Optometry & Contact Lenses · Vol. 3, No. 2, pp. 66-74, 2023
https://doi.org/10.54352/dozv.WCPS1785
Published online in English as Open Access: 27.02.2023

COVID-19 pandemic: Recommendations for infection control in optometry practices

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Received: 28 October 2022; received 29. November 2022

Abstract

Purpose. The recommendations justify infection control measures to minimize SARS-CoV-2 transmission in optometry practices.

Material and Methods. During January 2020 to September 2022, a literature search on infection control of COVID-19 was conducted in NCBI PubMed, Web of Science, Cochrane COVID-19 study register, WHO COVID-19 Global Literature on Coronavirus linked to the keywords SARS-CoV-2 and COVID-19 with the following links: Transmission, tenacity, risk assessment, screening, protective measures, vaccination, virucidal disinfection, virucidal antisepsis and post-exposure prophylaxis.

Results. While the primary vector of transmission of SARS-CoV-2 is the inhalation of virus particles via the oro-naso-pharyngeal path, ocular means of transmission also have to be considered. Especially hand to eye contacts present a danger. Vaccination proves to be effective for decreasing difficult disease progressions and transmission. Surgical masks are effective tools for slowing the spread of SARS-CoV-2, especially when considered as "source-control" when worn by potentially infectious persons. Hand antiseptics, mucous membrane antiseptics and surface disinfectants declared as "limited virucidal" are effective against SARS-CoV-2. Since viral particles remain potentially infectious for up to several days, proper surface disinfection is crucial.

Conclusion. Infection control concepts in optometry practices have to incorporate interruption of all transmission pathways of SARS-CoV-2 in this professional field. Professionals and patients should wear surgical masks. Staff should wear masks with a higher protective standard (for example CN95/FFP2) when treating patients with symptoms of respiratory infections. Personnel should be vaccinated and trained in hand antisepsis. The indications for surface disinfection of critical surfaces and equipment must be maintained. Any staff showing signs of respiratory infections is to be tested immediately; contacts to COVID-19 positive persons have to be tested for 5 d daily. After contact with possibly or definitely infectious person virucidal gargling and virucidal nose spray may prove beneficial.

Keywords

SARS-CoV-2, tenacity, anamnestic risk assessment, infection control, personal protective equipment, disinfection, antisepsis, screening, post-exposure prophylaxis

Introduction

The pandemic of SARS-CoV-2 that emerged in December 2019 has added a threat of infection that clearly surpasses previously known pathogens in transmissibility and is associated with high morbidity, including long-term effects (post and long covid), and lethality that varies with age.[1] Since the implementation of protective measures requires an understanding of the routes of transmission and knowledge of the infectivity duration of the virus when the environment is contaminated, the state of knowledge is summarised in a literature review.

Material and methods

We conducted bibliographic research on infection control of COVID-19 during January 2020 to September 2022 in NCBI PubMed, Web of Science, Cochrane COVID-19 study register and WHO COVID-19 Global Literature on Coronavirus linked to the keywords SARS-CoV-2 and COVID-19 with the following search words: transmission, tenacity, risk assessment, screening, protective measures, vaccination, virucidal disinfection, virucidal antisepsis and post-exposure prophylaxis.

Results and discussion

Transmission of SARS-CoV-2

The main route of transmission is the nasopharyngeal ingestion of virus-containing fluid particles. The particular challenge for infection prevention in optometry practices is the repeated close face-to-face contact during the fitting of glasses and contact lenses as well as different optometric examination procedures (e. g., intraocular pressure measurement or ophthalmoscopy using a 90D lens).

Justification: We release virus-containing fluid particles when breathing, coughing, talking and sneezing, which might then be inhaled through the upper respiratory tract by another person.[2] Depending on the particle size, a distinction is made between droplets (> 5 µm) and smaller aerosols (finest airborne fluid particles, so-called droplet nuclei < 5 µm) with a smooth transition. While larger respiratory droplets fall quickly to the ground, reaching only about 1-2 m, aerosols can spread over 8-12 m in enclosed spaces and pose a risk of infection.[3-7] Whether and how quickly droplets and aerosols fall depends not only on the size of the particles but also on a variety of other factors, including temperature and humidity. The probability of transmission can increase over a longer distance if an infectious person emits a particularly large number of small particles (superspreaders) and stays in a closed room for a longer period of time. Basically, the risk of transmission increases with decreasing distance, increasing duration of contact, intensity of breathing, breathing rate, simultaneous physical activity, necessity and intensity of verbal utterances (speech, instructions, singing), the lack of barrier measures (especially masks) and small room size with limited air exchange, low room temperature and low humidity. The latter favours the formation of droplet nuclei. In the case of the delta variant, the risk of airborne infection increases due to the higher amount of virus released.[8] Air exchange reduces the aerosol concentration indoors. A distinction must be made between natural ventilation through windows and doors and ventilation through ventilation systems. Regular natural ventilation through windows is considered an important measure for air exchange, but requires that the rooms have a sufficient number of windows.[9] Viruses are not retained in air-conditioning systems unless these are equipped with HEPA filters with filter class H13 according to EN 1822,9 so that further spreading can occur.[10] Particularly in the case of the delta variant, a sufficient protective effect cannot be achieved by air exchange alone, because this would have to take place more than 1000 times.[11]

Even though the upper respiratory tract is the main entry point for SASR-CoV-2, the conjunctiva can also be an entry point for the virus.

