

References





- Fernández-Vigo JI, Shi H, Kudsieh B, Arriola-Villalobos P, De-Pablo Gómez-de-Liaño L, García-Feijóo J & Fernández-Vigo JÁ (2019): Ciliary muscle dimensions by swept-source optical coherence tomography and correlation study in a large population. *Acta Ophthalmol* **98**: e487–e494.
- Figus M, Posarelli C, Passani A, Albert TG, Oddone F, Sframeli AT & Nardi M (2017): The supraciliary space as a suitable pathway for glaucoma surgery: Ho-hum or home run? *Surv Ophthalmol* **62**: 828–837.
- Kompella UB, Hartman RR & Patil MA (2020): Extraocular, periocular, and intraocular routes for sustained drug delivery for glaucoma. *Prog Retin Eye Res* 100901. <https://doi.org/10.1016/j.preteyres.2020.100901>. [Epub ahead of print]
- Melamed S, Ben Simon GJ, Goldenfeld M & Simon G (2009): Efficacy and safety of gold micro shunt implantation to the supraciliary space in patients with glaucoma: a pilot study. *Arch Ophthalmol* **127**: 264–269.
- Saheb H, Ianchulev T & Ahmed II (2014): Optical coherence tomography of the suprachoroid after CyPass Micro-Stent implantation for the treatment of open-angle glaucoma. *Br J Ophthalmol* **98**: 19–23.

Received on September 27th, 2020.
Accepted on February 27th, 2021.

Correspondence:

José Ignacio Fernández-Vigo
Zurbano 71
28010
Madrid
Spain
Tel: +34 609327093
Fax: +34 913086813
Email: jfvigo@hotmail.com

International survey on COVID-19 pandemic: personal protective measures during fundus examination

Friederike C. Kortuem,¹  Focke Ziemssen,¹  Karsten U. Kortuem²  and Constanze Kortuem¹ 

¹University Eye Hospital, Center for Ophthalmology, University of Tübingen, Tübingen, Germany; ²Private eye clinic Dres. Kortüm, Ludwigsburg, Germany

doi: 10.1111/aos.14904

© 2021 University Hospital Tuebingen. *Acta Ophthalmologica* published by John Wiley & Sons Ltd on behalf of Acta Ophthalmologica Scandinavica Foundation
This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

Editor,

Due to the close distance and the need for thorough examinations, ophthalmologists are at increased risk of acquiring the SARS-CoV-2 virus during the current pandemic (Raevis et al. 2021). Although wearing a nose-mouth mask (NMM) is effective at preventing infections (Chu et al. 2020), fogging of the indirect lens, spectacles and oculars can compromise the quality of the fundus examination.

We report on the results of an open online survey among ophthalmologists. The international enquiry was designed with an open-source web tool (LimeSurvey version 3.24.3, Germany) and advertised during November 2020 (Media MICE, Singapore: 68 482 deliveries,

open/response rate: 7.3%/0.8%; Texere Publishing Inc, USA: 10 026 deliveries, open/response rate: 20.0%/1.4%; CGO Gerling, Germany: 10 180 deliveries; 2312 personal mails). After 1.122 accesses to the survey, 687 ophthalmologists gave answers on their behaviour. The majority of participating physicians (84.0%) practised in Europe. Descriptive statistics using SPSS (IBM SPSS Statistics version 27.0.0.0, IBM Corporation, USA) confirmed an even distribution of all age groups and genders. Participating ophthalmologists mostly did not wear spectacles (48.8%), whereas 11.8% said they wore them sometimes and 39.5% stated they had glasses (Maragakis et al. 2020).

With regards to the fogging of the indirect lens, closing off the upper rim of the patient's NMM was ranked as the most important measure ($n = 225$), while additional disinfection was mentioned most frequently overall ($n = 484$) (Fig. 1). 375 ophthalmologists had their patients take the NMM off or place it under the chin; this behaviour was reported by significantly more ophthalmologists under 40 years old than over

