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About Masks - (Plus a personal note)

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Straight Talk on Masks from Anthony Fauci

In a widely shared YouTube interview with Lilly Singh, Anthony Fauci, head of the National Institute of Allergy and Infectious Diseases (NIAID) and a member of the White House coronavirus task force, explained the rationale for wearing face masks. He also explained why the CDC didn't initially suggest that Americans wear them.

"The primary purpose of a face mask is to protect a healthcare worker when he or she is taking care of somebody that's sick. The secondary use is to get someone who is sick to put it on themselves to prevent them from infecting somebody else. Other people who want to protect themselves in society, they can use face masks. The reason we didn't recommend it early on is we didn't want the supply of face masks to be used for people who didn't really need it when the physicians and the nurses and the healthcare providers who needed it weren't getting it. In a perfect world, if you have enough face masks, there's nothing wrong with wearing a face mask. Is it 100% protective, no way. What is it, estimate, maybe 50% or so, and that's merely an estimate. There's some degree of protection, but it isn't completely protected against the transmission." (https://www.youtube.com/embed/F2YKKba6ps0)

Myth-Busting Coronavirus ...

As Fauci (who tends to be forthright) confirms, the CDC's original guidance that Americans did not need to wear masks wasn't based on the fact that masks made no difference in infection control in daily life. The critical factor in the original decision not to recommend that Americans wear masks was that there weren't enough masks for healthcare workers fighting COVID-19 on the front lines. Now, the CDC's guidance has changed, and Americans are urged to wear cloth masks instead, still conserving the most effective masks — medical N95s and surgical masks — for nurses and doctors and first responders.

A Thorny Problem: Mask Supply

Everywhere we turn, we see that the shortage of masks and other PPE, particularly in hospitals, has been acute in the US. A survey of mayors in more than 200 US cities in March found that more than 90% of the cities did not have an adequate supply of masks for their medical personnel and first responders (including police, fire, and EMTs). ("Inside the start of the great virus airlift," Axios, March 29, 2020, https://www.axios.com/coronavirus-airlift-masks-medical-supplies-1d1913bf-744e-41cf-895c-d8934afa2c36.html)

Doctors and nurses have often had to reuse masks for days or even weeks, laboriously cleaning them as best they can, and falling back on masks hand-sewn by friends and relatives. ("People around the country are sewing masks. And some hospitals, facing dire shortage, welcome them," CNN, March 24, 2020, https://www.cnn.com/2020/03/24/us/sewing-groups-masks-coronavirus-wellness-trnd/index.html)

Because they lack adequate masks and PPE for effective infection control, US healthcare workers are falling sick and dying. In California, 10% of the infected are healthcare workers. (*Becker's Hospital Review,* April 9, 2020, https://www.beckershospitalreview.com/public-health/10-of-covid-19-cases-in-california-are-healthcare-workers-new-york-hospitalizations-trend-down-22-other-updates-from-the-6-hardest-hit-states.html)

China is the world's biggest producer of medical face masks. It made about half of the world's $11.7 billion supply in 2018, according to United Nations trade data. And the US has long been China's biggest customer for masks. But with China facing its own COVID-19 crisis and its factories shuttered, exports of masks plummeted. China *imported* two billion masks in a five-week period starting in mid-January, a quantity equal to about two and a half months of global production. Anyone who tried to order medical N95s in the second half of January could readily see that the global supply of masks was already being hollowed out by the urgent need in China. In February, the US actually ramped up its exports of masks to China some eight-fold, from the normal $2 million worth to $16 million.

Then, as the virus spread and China brought outbreaks under control, the tables turned; and now China has become a major part of the global masks solution. The country has increased production by nearly 12 times the previous level of 10 million masks a day – a huge mobilization effort.

("Coronavirus Battle Creates a Global 'Free-for-All' to Find Masks," *New York Times,* April 1, 2020, https://www.nytimes.com/2020/04/01/business/coronavirus-china-masks.html)

On Sunday morning March 29, a plane from China arrived at John F. Kennedy International Airport, carrying 130,000 N95 masks, 1.7 million surgical masks, 12 million gloves, 50,000 gowns, 130,000 hand sanitizer units, and 36,000 thermometers. It was the first of 22 such flights booked for the following two weeks, according to Rear Adm. John Polowczyk, who runs FEMA's coronavirus supply chain task force.

