**Mask wearing is essential in higher-risk group settings (schools) because of the nature of transmission of COVID19:**

* **New CDC study**

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](https://www.cdc.gov/mmwr/volumes/70/wr/mm7039e1.htm). *MMWR Morb Mortal Wkly Rep*. Published online September 24, 2021. doi:10.15585/mmwr.mm7039e1

A new CDC study shows that schools without mask requirements are 3.5 times more likely to have COVID-19 outbreaks.

Mask-wearing is especially crucial since not all children are eligible for the vaccine yet.

Experts say families, communities, and school administrators must employ a combination of several safety measures to further reduce the risk of infections.

• The preponderance of evidence now confirms that most SARS-CoV-2 transmission events come

from individuals who are without symptoms at the time

• Small, airborne respiratory particles that can travel over distance are a significant mode of

transmission for SARS-CoV-2

• Concentration of people (and exhaled breath) in a volume of air is a more important gauge of

risk than physical distancing. Indoor environments increase this risk while reducing the

concentration of exhaled (and inhaled) particles with masks decrease the risk

• The epidemiology of COVID-19 is characterized by a high dispersion factor of the reproductive

number (R), explaining how super-spreading events play a critical role in community

propagation. Simply speaking, a small number of infected individuals are responsible for the

majority of onward transmission. Thus COVID-19 transmission usually occurs in clusters.

Targeted NPIs that focus on high-risk venues for super-spreading (e.g., schools) have a

disproportionately large effect in reducing community rates

Scientific evidence for the effectiveness of face masks in reducing the risk of SARS-CoV-2 transmission

is overwhelming. Because mask-wearing can limit both virus shedding from (often asymptomatic)

sources and exposure to virus-containing particles in susceptible individuals, universal masking is

essential in reducing new cases of COVID-19.

• During the large USS Theodore Roosevelt outbreak, sailors who reported wearing a face

covering had 70% less risk of being infected than those who did not

• A study of household transmission of COVID-19 in Beijing demonstrated that when all

household members used face masks, they were 79% effective in reducing transmission from

index cases to family.

• A large case-control study from contact tracing in Thailand found that wearing masks at all

times during contact resulted in greater than 74% lower risk for SARS-CoV-2 infection; wearing

a mask only sometimes did not yield statistically reduced infection risk

Available face masks for general use span a range of materials, quality, and filtering characteristics.

While this has been the subject of debate regarding optimal face masks for community use, the

preponderance of data indicates that most commercially available face masks provide adequate

filtering and protection:

• An Australian study comparing filtration efficiency provided by 12 various masks (cloth, surgical,

and KN95) found 90-99% efficiency for aerosol-sized particles in 11 of the masks of all fabrics

and types, with only silk masks showing reduced (63%) filtration efficiency

• A study from the University of North Carolina showed that commercial cloth masks provide

equivalent filtering efficiency to surgical masks (up to 80%) and that good fit is generally more

important than material in face mask performance

Studies of community implementation of mandatory face mask use show the beneficial collective

effect of face masks as an NPI:

• An analysis of community COVID-19 incidence across German regions with differing face mask

requirements showed strong correlation of compulsory mask orders and lower transmission ten

days after implementation, reducing the daily growth rate of reported infections by 40%

compared to regions without mask requirementsxlix.

• In a study of county-based masking ordinances in Kansas, researchers found that counties with

mask mandates experienced a 60% reduction in COVID-19 cases compared to counties without

mandates over the same period. At the time of implementation, counties that adopted face

mask ordinances had had a 1.4-fold higher rate of COVID-19 deaths. By the end of the analysis,

that ratio more than reversed, and counties that did not require face masks had death rates

that were 1.8 times greater

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Finally, the few rigorous studies assessing COVID-19 prevalence in schools that implemented layered

school NPIs have found that these interventions (specifically universal face mask policies for staff and

students) avoided widespread symptomatic and asymptomatic cases.

