



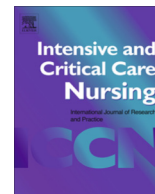
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Web-based survey of the importance and effectiveness of personal protective equipment during the COVID-19 pandemic

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Dear Editor,

In the wake of the current pandemic, it has been noted that many health care workers (HCWs) were infected with SARS-CoV-2 despite the use of personal protective equipment (PPE) (CDC, 2020). By April 2020, almost 10,000 HCWs in the United States had acquired SARS-CoV-2, either through direct or indirect contact with infected patients or other HCWs or as a result of ongoing community transmission (CDC, 2020; Jansson et al., 2020).

In order to prepare for the so called second wave or any future pandemic, we aimed to assess the particular measures taken in Austrian intensive care units (ICUs) as well as the lessons learned regarding HCWs' safety.

We performed an anonymised survey with the official support of the Austrian intensive care societies (FASIM, ÖGARI, ÖGAIIN) by contacting all Austrian ICUs by email and inviting them to participate in a web-based questionnaire concerning their experiences during the first wave on LimeSurvey™. The survey was conducted from July until September 2020. The questionnaire was developed by a national expert group in a multi-stage process and consisted of 36 questions (suppl. Table 1) concerning the logistics of the respective ICUs, the handling of COVID-19 patients, types of PPE and the implementation of safety protocols.

Two hundred and twenty-eight ICUs were contacted and 179 ICUs participated in this survey.

The use of FFP2 masks was reported in 14% of the 85 units and in 86%, FFP3 masks were applied. PPE shortages were not reported. Training in the correct use of these PPE was performed in 97% of all 179 ICUs (Table 1).

In total, 25 ICUs had HCW who tested positive, with mainly nurses affected (Table 1). Only two ICUs reported higher numbers of infected staff members. The ICU with the highest number (7 – all nurses) treated the most patients. The second ICU with five

Table 1

Percentage and median values of experience in treating COVID-19 patients (n = 85). Values are displayed in percent when a dichotomous answer was the only option or with median when the answer was given in numbers. Interquartile range is displayed in brackets as appropriate.

Question	Answers of ICUs (n = 85)
ICU only for COVID	41.2%
Max simultaneously COVID-19 patients	4 [1, 6]
Training of donning and doffing	97.3%
Training hands on	88.2%
Training per video	67.1%
Donning/Doffing area for the entire ICU	38.8%
Donning/Doffing area for each room	52.9%
FFP 2	14.0%
FFP 3	86.0%
Faceshields	84.2%
Surgical caps	96.1%
Surgical gowns	97.4%
Aprons	75.0%
Single gloves	16.0%
Double gloves	84.0%
Special PPE shoes	50.0%
Other	23.7%
Seropositive nurses	0 [0,1]
Seropositive physicians	0 [0, 0]

infected staff members (all nurses) pointed out, that the transmissions had occurred in the first weeks and were possibly due to poor adherence to safety protocols; after these five cases, no further transmissions were identified. No difference could be identified between the available PPE or training mode in these two ICUs.

In conclusion, no infection clusters were observed, presumably due to the unrestricted availability of PPE and adherence to the safety protocols. This low prevalence of COVID-19 acquired by HCWs performing patient care, suggests that PPE guidelines consistent with those of the WHO as well as the ECDC and CDC, offer adequate protection (WHO, 2020; CDC, 2020; ECDC, 2020). However, the seriousness of SARS-CoV-2 has still to be highlighted for all HCWs. For example in Germany, the highest mortality rate was observed in social workers with 1% followed by physicians

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with 0.5% and nurses 0.3%, with nurses constituting the majority of those with suspected HCW infections. (63.9% of 10,835) (Nienhaus and Hod, 2020).

Ethical statement

Due to the nature of this study (anonymised web based questionnaire) no approval from an ethics committee was necessary

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Author Agreement statement

Hereby we certify that all authors have seen and approved the final version of the manuscript being submitted. They warrant that the article is the authors' original work, hasn't received prior publication and isn't under consideration for publication elsewhere.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.iccn.2020.102996>.

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