



Letter to the Editor

An FFP2 respirator mandate for healthcare workers to prevent transmission of SARS-CoV-2 lacks proportionality



Sir,

The infection control strategies to prevent transmission of SARS-CoV-2 in healthcare settings vary between European countries. In a recent proposal published on 3rd August 2022, the German Federal Ministry of Health intends to change the current version of the infection control act regarding COVID-19 [1,2]. The new measures are expected to be valid from 1st October 2022. Filtering facepiece respirators of the FFP2 type (equivalent to N95 respirators) are the key component of the new concept. FFP2 respirators and negative COVID-19 tests will then be required for access to hospitals and nursing homes as well as for employees in outpatient nursing services unless the person provides evidence for an up-to-date COVID-19 vaccination or has recovered from COVID-19 within the last three months. This proposal, however, lacks proportionality and does not take into account relevant recent findings, especially for the healthcare sector. First, medical masks and FFP2 respirators offer a similar level of protection in preventing laboratory-confirmed viral infection and respiratory illness including coronavirus specifically in healthcare workers (HCWs) [3] although the filtration efficacy of the respirator material is higher [4]. A randomized controlled trial comparing respirators and medical masks for the prevention of influenza, which has comparable transmission routes, showed no advantages for respirators in the protection of HCWs [5]. Second, universal masking or respirator use alone is not a panacea in a hospital. A mask or respirator alone will not protect providers caring for a patient with active COVID-19 if it is not accompanied by meticulous hand hygiene and additional personal protective equipment such as eye protection or gowns [6]. A respirator alone will also not prevent HCWs with early COVID-19 from contaminating their hands and potentially spreading the virus to patients and colleagues [6]. In addition, the release of particles into the environment is dependent on facial movement and flow velocity of exhaled air (quiet breathing, talking, coughing) and can be significantly higher with a respirator compared with a medical mask [7]. Third, the protection of persons wearing respirators largely depends on the fitting. Fit failure rates of N95 respirators have been reported to be between 60% and 90%,

especially in extended use ≥ 1 h [8]. KF94 respirators (equivalent to FFP2/N95 respirators) have been described with rather poor tight fittings, especially for ear-loop-type respirators, such that the face seal was not maintained with movement providing inadequate respiratory protection [9]. Mandatory FFP2 respirators in healthcare may even result in a shortage of products with circumferential headbands such that the ear-loop-type respirators may have to be used. Fourth, FFP2 respirators have been shown to significantly increase self-perceived dyspnoea after only a 6-min walk [10]. Fifth, the expectable protective effect depends on the type of clinical situation. FFP2 respirators revealed a significantly higher protective effect for HCWs with frequent (>20 patients) COVID-19 exposure [11]. N95 respirators significantly reduced the risk for HCWs to acquire COVID-19 when working under aerosol conditions or in a designated COVID-19 area of the hospital [12].

We think that a general FFP2 respirator mandate for HCWs cannot be scientifically justified and is the wrong way to go. In German hospitals, an interdisciplinary commission (infection prevention commission) is mandatory taking into account both infection control and occupational health aspects, which by law has the function of determining infection prevention measures on the basis of the risk profile of the respective facility. The members know the vulnerability of their patients very well and should decide locally on suitable and effective infection control measures.

Author contributions

All authors conceived of the idea to write the letter. G.K. prepared the first draft, the other authors added relevant aspects and citations and thereby contributed to various aspects of the text.

Conflict of interest statement

J.K.K., M.E., P.W. and G.K. have no conflicts of interest to declare. W.P. has received honoraria for presentation from 3M. The views expressed here are those of the authors and do not necessarily reflect those of their universities.

