

## HOW EFFECTIVE ARE PHYSICAL DISTANCING, WEARING MASKS, & USING EYE PROTECTION IN CURBING SARS-CoV-2 INFECTION?

Can physical distancing, wearing masks, and using eye protection really protect us against SARS-CoV-2 infection? In a study published in early June in *The Lancet*, an international consortium of scientists found that all of these interventions are effective in reducing the transmission of the virus by several fold, although none offer complete protection.

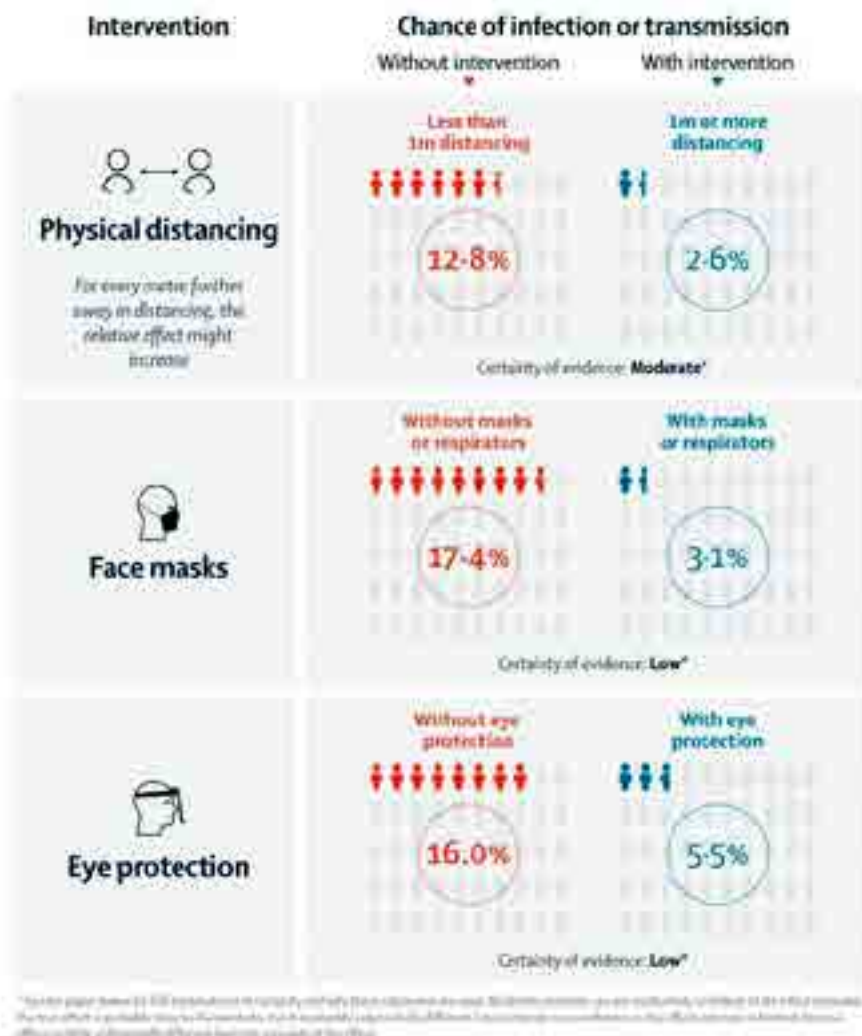
An international consortium of scientists from Argentina, Canada, Chile, China, Germany, Italy, Lebanon, Poland, and the United Kingdom (UK), called the COVID-19 Systematic Urgent Review Group Effort (SURGE) study group, examined the effectiveness of different measures (or 'interventions') being used worldwide to curb the transmission of the SARS-CoV-2 virus. The interventions that were analysed included physical distancing of 1 m or more, wearing face masks (like N-95 respirators, disposable surgical masks, or reusable 12–16-layer cotton masks), and wearing eye protection (like goggles or face shields). The results of this study were obtained through meta-analysis. **Meta-analysis** is a study design that uses information from already published sources or previous research to better understand broad patterns in a particular field or for a particular question. For example, this study used data from a total of 44 published studies, involving 25,697 patients from 10 countries (Saudi Arabia, China, USA, Canada, Vietnam, Taiwan, South Korea, Germany, Singapore, and Thailand), across three continents, in both community and healthcare settings. This data was not just on COVID-19, but also on SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome),

as the viruses that cause these diseases have very similar modes of transmission.

To understand the findings of the study, imagine a scenario where one person in a group of 100 people, mingling freely with each other at a social gathering, is infected with SARS-CoV-2. According to this study, if everyone in this group maintained a physical distance of 1 m or more, only ~3 out of those 100 are likely to contract the infection. In contrast, if this physical distancing is not maintained, ~13 out of the 100 are likely to contract it. Analysis suggested that the chances of viral transmission was likely to fall even more drastically if a physical distance of 2 m or more is maintained. It also indicated that wearing face masks reduces the chances of a person contracting COVID-19 by a factor > 5, and wearing eye protection such as goggles or face shields reduces transmission of the virus by a factor of ~3 (Figure 1). Finally, it showed that N95 masks were more effective than surgical masks, which in turn were more effective than reusable multilayer cotton masks, in preventing SARS-CoV-2 infections. However, all three types of masks offered more protection against COVID-19 than single-layer cotton masks.

These results show that while current public safety guidelines regarding physical distancing, face masks, and eye protection are effective in curbing transmission of SARS-CoV-2 infection, none of them are fool-proof. Other basic measures such as frequent hand washing, not touching the face with unwashed hands, and minimizing travel are also important to reduce spread of the infection.

# What protects against COVID-19 infection or transmission?



**Fig. 1.** Physical distancing, face masks and eye protection are effective in limiting COVID-19 transmission, but not completely. The risks of transmission without and with the different interventions are provided in percentages. Since these percentages are only estimates, the authors use the term 'certainty of evidence' as a measure of how sure they are that the true effect is very close to their estimated effect. This does not mean that these interventions are not effective in curbing viral transmission. What it means is that the extent of the effects may be much higher or lower than these estimates.

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Even when properly used and combined, none of these interventions offers complete protection and other basic protective measures (such as hand hygiene) are essential to reduce transmission

Chu DK, Heffernan DJ, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *Lancet*. 2020. Published online first.

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Reference: Chu, D. K. et al. (2020). Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *The Lancet*. 395. 10.1016/S0140-6736(20)31142-9.



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