

# Prevention of coronavirus infection spread through aerosols

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As the development of the COVID-19 pandemic to date has shown: aerosols contribute significantly to the occurrence of infection—and combating them can significantly reduce a resurgence of infection levels.

The question of effective protective measures will become acute in the autumn, if not before: seasonal factors, new virus variants, declining immunity after vaccination and vaccine hesitancy mean that there is still the risk of a fourth wave of infection in Germany.

Against this background, an academic position [paper](#) has now been published that provides a summary of the findings on the spread of SARS-CoV-2 viruses through aerosols. The paper was written at the suggestion of the interdisciplinary Commission for Pandemic Research of the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) and aims to contribute to establishing a reliable information base that is broadly coordinated among specialists as well as offering concrete advice on how to guard against infection. To this end, the researchers involved combined findings from different academic fields so as to compile differentiated yet concrete, situation-based knowledge, since at the present time only about 70 percent of the population is sufficiently informed about infectious [aerosols](#)—and those who are less well informed do less to guard against infection. The measures recommended in the paper also take into account the relevant recommendations issued by the Robert Koch Institute (RKI), the Center for Disease Control and Prevention (CDC) and the World Health Organisation (WHO).

The starting point of the paper—and a factor that is central to the question of infection risk and protective measures—is the distinction between direct infection from person to person, such as when conversing with another person at a short distance, and indirect infection through the accumulation of infectious aerosol particles indoors. Both direct and indirect infections can occur inside closed rooms. This is why comprehensive precautions are required to guard against infection indoors. Outside closed rooms—i.e. in the open air—virtually the only possibility of becoming infected is by direct means: indirect infection is highly unlikely due to the extensive dilution of the viral load and its

rapid removal by air currents.

For this reason, fewer protective measures are often required outdoors as compared to indoors. Exceptions to this are situations in which people talk to each other face to face for an extended period or sit close together for a long time, for example in a beer garden or in local transportation waiting areas, e.g. when standing together at bus stops, in queues, at open-air events or at demonstrations. In these situations, however, even simple medical masks or good mouth-and-nose coverings guard against direct infection.

The position paper explains these and other factors involved in the transmission of SARS-CoV-2 inside and outside closed rooms and offers concrete advice relating to protective measures such as window ventilation, permanently installed ventilation systems and mobile air purifiers as well as the wearing of particle-filtering masks.

The position paper concludes that the best protection is always provided by a combination of measures to prevent direct infection, i.e. contact avoidance, social distancing, masks and protective panels, and measures to prevent indirect [infection](#), i.e. windows ventilation, permanently installed ventilation systems, efficient mobile air purifiers and suitable masks. According to the experts involved, only regulations that are as consistent and uniform as possible guarantee a high level of safety with as few restrictions as possible in terms of day-to-day routine and quality of life.

**More information:** Christof Asbach et al, Coronavirus-Pandemie: Wie lassen sich Infektionen durch Aerosole verhindern?  
[www.dfg.de/download/pdf/foerde ...spapier aerosole.pdf](http://www.dfg.de/download/pdf/foerde...spapier_aerosole.pdf)

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