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References

- [1] Bundesministerium für Gesundheit. Pandemievorsorge für Herbst und Winter: neuer rechtlicher Rahmen im Infektionsschutzgesetz – Bundesgesundheitsministerium. 2022. Available at: <https://www.bmg.bund.de/SharedDocs/Pressemitteilungen/DE/2022/08/infektionsschutzgesetz.html>

- www.bundesgesundheitsministerium.de/presse/pressemitteilungen/fortentwicklung-infektionsschutzgesetzes-ifsg.html [last accessed August 2022].
- [2] Bundesministerium für Gesundheit. Corona: gut vorbereitet in den Herbst – Bundesregierung. 2022. Available at: <https://www.bundesregierung.de/breg-de/suche/infektionsschutzgesetz-2068856> [last accessed August 2022].
- [3] Bartoszko JJ, Farooqi MAM, Alhazzani W, Loeb M. Medical masks vs N95 respirators for preventing COVID-19 in healthcare workers: a systematic review and meta-analysis of randomized trials. *Influenza Other Respir Viruses* 2020;14:365–73.
- [4] Ju JTJ, Boisvert LN, Zuo YY. Face masks against COVID-19: standards, efficacy, testing and decontamination methods. *Adv Colloid Interface Sci* 2021;292:102435.
- [5] Radonovich LJ, Simberkoff MS, Bessesen MT, Brown AC, Cummings DAT, Gaydos CA, et al. N95 respirators vs medical masks for preventing influenza among health care personnel: a randomized clinical trial. *JAMA* 2019;322:824–33.
- [6] Klompas M, Morris CA, Sinclair J, Pearson M, Shenoy ES. Universal masking in hospitals in the COVID-19 era. *N Engl J Med* 2020;382:e63.
- [7] Asadi S, Cappa CD, Barreda S, Wexler AS, Bouvier NM, Ristenpart WD. Efficacy of masks and face coverings in controlling outward aerosol particle emission from expiratory activities. *Sci Rep* 2020;10:15665.
- [8] Jung J, Kim J, Yang H, Lim YJ, Kwak SH, Hong MJ, et al. Fit-failure rate associated with simulated reuse and extended use of N95 respirators assessed by a quantitative fit test. *Infect Control Hosp Epidemiol* 2021;42:1313–7.
- [9] Yang HJ, Yoon H, Kang SY, Lee G, Park JE, Kim T, et al. Respiratory protection effect of ear-loop-type KF94 masks according to the wearing method in COVID-19 pandemic: a randomized, open-label study. *J Korean Med Sci* 2021;36:e209.
- [10] Cabanillas-Barea S, Rodríguez-Sanz J, Carrasco-Uribarren A, López-De-celis C, González-Rueda V, Zegarra-Chávez D, et al. Effects of using the surgical mask and FFP2 during the 6-min walking test. A randomized controlled trial. *Int J Environ Res Public Health* 2021;18:12420.
- [11] Haller S, Güsewell S, Egger T, Scanferla G, Thoma R, Leal-Neto OB, et al. Impact of respirator versus surgical masks on SARS-CoV-2 acquisition in healthcare workers: a prospective multicentre cohort. *Antimicrob Resist Infect Control* 2022;11:27.
- [12] Chano T, Morita S, Suzuki T, Yamashita T, Fujimura H, Yuri T, et al. Serology suggests adequate safety measures to protect healthcare workers from COVID-19 in Shiga Prefecture, Japan. *PLoS One* 2022;17:e0270334.

J.K. Knobloch^a
 W. Popp^b
 M. Exner^c
 P. Walger^c
 G. Kampf^{d,*}

^aInstitute for Medical Microbiology, Virology and Hygiene, Department for Infection Prevention and Control, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

^bHyKoMed GmbH, Dortmund, Germany

^cGerman Society of Hospital Hygiene, Berlin, Germany

^dUniversity Medicine Greifswald, Greifswald, Germany

* Corresponding author. Address: University Medicine Greifswald, Ferdinand-Sauerbruch-Strasse, 17475 Greifswald, Germany.

E-mail address: guenter.kampf@uni-greifswald.de (G. Kampf)

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