

## **The Facemask: A COVID-19 Talisman**

Open Letter to School Officials, Board Members, and Policy Makers  
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I am an experienced attorney, published legal author, and knowledgeable researcher. Before attending law school, I worked for a decade in hospital laboratories and operating rooms in some of the largest level I trauma hospitals in the country. I have worked at the National Institutes of Health, the nation's leading medical research agency. I am the mother of four children who attend public school and have a vested interest in ensuring that the public-school policy regarding mask-wearing in the classroom is rooted in science. My concerns follow.

### **I. The benefits of mask-wearing by the general population are solely theoretical.**

This letter assumes that if required to wear masks, students, teachers, and staff will overwhelmingly wear cloth masks. While this letter focuses on the cloth mask, it also includes discussion of other types of masks such as the disposable medical mask. My extensive education, training, experience, and research leads me to conclude that masks are nothing more than a COVID-19 talisman. The underpinning for this conclusion is as follows:

#### **a. *The use of masks, especially cloth masks, is not supported by science.***

The U.S. Centers for Disease Control ["CDC"] currently recommends the use of cloth masks by the general public.<sup>1</sup> However, the University of Minnesota Center for Infectious Disease Research and Policy [CIDRAP] calls out the CDC as using bogus sources to support this recommendation. As CIDRAP notes, the CDC's citations "employ very crude, non-standardized methods [] or are not relevant to cloth face coverings because they evaluate respirators or surgical masks []."<sup>2</sup>

Unlike the CDC, The National Academy of Sciences ["NAS"] is a private, nonprofit organization of the country's leading researchers and provides objective, science-based advice on critical issues. In April NAS published the following:

There are no studies of individuals wearing homemade fabric masks in the course of their typical activities. Therefore, we have only limited, indirect evidence regarding the effectiveness of such masks for protecting others, when made and worn by the general public on a regular basis. That evidence comes primarily from laboratory studies testing the effectiveness of different materials at capturing particles of different sizes.

The evidence from these laboratory filtration studies suggests that such fabric masks may reduce the transmission of larger respiratory droplets. There is little evidence regarding the transmission of small aerosolized particulates of the size potentially exhaled by asymptomatic or presymptomatic individuals with COVID-19. The extent of any

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<sup>1</sup> <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html>

<sup>2</sup> COMMENTARY: Masks-for-all for COVID-19 not based on sound data found at <https://www.cidrap.umn.edu/news-perspective/2020/04/commentary-masks-all-covid-19-not-based-sound-data>

protection will depend on how the masks are made and used. It will also depend on how mask use affects users' other precautionary behaviors, including their use of better masks, when those become widely available. Those behavioral effects may undermine or enhance homemade fabric masks' overall effect on public health. The current level of benefit, if any, is not possible to assess.<sup>3</sup>

“There is no good evidence that facemasks protect the public against infection with respiratory viruses, including COVID-19.”<sup>4</sup> Zero efficacy trials have been conducted regarding the use of cloth masks by the general public (including children or adolescents) as a means to limit or prevent the spread of COVID-19.<sup>5</sup> Thus, as alluded by NAS, the current public policy that a *cloth* mask prevents the spread of COVID-19 is scientific balderdash.

While the use of cloth masks in the general public has not been scientifically studied for effectiveness, a 2009 study found no benefit to healthcare workers wearing *medical* masks as a means to prevent the common cold.<sup>6</sup> In 2015 researchers did study the efficacy of cloth masks in the hospital setting and concluded that healthcare workers “should not use cloth masks as protection against respiratory infection. Cloth masks resulted in significantly higher rates of infection than medical masks, and also performed worse than the control arm.”<sup>7</sup> A recent study from June 2020 reiterated that a cloth mask should only be considered as the “last resort” and will only offer “limited success.”<sup>8</sup> In fact, after a recent review of the available research CIDRAP determined that “[c]loth masks are ineffective as source control” and that “very poor filter and fit performance of cloth masks [] and very low effectiveness for cloth masks in healthcare settings lead us to conclude that cloth masks offer no protection for healthcare workers inhaling infectious particles near an infected or confirmed patient.”<sup>9</sup>