At the same time, rather than procuring masks and other critical PPE and coordinating their distribution according to need, the Trump administration was telling the states that they needed to go out and procure their own PPE. Since then, states' attempts to do so through direct contacts with Chinese companies have been fraught with peril. The incredible demand for masks and other PPE has led to an influx of new companies producing the items, with a resultant falloff in both quality and business ethics. Customers scramble to outbid one another while companies demand full payment up front – and then sometimes disappear with the money.

The Chinese government has responded to this free-for-all by requiring the inspection of every shipment of masks, ventilators, and other medical supplies before export; but that requirement means delayed arrival of critical PPE at hospitals around the world.

("Coronavirus: inside China's 'Wild West', where 'mask machines are like cash printers'," *South China Morning Post,* April 17, 2020, https://www.scmp.com/economy/china-economy/article/3080378/coronavirus-inside-chinas-wild-west-where-mask-machines-are)

The procurement difficulties faced by states and private entities worsened in many cases after control of the federal COVID-19 response was moved from the Dept. of Health and Human Services to FEMA on March 19. Soon reports began to emerge of FEMA's requisitioning and redirecting shipments of PPE. In Kentucky, for example, the head of a hospital system told members of Congress that his broker had withdrawn from an agreement to deliver four shipments of much-needed medical supplies after the order was commandeered by FEMA. ("'Swept Up by FEMA': Complicated Medical Supply System Sows Confusion," New York Times, April 6, 2020, https://www.nytimes.com/2020/04/06/us/politics/coronavirus-fema-medical-supplies.html)

Hospitals in search of masks have fared no better. Here is a harrowing first-person account from a chief physician executive of a health system in Massachusetts, detailing his trials and tribulations in securing a shipment of masks – and keeping them out of federal hands: "In Pursuit of PPE," *New England Journal of Medicine,* April 17, 2020, https://www.nejm.org/doi/full/10.1056/NEJMc2010025.

Governor J.B. Pritzker of Illinois is among those governors and mayors who have decided to try to outmaneuver the federal government to prevent shipments of masks and other vital supplies from being seized by FEMA for the national stockpile. The *Chicago Sun Times* reports that he is arranging secret flights out of China to obtain what Illinois needs in the state's fight against

the coronavirus. (“Pritzker arranging secret flights to bring millions of masks and gloves to Illinois,” *Chicago Sun Times,* April 14, 2020, https://chicago.suntimes.com/coronavirus/2020/4/14/21221459/pritzker-secret-flights-china-illinois-ppe-trump-coronavirus)

The Trump administration has also withheld distribution of PPE from the Strategic National Stockpile. On Thursday April 2, Jared Kushner, who has been given an increased role in the White House’s COVID-19 response, said, “The notion of the federal stockpile was, it’s supposed to be our stockpile. It’s not supposed to be states’ stockpiles that they then use.” (“Trump admin tries to narrow stockpile’s role for states,” AP, April 4, 2020, https://apnews.com/74926f591522b30cbd96853bbcf2dbbd)

It turns out, in any case, that the stockpile’s supply of masks was never replenished after 85 million N95 masks and millions of other protective masks were distributed during the 2009 swine flu pandemic. At the start of the SARS-CoV-2 outbreak, the stockpile held only about 12 million of the 3.5 billion N95 masks that federal officials estimated the healthcare system would need to deal with the pandemic. That shortfall stems from the fact that congressional appropriations for the stockpile are limited; and in the wake of 9/11, the officials who manage the stockpile opted to focus their limited dollars on preparing for terrorist threats and bioterrorism instead.

To make matters worse, in 2018, the stockpile was taken out of the hands of the CDC; and the assistant secretary for preparedness and response in the Health and Human Services Department was put in charge of it. Most experts agree that the CDC was better suited for operational tasks such as organizing and mobilizing a stockpile.

The bigger picture is that our US healthcare system operates with just enough resources, but “just enough” quickly becomes not nearly enough when an event such as a pandemic suddenly strikes. Greg Burel, who was the director of the Strategic National Stockpile from 2007 until January 2020, notes, “Public health is not well funded at the state level, the locality level, or at the federal level in the United States. It is a chronic problem.”