Justification: Data indicate that the ocular surface may serve as a reservoir and source of infection for SARS-CoV-2. The ocular surface epithelium represents an additional entry point for SARS-CoV-2, which may take advantage of inflammation-induced upregulation of the viral entry receptors ACE2 (angiotensin-converting enzyme 2) and TMPRSS2 (transmembrane serine protease 2) to promote infection.[12,13] Overall, the frequency of virus detection in tears and conjunctival samples from COVID-19 patients is low.[14] So far, it has been shown that the conjunctival and limbal epithelium can be infected with SARS-CoV-2. However, the corneal epithelium is resistant to infection.[15] If ocular symptoms are observed, conjunctivitis ("pink eye") is the most common ophthalmological sign[15] and requires the targeted application of preventive measures. The first therapeutic options have already been derived by elucidating natural resistance mechanisms of the eye to SARS-CoV-2 infection.[16]

There is no doubt that SARS-CoV-2 can be transmitted to the ocular surface by hand-to-eye contact and by aerosols and can spread by the nasolacrimal route and by haematogenous metastasis, meaning that the possibility of ocular transmission of SARS-CoV-2 shouldn't be disregarded.[17]

Infection protection measures

Wearing masks (surgical mouth and nose protection or FFP2 respirators), hand antisepsis and surface disinfection as well as ventilation are, in addition to the testing and vaccination strategy, the essential measures for infection protection in optometry practices. Social distancing —when masks are worn— plays a subordinate role in infection prophylaxis.

Protection through vaccination: Unvaccinated employees should be motivated to take advantage of the vaccination.

Justification: The main goals of vaccination are the prevention of severe COVID-19 cases and deaths and the protection of people with an increased risk of infection due to occupational exposure. Another goal is to interrupt or reduce SARS-CoV-2 transmission and ultimately to achieve herd immunity. Current data confirm the protective effect of vaccination.[18] However, the duration of said protection has not been conclusively clarified, especially since viral mutations can lead to reduced effectiveness of vaccines. The Robert Koch Institute (https://www.rki.de/SharedDocs/FAQ/COVID-Impfen/FAQ_Liste_Wirksamkeit.html) comes to the following conclusions: The COVID-19 mRNA vaccines Comirnaty (BioNTech/Pfizer) and Spikevax (Moderna) as well as the vector vaccine Vaxzevria (AstraZeneca) provided a very high efficacy of about 90% against severe COVID-19 disease and a good efficacy of about 75% against symptomatic SARS-CoV-2 infection in patients infected with the delta variant (2021). The vaccines Comirnaty, Spikevax and the vector vaccine JCOVDEN (Johnson & Johnson) provide less protection against infections with the omicron variants (2022) than against infections with the delta variant. The study results show that the overall efficacy after two doses of vaccine (basic immunisation) against the omicron variant is low and decreases significantly over time. The data suggest that the protective effect against severe disease also declines over time after basic immunisation (less than protection against infection). However, vaccination continues to provide good protection against severe disease. Booster vaccinations can improve the protective effect. Initial study results indicate that the COVID-19 vaccination can also reduce the risk of long COVID symptoms.

Anamnestic risk assessment: Since the infectivity of staff and patients cannot be excluded with certainty on the basis of anamnestic data, SARS-CoV-2 screening adapted to the epidemiological situation is necessary to minimise risks. In the endemic situation (reproduction rate < 1), patients do not need to provide evidence of a negative antigen and/or a PCR test. In the pandemic situation, however, the proof should be provided as a prerequisite for optometry services. In any case, however, an anamnestic risk assessment (symptom monitoring) should always be carried out.

Justification: If there are anamnestic indications of an increased risk of infection, the most effective barrier measures should be used to protect the respiratory tract (see below). It is therefore advisable to give patients a questionnaire at the time of registration for an assessment of the risk of infection with the following questions:

- Stay in a hotspot, cluster or risk area within the past 5 days,
- Contact with people with a confirmed or probable SARS-CoV-2 infection within the past 5 days,
- Presence of symptoms such as fever > 37.8 °C (highly suspected at > 40 °C and shivering), dry cough, loss of smell, sore throat, shortness of breath, runny nose, headache, weakness, fatigue, pink eye.

