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The Case for Face Shields: Improving the COVID-19 Public Health Policy Toolkit

[September 2, 2020 The Petrie-Flom Center Staff Featured, Health Law Policy, Public Health, Scientific Evidence](#)



By [Timothy Wiemken](#), [Ana Santos Rutschman](#), and [Robert Gatter](#)

As the United States battles the later stages of the first wave of COVID-19 and faces the prospect of future waves, it is time to consider the practical utility of face shields as an alternative or complement to face masks in the policy guidance. Without face shields specifically noted in national guidance, many areas may be reluctant to allow their use as an alternative to cloth face masks, even with sufficient modification.

In this post, we discuss the benefits of face shields as a substitute to face masks in the context of public health policy. We further discuss the implications and opportunity costs of creating policy guidance with only a small subset of scientific data, much of which is limited. We conclude by arguing that existing federal guidance should be expanded to include face shields as a policy option.

Known Limitations of Face Masks

Cloth masks have limited data surrounding their best-practice use for both source control of respiratory droplets and for personal protection of inhalation of respiratory droplets. Some of their limitations have been recently documented in the scientific literature. To begin with, cloth masks exhibit considerable [variability](#), particularly since many are made at home. This is critical, as the type of fabric used influences the effectiveness of source control.

For cloth masks to offer maximal protection, they must be used appropriately. This includes regular washing, likely after each use. However, washing cloth is not equivalent to disinfecting, and there are no data to show if machine or hand washing is sufficient to remove infectious viral particles from masks. An alternative is disinfecting with an EPA-approved soft surface disinfectant, but this could pose as yet unknown health risks from inhaling residual product, and there are very few of these approved disinfectants available in the United States.

Masks [do not protect the eyes](#), a critical mucus membrane for many similar respiratory virus entry into the host. Given the discomfort of masks, increased touching of the face or changing mask placement [could increase autoinoculation](#) without proper hand hygiene.

Moreover, like surgical masks, cloth masks may be difficult or impossible to use for claustrophobic individuals, young children, or those with respiratory comorbidities which reduce their oxygen intake. They also make communication difficult, especially when facial expression as a form of non-verbal communication is critical—for example, in schools, day cares, specialty care facilities, and for individuals with hearing impairment. With cloth masks, users sometimes need to remove their masks for communication, [reducing their effectiveness](#) and increasing the chances of autoinoculation.

The limitations noted above certainly do not detract from the fact that face masks have played a critical role in the response to the COVID-19 outbreak in many communities that have initiated mandatory masking when in public. Nonetheless, the known limitations of face masks suggest that complementary approaches might be necessary to better curb the spread of SARS-CoV-2.

Benefits of Face Shields

Face shields are clear plastic or acrylic barriers that cover the face from the forehead to the neck and from ear to ear. They are capable of blocking direct contact with respiratory droplets in the three main areas: eyes, nose, and mouth. They also [prevent](#) the user from touching their eyes.

When compared with cloth masks, they provide the following benefits:

1. Face shields [appear to prevent](#) inhalation of a substantial amount of aerosol-size particles, an important piece of personal protection that cloth based face masks have not been shown to provide thus far.
2. Face shields do not necessarily have the [variability](#) of cloth masks and that are easier to disinfect with traditional disinfectants.
3. For many individuals, face shields are likely to provide greater comfort

than face masks. This benefit may be especially relevant for claustrophobic individuals or those with respiratory medical comorbidities who have difficulty breathing.

4. Face shields can help with “maskne” prevention. Acne and facial indentations due to face masks is becoming more of an issue for users, particularly those using masks for extended time periods.
5. Face shields provide individuals with the ability to see and better interpret facial expressions. In schools, day cares, or careers where non-verbal communication is especially critical (e.g., working with [hearing-impaired individuals](#)), face shields offer the only method of personal protection with the ability to see the users’ face, lips and/or mouth.
6. In [some cases](#) – involving children, the very elderly, individuals with motor impediment, autism, anxiety, sensory issues, or seizure disorder – placing a face mask and readjusting it might require more skill or ability than doing the same with a shield, or it may cause direct [harm](#) to the user. This is showcased by many localities excluding individuals with various conditions from face mask requirements. In areas where this exclusion is not documented, requiring masks for certain subgroups of individuals could be classified as discrimination. Arguably, a face shield may reduce these issues for a wide variety of individuals.
7. Mask use has resulted in [racial discrimination](#), particularly against Black men. If face shields provide sufficient protection without a mask, their use may help reduce discriminatory conduct associated with mask-wearing.
8. Subsidiarily, face shields provide an alternative to masks, which have been the subject of idiosyncratic forms of resistance by some segments of the United States leadership and population.

Overall, face shields provide excellent [personal protection](#) against infectious particles. We note that this benefit may be diminished due to the fact that airflow may leak out to the sides or below the chin in a face shield [more than](#)

[from a mask](#), reducing community protection. Nonetheless, this airflow issue could be remedied with several potential modifications:

1. Fitting shields appropriately with extended curvature to or past the ears, and extending the shield significantly below the chin.
2. Creating an inward curvature of the lower rim of the face shield could deflect airflow back to the user's body, further limiting air movement and droplet spread.
3. Or, the ideal scenario: [attachment](#) of a shield to cloth at the bottom/sides or creating shields that rest on the neck, as opposed to the forehead, with a cloth head cover. This may be the best approach to reduce airflow and contain respiratory droplets. Further, this would allow for use of this modified shield alone, without a cloth face mask, as the cloth covering would serve as the droplet prevention material, much like a cloth directly on the nose and mouth.

It is also important to note that traditional shields should be attached to a barrier at the forehead without an exposed gap between the head and shield. Some shields that offer the ability to flip up when not in use do not meet this criterion. Care must be taken to choose the correct shield for the particular task of preventing respiratory droplet spread. There are no studies exploring varied lengths or widths of face shields for reducing leakage of particles. Regardless, similar issues with particle leakage may be exhibited by poorly fitting cloth masks.

The Policy Case for Face Shields

While acknowledging the lack of a systematic study of the use of masks for personal protection and therefore the existence of informational gaps in current policy settings, we note that the known relative advantages associated with the use of face shields for personal protection indicate that they should

have received greater consideration in earlier stages of the United States response to the pandemic. From a policy making perspective, if we are following the scientific method for policy development, we must account for all interventions for which there is some evidence of effectiveness. Face shields and cloth-based masks have complementary and potentially interchangeable protective ability based on data of equivalent reliability. As such, face shields be specifically incorporated as an option in federal guidance with or without cloth face mask use.