(“Why We’re Running Out of Masks,” *The Atlantic,* April 10, 2020, https://www.theatlantic.com/health/archive/2020/04/why-were-running-out-of-masks-in-the-coronavirus-crisis/609757/)

At this point, caught unprepared, the US is paying six times the usual price for masks and sometimes from questionable vendors. (“US Pays High Prices for Masks from Unproven Vendors in Coronavirus Fight,” Wall Street Journal, April 18, 2020, https://www.wsj.com/articles/u-s-pays-high-prices-for-masks-from-unproven-vendors-in-coronavirus-fight-11587218400)

Changing Guidance and Mixed Messages

It is not the successful resolution of the mask supply problem that has changed minds about mask use at the WHO and the CDC. The supply problem persists. Guidance changed for other reasons. (“To mask or not to mask: WHO makes U-turn while US, Singapore abandon pandemic advice and tell citizens to start wearing masks,” *South China Morning Post,* April 4, 2020, https://www.scmp.com/news/hong-kong/health-environment/article/3078437/mask-or-not-mask-who-makes-u-turn-while-us)

For one thing, the world now knows more about SARS-CoV-2, the coronavirus that causes the disease now dubbed COVID-19, than it did in January, February, and March. Infected people may be either presymptomatic for a day or two or, if they are very lucky, asymptomatic, meaning that they will never feel sick at all. Multiple studies have demonstrated that a significant number of infected people, 20% or more, are not symptomatic when they test positive. The Center for Evidence-Based Medicine (CEBM) has compiled a list of 21 reports and their results: “COVID-19: What Proportion Are Asymptomatic,” https://www.cebm.net/covid-19/covid-19-what-proportion-are-asymptomatic/.

An astonishing percentage of the hundreds of sailors who have tested positive aboard the USS Roosevelt, fully 350 of 600, were asymptomatic at the time. (“SECDEF: Majority of Roosevelt sailors with COVID-19 are asymptomatic,” *Navy Times,* April 16, 2020, https://www.navytimes.com/news/coronavirus/2020/04/16/secdef-majority-of-roosevelt-sailors-with-covid-19-are-asymptomatic-flattop-still-wartime-ready/.)

Furthermore, in another study, close to half of all secondary cases appear to have been infected when the person who infected them had not yet experienced symptoms. (“44% of secondary COVID-19 cases linked to presymptomatic patients,” *Becker’s Hospital Review,* April 17 2020, https://www.beckershospitalreview.com/public-health/44-of-secondary-covid-19-cases-linked-to-presymptomatic-patients-study-suggests.html)

Infections transmitted by asymptomatic or presymptomatic cases, US health experts realized, posed a gaping hole in the nation’s pandemic containment strategy. Their Asian counterparts, on the other hand, were not surprised. George Gao, director-general of the Chinese Center for Disease Control and Prevention (CDC), expressed concern about Western guidance that suggested only healthcare workers need masks in a *Science* magazine interview published online on March 27:

“The big mistake in the US and Europe, in my opinion, is that people aren’t wearing masks. This virus is transmitted by droplets and close contact. Droplets play a very important role — you’ve got to wear a mask, because when you speak, there are always droplets coming out of your mouth. Many people have asymptomatic or presymptomatic infections. If they are wearing face masks, it can prevent droplets that carry the virus from escaping and infecting others.” (“Not wearing masks to protect against coronavirus is a ‘big mistake,’ top Chinese scientist says,” *Science,* March 2020, https://www.sciencemag.org/news/2020/03/not-wearing-masks-protect-against-coronavirus-big-mistake-top-chinese-scientist-says)

People in Asian countries have long worn masks when they are sick to prevent infection, as a courtesy to others and a protection for society, and people there have the 2003 SARS experience with a deadly contagion to remember by. ("Coronavirus: Why some countries wear face masks and others don't," BBC, March 31, 2020, https://www.bbc.com/news/world-52015486)

As a case in point, the City of Hong Kong has insisted on masks from the start, but has also implemented vigilant testing, contact tracing, isolating of cases, and social distancing measures. Having done all this, top epidemiologists there still give masks a great deal of the credit for the fact that Hong Kong cases have not spiked:

"'If not for universal masking once we depart from our home every day, plus hand hygiene, Hong Kong would be like Italy long ago,' said K.Y. Yuen, a Hong Kong microbiologist advising the government. 'If you look at where we've had clusters, it's places where the masks come off, like hot-pot family dinners or Buddhist temples.'"