Based upon available data, the World Health Organization [“WHO”] does not recommend the use of masks in the general public as a means to prevent transmission of COVID-19, stating that “[t]he lower filtration and breathability standardized requirements, and overall expected performance, indicate that the use of non-medical masks, made of woven fabrics such as cloth, and/or non-woven fabrics, should only be considered for source control (used by infected persons) in community settings and not for prevention.”<sup>10</sup> WHO’s guidance is further supported by a June 2020 study concluding that

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<sup>3</sup> *National Academies of Sciences Rapid Expert Consultation on the Effectiveness of Fabric Masks for the COVID-19 Pandemic* found at <https://www.nap.edu/read/25776/chapter/1>

<sup>4</sup> *Do facemasks protect against COVID-19?* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7323223/>. See also, *Facemasks and similar barriers to prevent respiratory illness such as COVID-19: A rapid systematic review* found at <https://www.medrxiv.org/content/10.1101/2020.04.01.20049528v1> (stating that “evidence is not sufficiently strong to support widespread use of facemasks as a protective measure against COVID-19.”).

<sup>5</sup> See also, *COVID-19: What is the evidence for cloth masks?* found at <https://www.bmj.com/content/369/bmj.m1422> (finding that “[v]ery little good quality research exists on the use of cloth masks, especially in non-medical settings”; *COVID-19: What is the evidence for cloth masks?* found at <https://www.bmj.com/content/369/bmj.m1422> (recently finding that “[t]here have been a number of laboratory studies looking at the effectiveness of different types of cloth materials, [] none have been tested in a clinical trial for efficacy.”).

<sup>6</sup> *Use of surgical face masks to reduce the incidence of the common cold among health care workers in Japan: A randomized controlled trial* found at [https://www.ajicjournal.org/article/S0196-6553\(08\)00909-7/fulltext](https://www.ajicjournal.org/article/S0196-6553(08)00909-7/fulltext)

<sup>7</sup> *A cluster randomised trial of cloth masks compared with medical masks in healthcare workers* found at <https://bmjopen.bmj.com/content/5/4/e006577>

<sup>8</sup> *Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7293495/>

<sup>9</sup> *COMMENTARY: Masks-for-all for COVID-19 not based on sound data* found at <https://www.cidrap.umn.edu/news-perspective/2020/04/commentary-masks-all-covid-19-not-based-sound-data>. See also, *Medical Masks* found at <https://jamanetwork.com/journals/jama/fullarticle/2762694> (stating that “face masks should not be worn by healthy individuals to protect themselves from acquiring respiratory infection because there is no evidence to suggest that face masks worn by healthy individuals are effective in preventing people from becoming ill.”)

<sup>10</sup> [https://www.who.int/publications/i/item/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-\(2019-ncov\)-outbreak](https://www.who.int/publications/i/item/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak)

the questionable benefits of masks did not justify the use of them for healthcare workers<sup>11</sup> and a recent article appearing in the New England Journal of Medicine opining that “a mask alone will not prevent health care workers with early Covid-19 from contaminating their hands and spreading the virus to patients and colleagues. Focusing on universal masking alone may, paradoxically, lead to more transmission of Covid-19 if it diverts attention from implementing more fundamental infection-control measures.”<sup>12</sup>

Finally, the CDC does not know if COVID-19 is spread predominantly by droplets or aerosols.<sup>13</sup> Any type of facemask is ineffectual if COVID-19 transmits via aerosols.<sup>14</sup>

**b. *The theoretical benefits of masks are easily nullified.***

The small and theoretical benefit of any mask, cloth or otherwise, is nullified once other factors are considered. For example, (1) facemasks don’t protect the wearer from getting the virus into the eyes, (2) people (children especially) may not fit the masks properly or take them on and off hygienically, and (3) people (children especially) wearing the mask may have a false sense of reassurance and neglect to engage in behaviors vital in reducing transmission, such as hand washing.<sup>15</sup>

