

Fit testing of KN95 masks

Janice C Caoili, Arvee Vega,
Jomar Bigalbal, Sigrid Santos, Rose Cabujat

Makati Medical Center, Makati, Philippines

10.3396/ijic.v16i2.010.20

Keywords: COVID-19, personal protective equipment, respiratory protective devices, Philippines

Use of N95 respirators is recommended for health care workers (HCWs) who care for patients with airborne transmissible infections (e.g., tuberculosis) or perform aerosol-generating procedures for patients with COVID-19. Fit testing is a procedure to assess the adequacy of a respirator for use by a HCW under such circumstances.

The COVID-19 pandemic has resulted in a worldwide shortage of N95 respirators and other respiratory protective devices for use by HCWs. In response to this problem, the KN95 mask has been recently introduced in the Philippines, with its suppliers claiming that this has the same filter capacity as N95 respirators.

At Makati Medical Center, a private tertiary hospital in the Philippines, a total of 26 HCWs underwent fit testing for donated KN95 masks, which were all imported from overseas and represented 15 different brands. One, two and three brands of KN95 mask were used for fit testing 16, four and six HCWs, respectively. The fit testing protocol followed a qualitative fit testing procedure,¹ which assesses the adequacy of respirator fit based on the subject's detection of a test agent. For each fit test episode, the result was either passed or failed. Results for a total of 42 fit test episodes were thus recorded (table I).

Corresponding Author

Janice C Caoili
Makati Medical Center, Makati, Philippines
E-mail: janice.caoili@gmail.com

Table I. Results of fit tests

Number of KN95 Brands Used for Fit Testing	Number of HCWs Fit Tested			
	Total	Passed (with All Brands)	Failed (with All Brands)	Passed and Failed (Each with One Brand)
1	16	2	14	0
2	4	0	3	1
3	6	0	6	0

A result of failed was recorded for 39 of 42 fit test episodes. A common observation among the HCWs who failed the fit-test procedure was that the ear loops of the KN95 mask were loose, such that it tended to slide down the face. These HCWs attempted various adjustments such as tightening the ear loops to produce a better fit, placing a surgical mask either under or over the KN95 mask, and wearing the KN95 mask with a coverall, yet the outcome was still as failed.

As fit testing all HCWs in the hospital would be excessively time-consuming, the findings of this fit-testing study served as the basis for a hospital memorandum stating that KN95 masks are not generally recommended for use by HCWs while performing aerosol-generating procedures in the COVID-19 units.

Nevertheless, a KN95 mask can still be used for the same purposes as a surgical mask. Users should be reminded to tighten the ear loops (e.g., using an ear saver) to prevent the KN95 mask from inadvertently exposing the nose of the wearer.

HCWs who might use KN95 masks while performing aerosol-generating procedures should first undergo fit-testing to ensure that a good seal is achieved for protection against infectious aerosols.

Conflicts of interest

All authors report no conflicts of interest to declare.

Reference

1. 3M Occupational Health and Environmental Safety Group. Guide to using the 3M qualitative fit test kits. <https://multimedia.3m.com/mws/media/4739600/guide-to-using-the-3m-qualitative-fit-test-kits.pdf> (Accessed 19 May 2020)