("Hong Kong Shows the World Masks Work," *Wall Street Journal,* April 8, 2020, https://www.wsj.com/articles/to-curb-the-coronavirus-hong-kong-shows-the-world-masks-work-11586338202)

Western countries, on the other hand, are not accustomed to wearing masks to avoid spreading illnesses, and this reality is obvious today as we see how many people, Donald Trump among them, opt not to wear a mask despite the CDC's about-face. ("'I'm not going to do it': Trump rejects his own administration's advice on masks," https://www.theguardian.com/world/2020/apr/03/im-not-going-to-do-it-trump-refutes-his-own-administrations-advice-on-masks)

The push for a change in guidance came not only from the evidence but through social media. For example, Jo (@jperla), an autonomous engineer, noted, using a *Financial Times* graphic updated March 20, outcomes for countries using masks versus countries not using masks. The countries requiring or advising masks for all, however, are also countries that are implementing extensive testing, quarantines, and other measures to control spread of COVID-19.

The chart went viral.

Not found

> More updated chart. We need the @CDCgov to recommend people always wear homemade masks when out!@naval @schrockn https://t.co/u553dvGPMU pic.twitter.com/AAiBJSTsjt
>
> — Jo (@jperla) March 22, 2020

While it was making the rounds on social media, the debate within the White House and between the White House and the CDC seems to have been spirited. No two news stories depict the dynamics of that debate in exactly the same way, and that fact suggests the diversity of perspectives involved.

("A Debate Over Masks Uncovers Deep White House Divisions," *New York Times,* April 3, 2020, https://www.nytimes.com/2020/04/03/us/politics/coronavirus-white-house-face-masks.html)

("New face mask guidance comes after battle between White House and CDC," *Washington Post,* April 3, 2020, https://www.washingtonpost.com/health/2020/04/03/white-house-cdc-turf-battle-over-guidance-broad-use-face-masks-fight-coronavirus/)

("CDC recommends Americans wear face masks voluntarily in public but some officials say they felt 'pressured' to draft new guidelines," CNN, April 3, 2020, https://www.cnn.com/2020/04/03/health/us-coronavirus-friday/index.html)

Issued on April 3, the CDC guidance that resulted reflects concerns of all perspectives and the back-and-forth that apparently took place. Masks are recommended but not required, and not necessarily everywhere but for places where transmission might be more likely. Cloth masks do not change the necessity for 6-foot physical distancing, and the masks recommended are cloth, not precious surgical masks or N95s that doctors, nurses, and emergency responders desperately need:

"CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g., grocery stores and pharmacies) **especially** in areas of significant community-based transmission.

"It is critical to emphasize that maintaining 6-feet social distancing remains important to slowing the spread of the virus. CDC is additionally advising the use of simple cloth face coverings to slow the spread of the virus and help people who may have the virus and do not know it from transmitting it to others. Cloth face coverings fashioned from household items or made at home from common materials at low cost can be used as an additional, voluntary public health measure.

"The cloth face coverings recommended are not surgical masks or N-95 respirators. Those are critical supplies that must continue to be reserved for healthcare workers and other medical first responders, as recommended by current CDC guidance."

(CDC, April 3, 2020, https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html)

The US government's mixed messaging on masks has had one obvious result. We see some people wearing masks and others not. Telling Americans first to do one thing and then to do another, and failing to lead by example, has ensured poor compliance in many areas.

Across the Atlantic, the UK government is still reluctant to require that UK citizens wear masks, but UK doctors have rallied behind the Masks4AllUK campaign to urge British citizens to don reusable cotton masks when they go out. ("Wear cloth masks to prevent coronavirus spread, say doctors," https://www.telegraph.co.uk/politics/2020/04/19/doctors-say-cloth-face-masks-should-worn-prevent-coronavirus/)

However, some European countries – Slovakia, the Czech Republic, and Austria – shifted in late March to requiring that their citizens wear face masks or other facial coverings in public. ("In 'Big Adjustment,' Some European Countries Push For Residents To Wear Masks," NPR, April 1, 2020, https://www.npr.org/sections/coronavirus-live-updates/2020/04/01/825180019/in-big-adjustment-some-european-countries-push-for-residents-to-wear-masks)

