The authors respond to "Disinfection of N95 respirators"

We believe Dr. Ponsford's question[1] may be of interest to other *CMAJ* readers and thus would like to share our perspective on the domestic use of N95 respirator heat treatment.

We tested thermal disinfection in 4 common N95 respirator models (8110s, 9105s, 8210, and 1860s; All 3M). After 10 disinfection cycles, the structure of the tested respirators was maintained, and the protective function met National Institute for Occupational Safety and Health and Occupational Safety and Health Administration criteria for N95 approval. We did not test other 3M models or masks of other manufacturers and can therefore not recommend thermal disinfection of those N95 respirators. However, a recent 3M technical bulletin suggests that moist heat treatment may be compatible with multiple 3M N95 respirator models.[2]

For thermal disinfection, we used a commonly available heated holding cabinet (BevLes Inc.) designed to hold a consistent temperature and humidity. To the best of our knowledge, the actual temperature in kitchen ovens may fluctuate around the set temperature. Although we accounted for real-world temperature fluctuation by cooling the masks down for 5 minutes mid-cycle, kitchen ovens bear the risk of prolonged periods below and above the temperature investigated in our study (70°C). Higher temperatures may affect the structure and function of the mask, and lower temperatures may result in insufficient pathogen inactivation. Additionally, controlling for 50% relative humidity to eliminate bacteria may be challenging in a commonly sourced kitchen oven.

Based on these considerations and the presently available evidence we cannot recommend N95 respirator decontamination in domestic kitchen ovens. However, if one can control for a constant temperature and humidity setting at home, domestic thermal disinfection of the mentioned N95 respirator models may be feasible.

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References

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