Best practice is to use new N95s. Decontamination does not solve the PPE shortage crisis, and is an emergency practice to be considered during the COVID-19 pandemic. Efficacy and safety of N95 decontamination has not been fully characterized.

**CORONAVIRUS INACTIVATION**

- Hydrogen peroxide inactivates SARS-CoV-2 on all N95 mask types tested.\(^1,2\)
- Hydrogen peroxide inactivates viruses and highly-resistant bacterial spores.\(^3\)
- Hydrogen peroxide systems differ in dosing and effects

**N95 MASK INTEGRITY**

- HPV (Battelle) for up to 20 cycles does not degrade filter quality or straps for 3M 1860\(^4\)
- VHP (Steris) for up to 10 cycles does not degrade N95 filter quality.\(^5\)

**KEY CONSIDERATIONS**

Hydrogen peroxide is incompatible with cellulose, which is a component of some N95 FFRs

- Data from specific N95 models may not apply to other models
- FDA EUAs require return to original user except for the Battelle process.\(^6\)
- Each don/doff can reduce N95 fit; some models lose fit after 5 don/doff cycles, others after >15 cycles.\(^6\)
- N95 user seal check should be performed before each reuse

**RISKS**

- Insufficient off-gas time and residue may pose a respiratory and skin hazard
- Some HPGP protocols reduce filtration efficiency
- Insufficient dosing may lead to insufficient decontamination
- Hydrogen peroxide is a powerful oxidizer and presents a combustion and explosion risk
- HPV and HPGP systems are dangerous if manufacturer guidelines are not carefully followed

**IMPLEMENTATION**

- VHP, HPV/HPVP, HPGP, iHP, and aHP refer to different methods with varying effects on N95s
- CDC released guidance on HPV for decontaminating N95s.\(^7\)
- Some hydrogen peroxide systems have received FDA emergency use authorization.\(^6\)
- Hospitals have developed SOPs for HPV and VHP.\(^8\)

**CONCLUSION**

If implemented properly, and N95 masks are not soiled, it is likely that all of the standard hospital decontamination protocols for HPV/HPVP, VHP, HPGP, iHP and aHP will inactivate SARS-CoV-2 and bacterial spores. Decontamination durations and maximum recommended reuse cycles are extremely different among these methods and misapplication can result in failure to decontaminate and/or failure of N95 mask filtration or fit.

**SUPPORTING RESEARCH**

- Kumar et al., 2020
- Oral et al., 2020
- Heckert et al., 1997
- Battelle, 2016
- CDC, 2020
- Battelle, Steris, STERRAD
- Bergman et al., 2012
- n95decon.org/example-processes

The content provided by N95 DECON is for INFORMATIONAL PURPOSES ONLY and DOES NOT CONSTITUTE THE PROVIDING OF MEDICAL ADVICE and is NOT INTENDED TO BE A SUBSTITUTE FOR INDEPENDENT PROFESSIONAL MEDICAL JUDGMENT, ADVICE, DIAGNOSIS, OR TREATMENT. Use or reliance on any content provided by N95 DECON is SOLELY AT YOUR OWN RISK. A link to the full N95 DECON disclaimer can be found at https://www.n95decon.org/disclaimer.