggio MJ, Parks SE, et al. Pediatric COVID-19 cases in counties with and without school mask requirements - United States, July 1-September 4, 2021. *MMWR Morb Mortal Wkly Rep*. 2021;70(39):1377-1378. doi:10.15585/mmwr.mm7039e3
46. Gettings J, Czarnik M, Morris E, et al. Mask use and ventilation improvements to reduce COVID-19 incidence in elementary schools - Georgia, November 16-December 11, 2020. *MMWR Morb Mortal Wkly Rep*. 2021;70(21):779-784. doi:10.15585/mmwr.mm7021e1
47. Jehn M, McCullough JM, Dale AP, et al. Association between K-12 school mask policies and school-associated COVID-19 outbreaks - Maricopa and Pima Counties, Arizona, July-August 2021. *MMWR Morb Mortal Wkly Rep*. 2021;70(39):1372-1373. doi:10.15585/mmwr.mm7039e1
48. Lee SA, Grinshpun SA, Reponen T. Respiratory performance offered by N95 respirators and surgical masks: human subject evaluation with NaCl aerosol representing bacterial and viral particle size range. *Ann Occup Hyg*. 2008;52(3):177-185. doi:10.1093/annhyg/men005
49. World Health Organization. Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza. https://apps.who.int/iris/bitstream/handle/10665/329438/9789241516839-eng.pdf. Published 2019. Accessed February 15, 2022.
50. Gonzalez-Garcia N, Castilla-Peon MF, Solorzano Santos F, et al. Covid-19 incidence and mortality by age strata and comorbidities in Mexico City: a focus in the pediatric population. *Front Public Health*. 2021;9:738423. doi:10.3389/fpubh.2021.738423
51. Kushner LE, Schroeder AR, Kim J, Mathew R. "For COVID" or "With COVID": classification of SARS-CoV-2 hospitalizations in children. *Hosp Pediatr*. 2021;11(8):e151-e156. doi:10.1542/hpeds.2021-006001
52. Maltezou HC, Vorou R, Papadima K, et al. Transmission dynamics of SARS-CoV-2 within families with children in Greece: a study of 23 clusters. *J Med Virol*. 2021;93(3):1414-1420. doi:10.1002/jmv.26394
53. Provisional COVID-19 deaths by sex and age. Centers for Disease Control and Prevention. https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-by-Sex-and-Age/9bhg-hcku. Published February 9, 2022. Accessed February 15, 2022.
54. Bullard J, Funk D, Dust K, et al. Infectivity of severe acute respiratory syndrome coronavirus 2 in children compared with adults. *CMAJ*. 2021;193(17):E601-E606. doi:10.1503/cmaj.210263
55. Chandrasekaran B, Fernandes S. "Exercise with facemask; Are we handling a devil's sword?" - A physiological hypothesis. *Med Hypotheses*. 2020;144:110002. doi:10.1016/j.mehy.2020.110002
56. Kisielinski K, Giboni P, Prescher A, et al. Is a mask that covers the mouth and nose free from undesirable side effects in everyday use and free of potential hazards? *Int J Environ Res Public Health*. 2021;18(8). doi:10.3390/ijerph18084344
57. Charney SA, Camarata SM, Chern A. Potential impact of the COVID-19 pandemic on communication and language skills in children. *Otolaryngol Head Neck Surg*. 2021;165(1):1-2. doi:10.1177/0194599820978247
58. Gori M, Schiatti L, Amadeo MB. Masking emotions: face masks impair how we read emotions. *Front Psychol*. 2021;12:669432. doi:10.3389/fpsyg.2021.669432
59. Chao FL. Adolescents' face mask usage and contact transmission in novel coronavirus. *J Public Health Res*. 2020;9(1):1771. doi:10.4081/jphr.2020.1771

60. @MonicaGandhi9. Respirators/ other high-quality masks are highly effective at protecting their wearers, regardless of what people around them are doing ('my mask protects you and your mask protects me' is obsolete). Allows for masks optional for students & staff. Twitter. https://twitter.com/monicagandhi9/status/1486860520745439233?s=11. Published January 27, 2022. Accessed February 16, 2022.
61. @MonicaGandhi9. Masks to be recommended for one-way masking (masks protect you) for those who want little exposure or vulnerable groups in schools & indoor settings: 1) N95; 2) KN95; 3) FFP2; 4) KF94; 5) double mask (cloth + surgical); 6) cloth mask with filter pocket (replace filter per 3 days). Twitter. https://twitter.com/monicagandhi9/status/1488191749893677059?s=11. Published January 31, 2022. Accessed February 16, 2022.