A recent article in JAMA offers proper practices for donning and doffing a mask for preventing the spread of COVID-19.<sup>16</sup> It is inconceivable that students are knowledgeable of these critical instructions or that they will comprehend and consistently follow these explicit directives:

If wearing a face mask is indicated, it is important to wash your hands with soap and water for at least 20 seconds prior to putting on the face mask. An alcohol-based sanitizer that contains at least 60% alcohol can also be used if soap and water are unavailable.

After cleaning your hands, place the face mask over your nose and mouth. Make sure there are no gaps between the face mask and your face, and ensure a tight seal. Try to avoid touching the face mask when wearing it. If you do touch the face mask, wash your hands or use hand sanitizer again. When you are done using the face mask, remove it without touching the front of the face mask, and discard it into a closed bin. Wash your hands again after discarding the face mask.

It is crucial that any mask-wearer heed proper donning and doffing instructions because the effectiveness of masks “at reducing human-to-human transmission of respiratory pathogens is ultimately governed by compliance” and that “[a]dherence to proper [] practices requires careful

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<sup>11</sup> Do facemasks protect against COVID-19? found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7323223/>

<sup>12</sup> *Universal Masking in Hospitals in the Covid-19 Era* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7323223/>

<sup>13</sup> *Airborne Transmission of SARS-CoV-2 Theoretical Considerations and Available Evidence* found at <https://jamanetwork.com/journals/jama/fullarticle/2768396>

<sup>14</sup> *Id.* See also, *Transmission of COVID-19 virus by droplets and aerosols: A critical review on the unresolved dichotomy* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7293495/> (stating that “the effectiveness of the use of masks for the control of [COVID-19]-laden aerosol transmission from an infected person to a susceptible host is uncertain and not fully conceivable; *Testing the Efficacy of Homemade Masks: Would They Protect in an Influenza Pandemic?* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7108646/> (concluding that “we would not recommend the use of homemade face masks as a method of reducing transmission of infection from aerosols.”).

<sup>15</sup> *COVID-19: What is the evidence for cloth masks?* found at <https://www.bmj.com/content/369/bmj.m1422>. See also, *Aerosol Filtration Efficiency of Common Fabrics Used in Respiratory Cloth Masks* found at <https://pubmed.ncbi.nlm.nih.gov/32329337/> (stating that “[o]ur studies also imply that gaps (as caused by an improper fit of the mask) can result in over a 60% decrease in the filtration efficiency, implying the need for future cloth mask design studies to take into account issues of “fit” and leakage, while allowing the exhaled air to vent efficiently).

<sup>16</sup> *Medical Masks* found at <https://jamanetwork.com/journals/jama/fullarticle/2762694>

attention [] and proper donning/doffing technique.”<sup>17</sup> “Poor doffing techniques can lead to the transfer of infectious material to the user’s hands.”<sup>18</sup>

Another factor to consider is that cloth masks must be laundered after each use.<sup>19</sup> How many parents, teachers, and staff will wash masks each day? Perhaps it is of no consequence, as it is unknown if variations in frequency and type of cleaning affect the already limited efficacy of cloth masks.<sup>20</sup> Cleaning methods and regularity will inevitably vary by household, creating yet another variable affecting the tenuous effectiveness of the cloth mask.<sup>21</sup>

## II. Masks are unnecessary because children are not likely to transmit COVID-19.

Children are unlikely to transmit COVID-19. “Children and adolescents play a subordinate role in the transmission of the virus - not only to other children and adolescents, but also to adults.”<sup>22</sup> Schools can, therefore, open “without excessive restrictions, such as clustering into very small groups, implementation of barrier precautions, maintaining appropriate distance from others or wearing masks.”<sup>23</sup>

## III. Mask-wearing carries the risk of tangible harm.

Some argue that even in the absence of scientific evidence that masks help prevent the transmission of COVID-19, the precautionary principle requires the use of a mask—even a cloth mask. See, for example, *Face masks for the public during the covid-19 crisis* finding that “the evidence base on the efficacy and acceptability of the different types of face mask in preventing respiratory infections during epidemics is sparse and contested” but arguing anyway that facemasks should be worn because “we have little to lose and potentially something to gain.”<sup>24</sup> However, this narrow-sighted fantasy ignores the following potential and real harms of mask-wearing for students.