• A study of two large private schools showed relatively low in-school transmission rates with

aggressive NPIs and universal face mask use. In the school that experienced six cluster events,

72% percent of the in-school transmission cases were associated with noncompliance with

school mask-wearing rules. Unsurprisingly, most cases in students were asymptomatic (>97% in

one lower school) and only detected by universal surveillance testing.

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• In another study, Vanderbilt University pediatric, infectious disease, and laboratory diagnostics

experts partnered with an independent school to implement layered NPIs for the fall 2020

semester – including universal mask wearing and regular surveillance PCR testing. With these

measures in place, they found student rates that were generally lower than surveillance

screening rates for pediatric appointments at Vanderbilt University Hospital and low incidence

of cases from in-school transmission. The one identified in-school cluster was linked to a

classroom that had not followed the school’s universal face mask policy

The CDC’s scientific briefing on the use of cloth masks to control the spread of COVID-19 provides a

solid overview of additional existing evidence supporting the effectiveness of face masks against

COVID-19 transmission.

https://science.sciencemag.org/content/372/6546/1092 https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01358-1/fulltext https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3861566 https://www.medrxiv.org/content/10.1101/2021.07.05.21260050v3.full.pdf https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/1005517/Tech nical\_Briefing\_19.pdf https://spiral.imperial.ac.uk/bitstream/10044/1/90197/2/react1\_r13\_interim\_preprint.pdf https://science.sciencemag.org/content/372/6546/1092 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8007924/ https://www.cdc.gov/mmwr/volumes/70/wr/mm7012e3.htm https://www.cdc.gov/mmwr/volumes/70/wr/mm7011a2.htm#contribAff https://www.nature.com/articles/s41467-021-21710-6 <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2774707> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7454469/ https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/sars-cov-2-transmission.html <https://www.pnas.org/content/118/17/e2018995118> <https://www.nature.com/articles/s41591-020-1092-0> https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000897 https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/32525850/ https://pubmed.ncbi.nlm.nih.gov/32467353/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7588529/ <https://doi.org/10.3390/pathogens9090762> <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2774266> https://www.iza.org/publications/dp/13319/face-masks-considerably-reduce-covid-19-cases-in-germany-asynthetic-control-method-approach https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2781283 https://onlinelibrary.wiley.com/doi/10.1111/josh.13008 <https://www.sciencedirect.com/science/article/pii/S0022347621005321> <https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/masking-science-sars-cov2.htm>

3.2. ECDC report. The high transmissibility of the Delta variant means that the risk of transmission in school settings is higher than with previously circulating SARS-CoV-2 strains, given comparable control measures in place [89,90]. While severe COVID-19 outcomes in children remain relatively rare compared with other age groups [91], increases in case numbers amongst children could lead to higher absolute numbers of severe outcomes, notably hospitalisations, in this age group. In the US, the number of children and adolescents hospitalised due to COVID-19 increased nearly five-fold during late-June to mid-August 2021 due to the circulation of the Delta variant, but the proportion of children and adolescents having severe disease due to COVID-19 infection was noted to be similar to periods prior to the dominance of Delta [92]. School closures have been shown to have significant negative physical, mental and educational impacts on children, as well as the economic impact on society more broadly, and therefore alternative mitigation and response strategies should be given priority, as outlined below. Combinations of NPIs in the form of physical distancing to prevent crowding, as well as hygiene, improved ventilation, masks and other measures remain important tools for the prevention of transmission in school settings. Measures should be adapted to levels of community SARS-CoV-2 transmission and healthcare system utilisation, as well as to the educational setting and age group, and their implementation should consider the need to provide an optimal learning and social environment while reducing transmission risks [88]. Measures to reduce SARS-CoV-2 transmission in school settings may also help to mitigate the transmission of other respiratory viruses commonly circulating in the autumn and winter months amongst the paediatric population. ‘Test-to-stay’ strategies could additionally be considered in an attempt to minimise disruption and school absenteeism in school settings while also limiting opportunities for further transmission [88,93,94]. Daily testing has been used successfully to keep children in schools, despite positive cases in a class. In a UK open-label cluster-randomised trial, daily contact testing of school-based contacts was found to be a non-inferior safe alternative to self-isolation [93].