HealthCap
RISK MANAGEMENT SERVICES

Community Use of Cloth Masks to Control the Spread of SARS-CoV-2

CDC Guidance

Background

SARS-CoV-2 infection is transmitted predominately by respiratory droplets generated when people cough, sneeze, sign, talk, or breathe. CDC recommends community use of masks, specifically non-valved, multi-layer, cloth masks to prevent transmission of SARS-CoV-2. Masks are primarily intended to reduce the emission of virus-laden droplets ("source control"), which is especially relevant for asymptomatic or pre-symptomatic infected wearers who feel well and may be unaware of their infectiousness to others and who are estimated to account for more than 50% of transmissions. Masks also help reduce inhalation of these droplets by the wearer ("filtration for personal protection"). The community benefit of masking for SARS-CoV-2 control is due to the combination of these effects; individual prevention benefit increases with increasing numbers of people using masks consistently and correctly.

Source Control to Block Exhaled Virus

Multi-layer, cloth masks block release of exhaled respiratory particles into the environment along with the microorganisms these particles carry. Cloth masks not only effectively block most large droplets (i.e., 20-30 microns and larger) they can also block the exhalation of fine droplets and particles (also often referred to as aerosols) smaller than 10 microns, which increase in number with the volume of speech and specific types of phonation. Multi-layer, cloth masks can both block up to 50-70% of these fine droplets and particles and limit the forward spread of those that are not captured. Upwards of 80% blockage has been achieved in human experiments that have measured blocking of all respiratory droplets with cloth masks in some studies performing on par with surgical masks as barriers for source control.

Filtration for Personal Protection

Studies demonstrate that cloth mask materials can also reduce wearers' exposure to infectious droplets through filtration, including filtration of fine droplets and particles less than 10 microns. The relative filtration effectiveness of various masks has varied widely across studies, in large part due to variation in experimental design and particle sizes analyzed. Multiple layers of cloth with higher thread counts have demonstrated superior performance compared to single layers of cloth with lower thread counts, in some cases filtering nearly 50% of fine particles less than one micron. Some materials (i.e., polypropylene) may enhance filtering effectiveness by generating triboelectric charge (a form of static electricity) that enhances capture of charged particles while others (i.e., silk) may help repel moist droplets and reduce fabric wetting and thus maintain breathability and comfort.

https://www.cdc.gov/coronavirus/2019-ncov/more/masking-science-sars-cov2.html?ACSTrackingID=USCDC_1052-DM42364&ACSTrackingLabel=COCA%20Now%3A%20Scientific%20Brief%3A%20Community%20Use%20of%20Cloth%20Masks%20to%20Control%20Spread%20of%20SARS-CoV-2%20&deliveryName=USCDC_1052-DM42364
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