### a. Cloth masks increase the likelihood of infection.

Cloth masks increase the risk of infection to the wearer. Students likely do not understand the importance of removing the mask correctly, and “poor doffing techniques can lead to the transfer of infectious material to the user’s hands.”<sup>25</sup> Moreover, a 2015 study compared the efficacy of cloth masks to medical masks in hospital healthcare workers. Healthcare workers who elected to wear cloth masks were directed to wash and dry the mask after daily use. Even so, the authors advised against

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<sup>17</sup> *Validation and Application of Models to Predict Facemask Influenza Contamination in Healthcare Settings* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4485436/>

<sup>18</sup> *Id.*

<sup>19</sup> “Wash cloth mask at least once per day.” [https://www.who.int/images/default-source/health-topics/coronavirus/clothing-masks-infographic-web--part-1.png?sfvrsn=679fb6f1\\_26](https://www.who.int/images/default-source/health-topics/coronavirus/clothing-masks-infographic-web--part-1.png?sfvrsn=679fb6f1_26); “Cloth face coverings should be washed after each use” <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-to-wash-cloth-face-coverings.html>

<sup>20</sup> *A cluster randomised trial of cloth masks compared with medical masks in healthcare workers* found at <https://bmjopen.bmj.com/content/5/4/e006577>

<sup>21</sup> *A cluster randomised trial of cloth masks compared with medical masks in healthcare workers* found at <https://bmjopen.bmj.com/content/5/4/e006577> (stating that “[c]loth masks are generally retained long term and reused multiple times, with a variety of cleaning methods and widely different intervals of cleaning.”)

<sup>22</sup> *Children and adolescents in the CoVid-19 pandemic: Schools and daycare centers are to be opened again without restrictions. The protection of teachers, educators, carers and parents and the general hygiene rules do not conflict with this* found at <https://pubmed.ncbi.nlm.nih.gov/32547911/>. See also, *Children are not COVID-19 super spreaders: time to go back to school* found at <https://adc.bmj.com/content/105/7/618.long> (opining that “children do not appear to be super spreaders” of COVID-19.

<sup>23</sup> *Id.*

<sup>24</sup> *Face masks for the public during the covid-19 crisis* found at <https://www.bmj.com/content/369/bmj.m1435.long>

<sup>25</sup> *Validation and Application of Models to Predict Facemask Influenza Contamination in Healthcare Settings* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4485436/>

the use of cloth masks because “moisture retention, reuse of cloth masks, and poor filtration may result in an increased risk of infection.”<sup>26</sup> The authors elaborated by stating:

[The] virus may survive on the surface of the facemasks, and modelling studies have quantified the contamination levels of masks.” Self-contamination through repeated use and improper doffing is possible. For example, a contaminated cloth mask may transfer pathogen from the mask to the bare hands of the wearer. We also showed that filtration was extremely poor (almost 0%) for the cloth masks.<sup>27</sup>

**b. Cloth masks increase the likelihood of transmission.**

Cloth masks, such as cotton masks, can increase the risk of COVID-19 transmission to others because these masks do not trap the viruses, and particles can be detected on the outer surface of masks for up to 7 days. In fact, “a pre-symptomatic or mildly infected person wearing a facemask for hours without changing it and without washing hands every time they touched the mask could paradoxically increase the risk of infecting others.”<sup>28</sup>

**c. Reusable masks may harbor mold and bacteria.**

Reused and reusable masks have the potential to harbor bacteria.<sup>29</sup> To my knowledge, no study has been conducted to refute otherwise.

