



## Respirators evaluated by fit testing

To the Editor:

The COVID-19 pandemic has led to challenges in the steady supply of single-use masks (respirators) [1] and many hospitals are faced with using new types of respirators to avoid stock-outs. While certified FFP2/KN95 respirators have the ability to prevent airborne infections, like COVID-19, influenza or tuberculosis, the performance of the respirators depends on tight sealing of nose and mouth.

We performed seal checks with five types of respirators designated to have filtering abilities compliant with the FFP2 standard (Polmaska Donald and X200 (Oxyline, Pabianice, Poland), Aura 1862+ (3M, Neuss, Germany), and AP-81001 and AP-83001 (MAXK Zhejiang Aopeng Industry and Trading Co. Ltd, Zhejiang, China)) and four different KN95 respirators with ear straps prospectively on healthcare workers in a 83-bed hospital setting by fit testing (FT 30; 3M). The fit test assesses how well a respirator seals off the face *via* taste perception of a sodium saccharine aerosol by the test person, where a perceived taste indicates a leak in the seal around mouth and nose [2].

Only the “Polmaska Donald” passed the fit test perfectly (no taste perceived in 40 out of 40 workers, 100%); the Aura 1862+, X200, AP-81001 and AP-83001 passed fit testing in 80 out of 97 (82.5%), 48 out of 66 (72.7%), 31 out of 46 (67.4%) and seven out of 31 (22.6%) healthcare workers. KN95 masks failed fit testing in all (82 out of 82, 100%) healthcare workers evaluated (figure 1).

Respirators can vary greatly in their ability to protect the wearer by their filtering medium, and sealing of the mouth and nose tightly. Variations in human facial anatomy must be accounted for by consequently fit testing respirators for all healthcare workers in facilities at risk for airborne transmitted infections like COVID-19, influenza or tuberculosis.



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**FFP2/KN95 respirators can vary greatly in their ability to protect the wearer. Fit testing of respirators should be performed by all healthcare workers at risk for airborne transmitted diseases like #COVID19, #influenza or #tuberculosis** <https://bit.ly/3lFuwy5>

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**FIGURE 1** Different respirators evaluated by fit testing for tight sealing of nose and mouth. a) Polmaska Donald; b) Aura 1862+; c) X200; d) AP-81001; e) AP-83001; f) KN95 type. Pie charts show the percentages of tight sealing (green) and nonsealing (red) respirators in healthcare workers.

### References

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