And on April 8, the European Centre for Disease Prevention and Control (ECDC) issued a technical report indicating that Europeans could "consider" wearing masks when they leave home to reduce the spread of COVID-19. ("Using face masks in the community – Reducing COVID-19 transmission from potentially asymptomatic or pre-symptomatic people through the use of face masks," https://www.ecdc.europa.eu/en/publications-data/using-face-masks-community-reducing-covid-19-transmission)

What Masks Do (And Don't)

Back when the threat of an H5N1 influenza pandemic loomed large, health experts used an analogy to explain how layered nonpharmaceutical interventions such as masks and social distancing work together to reduce transmission of a pandemic virus: "Researchers compare layering interventions to layering Swiss cheese: if the holes are vulnerabilities, with enough layering you'll end up with a solid block of prevention." Masks reduce the likelihood of infection but are not complete protection. They are one more layer of Swiss cheese a society can use to reduce the spread of a virus. ("Study: Quarantines Work Against Pandemics," *Time,* Aug. 7, 2007, http://content.time.com/time/health/article/0,8599,1650634,00.html)

Masks do filter large droplets that can carry heavy viral loads. Even surgical masks significantly reduce the amount of cold and flu viruses expelled into the air by coughs, sneezes, conversations, and even just breathing. ("Masks do reduce spread of flu and some viruses, study finds," Reuters, April 3, 2020, https://www.reuters.com/article/us-health-coronavirus-masks-science-idUSKBN21L2BW)

Studies demonstrate that droplet transmission can be significantly reduced when an infected person wears a mask and that, without masks, virus-laden droplets travel much farther than six feet and remain in the air for some time. ("Coronavirus droplets may travel further than personal distancing guidelines, study finds," *South China Morning Post,* April 16, 2020, https://www.scmp.com/news/china/society/article/3080177/coronavirus-droplets-may-travel-further-personal-distancing)

Since masks help contain virus-laden droplets otherwise spread freely by coughing, sneezing, or simply talking, masks reduce the chances that people will inhale enough of the virus to trigger an infection. We don't yet know what an infectious dose of SARS-CoV-2 actually is, but reducing the initial viral load associated with an infection means that the body has a smaller invading viral army to fight. That may make a difference in outcomes, though the jury is still out.

("What We Know about the Viral Load of COVID-19"

https://www.zmescience.com/science/viral-load-coronavirus-03042020/)

("These Coronavirus Exposures Might Be the Most Dangerous"

https://www.nytimes.com/2020/04/01/opinion/coronavirus-viral-dose.html)

Jeremy Howard, a research scientist at the University of San Francisco and member of the WEF Global AI Council, wrote an op-ed in the *Washington Post* arguing that the public should wear masks. His research institute, fast.ai, identified 34 studies which found that basic masks help to impede the transmission of viruses. ("Simple DIY masks could help flatten the curve. We should all wear them in public," https://www.washingtonpost.com/outlook/2020/03/28/masks-all-coronavirus/. Here is the fast.ai list of studies: https://docs.google.com/document/d/1HLrm0pqBN_5bdyysOeoOBX4pt4oFDBhsC_jpblXpNtQ/edit#heading=h.9yzpxufkt5ow. fast.ai did not find any studies proving that basic masks do no good.)

Naysayers have offered several arguments against recommending masks for the public. Among these are Dr. Lisa Brousseau and Dr. Margaret Sietsema, both experts on respiratory protection hailing from the University of Illinois. In a commentary titled, "Commentary: Masks-for-all for COVID-19 not based on sound data" (CIDRAP, April 2020, http://www.cidrap.umn.edu/news-perspective/2020/04/commentary-masks-all-covid-19-not-based-sound-data), they lay out their reasoning. I quote them below and suggest counterarguments. (I began wearing a mask early on. Readers, as ever, are invited to delve more deeply and to decide for themselves.)

· Brousseau and Sietsema: “There is no scientific evidence they are effective in reducing the risk of SARS-CoV-2 transmission.”

[There is, however, scientific evidence, cited above, that masks are effective in reducing the transmission of cold and flu viruses; and since droplet transmission is the certain form of respiratory transmission we know about, we suspect that a mask’s ability to filter a percentage of larger droplets is likely the determinative factor, rather than the particular virus hitching a ride on those droplets.]

· Brousseau and Sietsema: “Their use may result in those wearing the masks to relax other distancing efforts because they have a sense of protection.”

[Americans without medical training need training as to how to use masks to best advantage. That’s a public education task, not an excuse for not recommending masks that could save lives. More about that later in this piece.]