Students, teachers, and staff are not professionally trained in the practices of medical hygiene and universal precautions. On the contrary, note that all the above-cited studies were performed on healthcare workers in a medical setting. Healthcare workers’ health, livelihood, and patient well-being depend on constant use of universal precautions and other forms of personal protective equipment such as gloves. Yet, even in the ideal conditions provided in the studies, masks provided either no benefit or increased the risk of virus transmission.

**d. Masks hinder facial expression and nonverbal communication.**

Masks cover most of the face and hinder facial and nonverbal communication. The covering of the face is detrimental for the classroom environment because “[f]acial expressions are one of the more important aspects of human communication. The face is responsible for communicating not only thoughts or ideas, but also emotions.”<sup>30</sup> For example, a 2013 randomized controlled study was conducted to explore the effects of doctors wearing facemasks on patients’ perceptions of doctors’ empathy. The author’s concluded that the mask “had a significant and negative effect on patients’ perceptions of the doctors’ empathy.”<sup>31</sup> Also, consider that

every time you interact with another person [] the two of you subconsciously and subtly reflect each other’s facial expressions. By

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<sup>26</sup> *A cluster randomised trial of cloth masks compared with medical masks in healthcare workers* found at <https://bmjopen.bmj.com/content/5/4/e006577>

<sup>27</sup> *Id.*

<sup>28</sup> *Do facemasks protect against COVID-19?* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7323223/>

<sup>29</sup> *Bacterial Survival on Respirator Filters and Surgical Masks* found at <https://journals.sagepub.com/doi/10.1177/109135059700200308>

<sup>30</sup> *International Encyclopedia of the Social & Behavioral Sciences*, found at <https://www.sciencedirect.com/science/article/pii/B0080430767017137>

<sup>31</sup> *Effect of facemasks on empathy and relational continuity: a randomised controlled trial in primary care*, found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3879648/>

mirroring the other person's expressions, you not only signal you are engaged and participating, but it's also a kind of feedback loop that helps you empathize. If you hinder your ability to do that even slightly, you're changing the social dynamic between you and the other person" and "we might be grossly underestimating just how powerful our facial expressions are," [] We have to recognize how informationally rich facial feedback is and when we block it, we are cutting off a major channel about our own emotions and information about social emotions."<sup>32</sup>

Mask-wearing eliminates an important form of communication and social interaction and will have a substantial negative impact on all students; however, the students who already struggle with communication, learning, and social interaction will disproportionately carry the weight.

e. *Masks limit oxygen exchange and increase nasal resistance.*

Masks limit proper oxygen exchange. Clinical research suggests that masks lower blood oxygen levels<sup>33</sup> and raise carbon dioxide blood levels.<sup>34</sup> These findings should at least caution against the prolonged use of masks in children pending proper scientific research. For further consideration, see *Two Chinese boys drop dead during PE lessons while wearing face masks amid concerns over students' fitness following three months of school closure*<sup>35</sup>, *Student deaths stir controversy over face mask rule in PE classes*<sup>36</sup>, and *Jogger's lung collapses after he ran for 2.5 miles while wearing a face mask*.<sup>37</sup> Finally, mask-wearing can alter breathing physiology by increasing nasal congestion.<sup>38</sup>

f. *Masks cause headaches or exacerbate headache disorders.*

The prolonged use of masks can cause headaches or exacerbate pre-existing headache disorders.<sup>39</sup>

#### IV. Hand washing is an appropriate and scientifically sound mitigating measure.

Respiratory viruses are transmitted more commonly via contact than droplet, and the control measure to reduce the spread of respiratory viruses should, therefore, focus on contact precaution. In fact, "[t]he single most important protective measure is hand washing, rather than mask-wearing."<sup>40</sup>