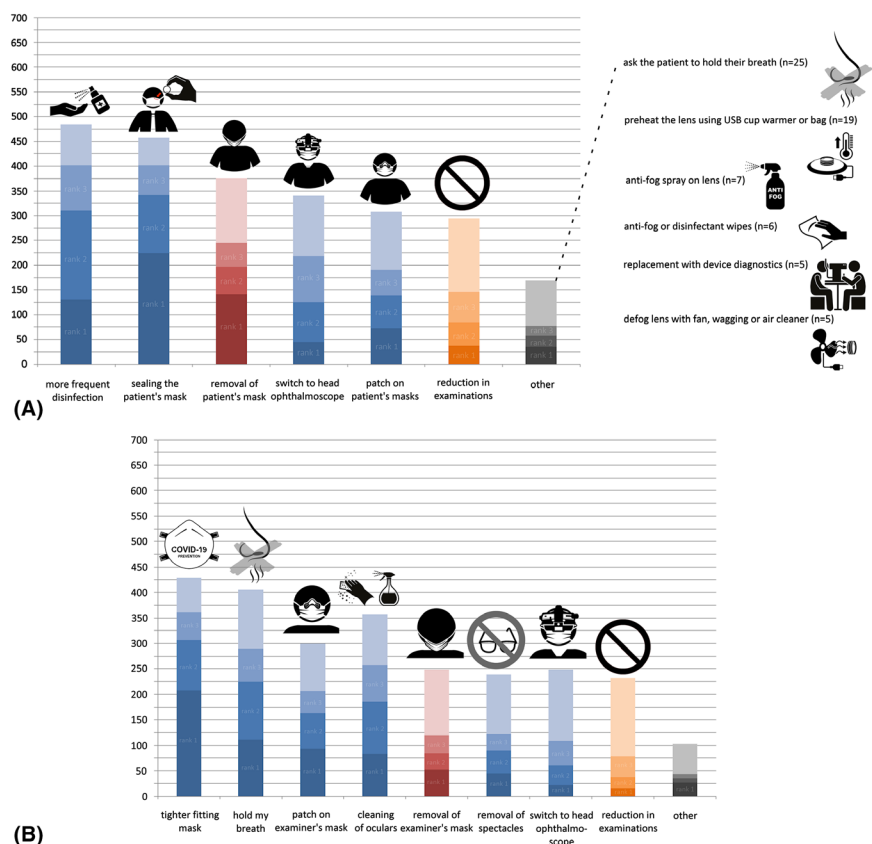


Fig. 1. (A) For measures against lens fogging, shading indicates the prioritization ranking by the physicians ($n = 687$). The most frequent free text answers are shown on the right. (B) Actions taken against the fogging of oculars and glasses ($n = 657$).

40 years old. One third reported having reduced the number of fundus examinations ($n = 295$). Especially older colleagues switched more often to the head ophthalmoscope with a greater distance between indirect lens and the cornea.

Regarding the ophthalmologists' spectacles and oculars, 35% reported a reduction in retinal examinations to a minimum. However, the most frequently mentioned answers included measures to influence the escape of one's own breathing air (tight NMMs, stopping breathing, masking). One third of the spectacle wearers took their NMMs off for the examination. Some of the feedback, and possibly the low participation rate, indicated that not all ophthalmologists experienced fogging eyepieces as a relevant problem.

During the COVID-19 pandemic, fogging of lenses and glasses has made thorough retinal examinations more difficult. An important factor is probably the type and the air-tight closure of the NMM. Touching the upper part of the mask may expose to more significant virus load in individual patients (Deng et al. 2020). Other approaches to prevent fogging are patching and changing the temperature of instruments. Anti-fog coatings and fluids of different materials such as proteinoid polymers are available.

Although physical proximity without a sealing patient's mask is likely to increase

the risk of COVID-19 infection, it seems to be a part of ophthalmic practice: Removal of the mask of patients was reported even more frequently by the ophthalmologists than removing their own mask. Both measures must be viewed critically because the risk of aerosol exposure is likely to increase immediately. Similarly, the effectiveness of several other methods (e.g. breath holding) has yet to be assessed, and the survey responses should in no way be taken as recommendations. The renunciation of fundus examinations, just like the impairment caused by a reduced view, increases the risk that lesions requiring treatment or clinically relevant lesions are likely to be more frequently overlooked during the pandemic. This could result not least in treatment errors and malpractice claims, as telehealth offers better applications in diseases related to cornea and external disease diagnoses (Portney et al. 2021).

Future studies still need to investigate whether the use of tape, preheated and prepared lenses (clips) or wide-angle photography for targeted questions represent a safe and suitable approach.

References

Chu DK, Akl EA, Duda S et al. (2020): Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-

19: a systematic review and meta-analysis. *Lancet* **395**: 1973–1987. [https://doi.org/10.1016/S0140-6736\(20\)31142-9](https://doi.org/10.1016/S0140-6736(20)31142-9).

Deng C, Yang Y, Chen H et al. (2020): Low risk of SARS-CoV-2 transmission through the ocular surface. *Acta Ophthalmol* **98**: e926–e927. <https://doi.org/10.1111/aos.14471>.

Maragakis LL (2020): Eye protection and the risk of Coronavirus disease 2019: does wearing eye protection mitigate risk in public. Non-Health Care Settings? *JAMA Ophthalmol* **138**: 1199. <https://doi.org/10.1001/jamaophthalmol.2020.3909>. [Epub ahead of print].

Portney DS, Zhu Z, Chen EM et al. (2021): Trends and Diagnoses. *Ophthalmology* S0161-6420 [Epub ahead of print] <https://doi.org/10.1016/j.ophtha.2021.02.010>

Raevis JJ, Gjyzeli G, Mititelu M et al.(2021): Face masks and bacterial dispersion toward the periocular area. *Ophthalmology*. S0161-6420 [Epub ahead of print] <https://doi.org/10.1016/j.ophtha.2021.01.007>.

Received on September 27th, 2020.

Accepted on February 27th, 2021.

Correspondence:

Focke Ziemssen

University Eye Hospital Tübingen

Centre for Ophthalmology

Elfriede-Aulhorn-Str.7

72076 Tübingen

Germany

Tel.: +49 7071 29 88088

Fax: +49 7071 29 4674

Email: focke.ziemssen@med.uni-tuebingen.de

†Both authors contributed equally.