N95DECON-- A scientific consortium for data-driven study of N95 FFR decontamination

Shortages of personal protective equipment (PPE), including medical N95 masks, are forcing hospitals, care centers, and first responders across the country to, in some cases, reuse their limited supply of these critical resources during this unprecedented COVID-19 crisis. The lack of crucial protective devices puts health care workers at increased risk of infection by the SARS-CoV-2 virus, which causes the COVID-19 disease. On March 31, 2020, the CDC released Crisis Standards of Care Recommendations for N95 Decontamination. In this time of crisis, hospitals and clinics in the US and around the world would need to decide on the best risk-management approaches to protect their medical staff since there is a limited supply of new N95s.

N95DECON is a volunteer collective of scientists, engineers, clinicians, and students from universities across the US (University of California, San Francisco; University of California, Berkeley; University of Chicago; Harvard University; Stanford University; Georgetown University; Seattle University; University of Utah; Massachusetts Institute of Technology and the University of Michigan) as well as other professionals in the private sector. N95DECON seeks to review, collate, publish, and disseminate scientific information about N95 decontamination to help in decisions about N95 decontamination and reuse. Another goal is to identify important missing information, then plan and carry out future joint research projects to address those knowledge gaps rapidly without unnecessary duplication of effort. N95DECON is not sponsored by any group nor does it represent the interests of any private/public organization or any specific technology.

Over the past 2 weeks, N95DECON team members met online daily and exchanged information, suggestions and ideas in a free, open, and transparent way. We reviewed a large body of the information on N95 decontamination and deliberated different methods based on evidence from scientific literature and available data. Our discussions followed the same principles we adopt in our own work; exploring whether the data was convincing, definitive, complete, and reproducible. Our resulting report (N95decon.org) provides a summary of this critical information. Specifically, the report examines 3 methods of N95 decontamination: heat, ultraviolet C (UV-C) and hydrogen peroxide vapor (HPV) treatments. We summarize their strengths and weaknesses while pointing out knowledge gaps in their application. This report complements the new CDC recommendations by providing health care personnel with a data-driven fact-sheet and detailed overview for each of three recommended methods.

The summaries and website created by N95DECON will be updated with new information and findings as they emerge. This effort is motivated by our deep appreciation and gratitude for the workers at the frontlines of this pandemic. This work in no way addresses or remedies the PPE shortage crisis. The N95 decontamination approaches that we review are only contingency strategies to reduce the risk from N95 reuse for healthcare workers and are not a substitute for new N95s for these critical personnel. We hope that this information will help workers and administrators make informed decisions about N95 decontamination and standard operating procedures based on their own specific circumstances. We wish to convey that the scientific
community is working to support them by exploring and mobilizing scientific literature and research teams to provide data-backed solutions against threats to their health and safety.

N95DECON team
Please use the contact form on our website for general questions.

For scientific questions, please contact:

Amy Herr, (UC Berkeley) aeh@berkeley.edu (Ultra-Violet C, UV-C)
Margaret Gardel, (U. Chicago) gardel@uchicago.edu (Heat and Humidity)
Jill Crittenden (MIT) jrc@mit.edu (Hydrogen Peroxide Vapor, HPV)

For questions about this consortium, please contact:

Kevin Fu (U. Michigan), kevinfu@umich.edu
Manu Prakash (Stanford) manup@stanford.edu
Hana El-Samad (UCSF), Hana.el-Samad@ucsf.edu