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<sup>32</sup> *Can Botox and Cosmetic Surgery Chill Our Relationships With Others?* found at <https://www.nytimes.com/2019/04/18/well/mind/can-botox-and-cosmetic-surgery-chill-our-relationships-with-others.html>

<sup>33</sup> *Preliminary report on surgical mask induced deoxygenation during major surgery* found at <https://pubmed.ncbi.nlm.nih.gov/18500410/>

<sup>34</sup> *Carbon dioxide re-breathing with close fitting face respirator masks* found at <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2044.2006.04767.x>

<sup>35</sup> found at <https://www.dailymail.co.uk/news/article-8283965/Two-Chinese-boys-drop-dead-run-PE-lessons-wearing-face-masks.html>

<sup>36</sup> found at <https://www.globaltimes.cn/content/1187434.shtml>.

<sup>37</sup> found at [https://www.dailymail.co.uk/news/article-8311179/Joggers-lung-collapses-ran-2-5-miles-wearing-face-mask.html?ito=facebook\\_share\\_article-facebook\\_preferred-top&fbclid=IwAR0kieVZJ9qUeNir6ELHbdys4KqOJqfk6Wsz-RknRDXWrQZCpBRr--br2A0](https://www.dailymail.co.uk/news/article-8311179/Joggers-lung-collapses-ran-2-5-miles-wearing-face-mask.html?ito=facebook_share_article-facebook_preferred-top&fbclid=IwAR0kieVZJ9qUeNir6ELHbdys4KqOJqfk6Wsz-RknRDXWrQZCpBRr--br2A0)

<sup>38</sup> *Effects of long-duration wearing of N95 respirator and surgical facemask: a pilot study*, found at <http://medcraveonline.com/JLPRR/JLPRR-01-00021.pdf>

<sup>39</sup> *Headaches Associated With Personal Protective Equipment – A Cross-Sectional Study Among Frontline Healthcare Workers During COVID-19* found at <https://headachejournal.onlinelibrary.wiley.com/doi/full/10.1111/head.13811>. See also, *Headaches and the N95 face-mask amongst healthcare providers* found online <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7159726/>

<sup>40</sup> *What Type of Face Mask Is Appropriate for Everyone-Mask-Wearing Policy amidst COVID-19 Pandemic?* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7246185/>

So, it is no surprise that during the 2009 swine flu pandemic, “encouraging the public to wash their hands reduced the incidence of infection significantly whereas wearing facemasks did not.”<sup>41</sup>

#### V. **Masks are a COVID-19 talisman.**

Wishful thinking is the basis for mask-wearing by the general public, not science. This public policy was born of fear and anxiety.

It is also clear that masks serve symbolic roles. Masks are not only tools, they are also talismans that may help increase health care workers’ perceived sense of safety, well-being, and trust in their hospitals. Although such reactions may not be strictly logical, we are all subject to fear and anxiety, especially during times of crisis. One might argue that fear and anxiety are better countered with data and education than with a marginally beneficial mask, particularly in light of the worldwide mask shortage, but it is difficult to get clinicians to hear this message in the heat of the current crisis. Expanded masking protocols’ greatest contribution may be to reduce the transmission of anxiety, over and above whatever role they may play in reducing transmission of COVID-19.<sup>42</sup>

The mask serves as a security blanket to some during unsettling times. But students are not guinea pigs for a mass public policy experiment. Our children deserve sound public policy measures that account for actual benefits and tangible harms. As a policymaker, you must heed available science regarding the risks and benefits of masks in the classroom. Do better than the CDC and resist the urge to make policy decisions based upon wishful thinking, fear, and anxiety. Masks are nothing more than a COVID-19 talisman, and the science does not support the use of masks in the classroom.

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<sup>41</sup> *Face masks for the public during the covid-19 crisis* found at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7323223/>

<sup>42</sup> *Universal Masking in Hospitals in the Covid-19 Era* found at <https://www.nejm.org/doi/full/10.1056/NEJMp2006372?af=R&rss=currentIssue>