· Brousseau and Sietsema: “We need to preserve the supply of surgical masks for at-risk healthcare workers.”

[With this end in mind, the CDC recommends that Americans use cloth masks made out of commonly available materials rather than precious medical masks that can protect the healthcare workers who risk their own lives to treat others. Healthcare workers need the medical masks, the CDC urges. Other essential workers need meaningful protection, too.]

There is another case for Americans to have and to wear masks, and not one that has been widely discussed in the public debate. People who have mild cases of COVID-19 are self-isolating at home, often under the same roof as other family members or housemates, where everyone is better protected if at least the sick person wears a mask and better protected still if everyone does. The difficult truth is that people are dying at home, too, and family or housemates may be their default caregivers. (“After Deaths at Home Spike in NYC, Officials Plan to Count Many as COVID-19,” https://www.npr.org/sections/coronavirus-live-updates/2020/04/08/829506542/after-deaths-at-home-in-nyc-officials-plan-to-count-many-as-covid-19)

Since the beginning, COVID-19 has spread most readily among family members living under a single roof. Thus, masks are, in fact, needed in homes, where the disease spreads most easily. COVID-19 is perhaps taking the greatest toll in multigenerational households. In the US, people who have symptoms of COVID-19 do not go to a quarantine center (or get dragged to one); they are told to self-isolate at home instead, whether that’s readily possible in a full house or not. At the very least, a symptomatic family member should wear a mask when he or she is around others.

(“Coronavirus Spread in China Mostly Among Families, WHO Says,” Bloomberg, Feb. 28, 2020, https://www.bloomberg.com/news/articles/2020-02-28/coronavirus-spread-in-china-mostly-among-families-report-says)

(“Are Adults Living with Parents Making the Pandemic More Deadly,” *New York Times,* April 8, 2020, https://www.nytimes.com/2020/04/08/world/europe/adults-parents-home-coronavirus.html)

Wearing a Mask Correctly

The CDC’s guidance regarding masks, posted April 3, includes a video showing Americans how to create a no-sew mask out of a piece of fabric: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html. While creating a fabric mask can be just that simple, one physician who watched this video suggests folding the cloth to get the same number of layers but without the folds meeting the middle of the mask. Folded as the CDC suggests, the mask has only one layer of fabric in the middle, and that single layer is a weakness.

What the CDC guidance does not include is basic information every nurse, doctor, and emergency responder knows, and that is how to don, wear, and remove a mask so that it offers protection rather than posing a hazard. For that information, we might refer readers to an April 8 *New York Times* article, “How NOT to Wear a Mask,” https://www.nytimes.com/2020/04/08/well/live/coronavirus-face-mask-mistakes.html. Readers are advised to read to the end. Videos are also a help. In this example, physician Patricia George shows how to put on, remove, handle, and launder a cloth mask safely: https://www.nationaljewish.org/patients-visitors/patient-info/important-updates/coronavirus-information-and-resources/health-tips/how-to-put-on-a-surgical-mask.

Wearing masks correctly is critically important to their effectiveness, and handling them correctly is also critically important since SARS-CoV-2 can remain viable on the outer surface of a surgical mask for up to a week. (“Coronavirus can stay on medical face masks for up to a week, study finds,” *South China Morning Post,* April 6, 2020, https://www.scmp.com/news/china/science/article/3078511/coronavirus-can-remain-face-masks-week-study-finds)

The virus is viable on cloth masks for a shorter time — just two days. (“One chart shows how long the coronavirus lives on surfaces like cardboard, plastic, wood, and steel,” https://www.businessinsider.com/coronavirus-lifespan-on-surfaces-graphic-2020-3)

Buying or Making Cloth Masks

USA Today recently reviewed cloth masks worth buying:

https://www.usatoday.com/story/tech/reviewedcom/2020/04/17/where-buy-homemade-face-masks-9-retailers-selling-fabric-face-coverings-worth-buying/5155800002/.

With a WW2-style army of volunteers sewing cloth masks for doctors, nurses, and other essential workers, as well as for themselves, their families, and friends, and with others turning out cloth masks to sell online, many people with sewing machines and basic sewing skills are turning to various patterns for making masks. The Olson mask, one example, was designed by clinicians at UnityHealth: https://www.regmedctr.org/webres/File/OlsonMask_wPattern_v3-USE%20THIS%20ONE.pdf.

As for the best materials to use for mask-making, cotton fabrics with high thread counts such as sheets or premium quilting fabric or cotton jersey T-shirt material or even flannel seem to score best for combining semi-effective filtration with breathability. Cloth masks with pockets for filters and filters to put in them are most effective. Several layers of T-shirt material can substitute for a filter when filters are not available.

("What's the Best Material for a Face Mask," *New York Times,* April 20, 2020, https://www.nytimes.com/article/coronavirus-homemade-mask-material-DIY-face-mask-ppe.html

("What Are the Best Materials for Making DIY Masks," Smart Air, March 8, 2020, https://smartairfilters.com/en/blog/best-materials-make-diy-face-mask-virus/)

While Americans scrounge for masks and make their own out of whatever they can find or buy, medical masks are evolving. An Israeli version features a virus-killing sticker: "Israeli hospital pilots virus-killing sticker for coronavirus masks," https://www.israel21c.org/in-corona-response-israeli-hospital-pilots-virus-neutralizing-sticker-for-masks/.

Face shields, which can be made out of something as simple as an overhead transparency in a pinch, supplement the protection that masks offer, ensuring that few droplets reach a wearer's mask. Both face masks and face shields promise to evolve into fashion statements, judging from online offerings. One reader sent this link as an example: https://www.newchic.com/theme-cap-t-333962/.

Staying Safe

Last, in terms of keeping yourself and your family safe, we highly recommend this 57-minute video interview with Dr. David Price of Weill Cornell Medical Center in New York City. Doctor Price treats COVID-19 patients. In a Mar. 22 Zoom call, now widely viewed online, he shared information on preventing infection during the COVID-19 pandemic. His advice is a good antidote for anxiety over infection control.

Video, "Empowering and protecting families during the COVID-19 pandemic": https://vimeo.com/399733860

The entire 57 minute video is worth watching, but if you need the short version, a summary of key points is below.

Summary of Dr. David Price's **key points** in "Empowering and protecting families during the COVID-19 pandemic":

- Know your hands are clean. Have Purell and wash hands whenever you have to touch things outside your house (doorknobs, etc.). Don't touch the front of your mask.
- Don't touch your face.
- Wear a mask when you leave your house. The major purpose of your mask is to keep your hands off your face.
- Distance yourself. (Masks don't substitute for distancing.)
- Shrink your social circle. Find your isolation group of 3 or 4, and that's it. People with large social circles will get this. No one else should be coming in and out of the house.
- You don't need a medical mask. General community has zero need for an N95.
- Avoid sustained contact with a person who is sick. Separate room. Separate bathroom. If interaction, a mask goes on the person who is sick (wash hands first, put on mask).
- A person who has been ill should remain isolated after recovery for seven days, keep a mask on, and wash hands.

Now to a personal Kotok note. I wear a mask every time I go out of my front door. I leave it on and keep it on until I return. I wash my hands before I put it on. I wash my hands when I return and before I take the mask off. At the end of January, I was a speaker at the global ETF conference in Ft. Lauderdale. Matt Hougan moderated the session. At the end of the session we discussed preventive techniques and why COVID needed to be taken seriously. That conversation included masks. We were the only two people wearing masks at a worldwide conference of 2000 people held in Florida on January 27-28. I certainly hope that those who attended are safe and healthy. I also believe the results at such a conference would be quite different today and will be different for many future years, once such a conference can again be convened.

Readers can and may decide for themselves where responsibilities belong for the current situation of America's inadequate PPE supplies. But please take the masking and social distancing seriously as each person acts in her/his own self protective defense. I'm personally appalled by the crowds in various state capitols at demonstrations that ostensibly call for Liberty. They are a mass of folks who are inviting danger and death.

We need to have this issue in perspective. Rhodes College Professor Scott Newstok eloquently stated it in his new book *How to Think Like Shakespeare*. (Princeton University Press-2020) We will close with this quote from Chapter 14, page 148 of Scott's new book.

"There's a classic political distinction between negative liberty and positive liberty. It's the difference between 'freedom from' (as in, I am slave to no man) and 'freedom to' (as in, I am my own master)."

I (we) have the freedom to personally protect ourselves. Or not. Each of us can choose, within the best of our ability and circumstances, to be our own master.

David R. Kotok
Chairman of the Board & Chief Investment Officer
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