Mouth-nose protection: Patients and staff should wear surgical mouth-nose protection (MNP) in both the endemic and pandemic situation within the clinic. If patients have symptoms of an acute respiratory infection, an FFP2 respirator should be worn by the optometrist. Depending on the length of the beard, the function of the MNP is not guaranteed for beard wearers. In the pandemic situation, male staff may therefore consider switching to a clean shave, which can only be an individual decision.

Justification: Medical MNP prevents people from contaminating their environment with exhaled droplets.[19] In infected or symptomatic patients, it has been shown that wearing MNP reduces contamination of the room air. Face masks worn by infected persons contained SARS-CoV-2 RNA in 71% of cases.[20] Another study confirmed the high inner contamination of surgical MNP worn by infected patients without exception, concluding that it is recommended that patients also wear MNP.[21]

The wearer is only protected to a limited extent by the MNP, as the mask does not provide complete protection against aerosols. Correctly worn FFP2 masks, on the other hand, protect the wearer more reliably against viruses by filtering small particles and aerosols from the air.

The choice of mask depends on the type of expected exposure. Epidemiologically, FFP2 respirators have not been shown to be superior to medical MNP in untargeted use.[22-24] Therefore, in optometry care, it is sufficient to wear medical MNP during pan-/endemic exposure. The use of FFP2 masks to protect staff is only appropriate in cases of suspected/proven SARS-CoV2 infection in either patients or staff.

Hand antisepsis: All staff and patients should apply alcohol based handrub when entering the clinic. Hygienic hand antisepsis must be carried out before and after each patient contact and before removing fitting contact lenses or glasses. At least 3 ml is required for sufficient wetting of the hands. The antiseptic should be rubbed especially on the fingertips, nail folds and thumbs. In 2019, a reduction of the rub-in time to 15 s was suggested by the "Clean Hands" campaign. The skin intolerance of handwashing is often underestimated. Skin tolerance during handwashing is significantly worse than the use of alcohol-based hand antiseptics for all factors (transepidermal water loss, defatting, skin roughness, scaling, dehydration). Therefore, handwashing should only be carried out when necessary, for example once at the beginning of work and after using the toilet. Because of skin compatibility, the pH value should be neutral or slightly acidic. After washing, the skin must be dried to prevent skin damage. Instead of solid soaps, the use of liquid soaps is recommended, as the former were often contaminated.[81]

Justification: All VAH (Verbund für Angewandte Hygiene, German Association for Applied Hygiene)-certified alcohol-based hand antiseptics with the declaration "virucidal with limited effectiveness" are effective against SARS-CoV-2.[25] The eligible hand antiseptics can be found in the freely accessible database of the German Association for Applied Hygiene, (https://vah-liste.mhp-verlag.de).

If less than 2 ml of hand antiseptic is applied, the wetted area is significantly reduced.[26] Full efficacy is only achieved with 3 ml or more.[27]

Shortening the rub-in time to 15 s is possible because it has been shown that, through training, the degree of hand wetting can be achieved comparably well in both 15 s and

30 s.[28] The effectiveness did not differ between 15 s and 30 s rub-in time in test persons[29] and in everyday practice activities.[30,31] However, by shortening the rub-in time to 15 s, the willingness to perform hand antisepsis, i.e. compliance, increased, presumably due to the saving of time. Observations showed that hand antisepsis was performed by doctors for an average of only 8.5 s and by nursing staff for as little as 6.6 s.[32,33] This underlines the usefulness of shortening the time to 15 s for trained staff.

Disinfection of potentially contaminated surfaces: Devices and surfaces in contact with the skin (e.g., forehead, chin, hands) must be wiped with disinfectants after each contact/use. This also applies to spectacles after frame selection and fitting.

Justification: Typical contact surfaces are forehead and chin rests on the slit lamp, perimeter, nyctometer, topograph, equipment for visual tests and fundus camera. The hygienic condition of forehead and chin rests can be improved by using disposable paper strips to cover them.[34] Similarly, measuring glasses and holders are touched by the optometrist. These transmission routes must be interrupted by both hand antisepsis and surface disinfection. This applies not only to the prevention of the transmission of SARS-CoV-2, but also to all pathogens that can be transmitted in this way, for example influenza, rhinovirus, respiratory syncytial virus and human metapneumovirus, as well as multi-resistant bacteria. If a patient has a pink eye, this may be due to an infection with adenoviruses. In this case, a product with the declaration "limited virucidal effectiveness plus" should be used for hand antisepsis and surface disinfection, because adenoviruses as well as noroviruses and rotaviruses have a higher chemoresistance.[35]

Data on the occurrence of SARS-CoV-2 in the near-patient environment and the duration of infectivity should help to understand the need for situational surface disinfection. The main risk comes indirectly from surfaces through hand contact if the infection route is not interrupted by hand antisepsis.

Depending on the material of the surface, the number of pathogens on the surface, the initial inoculum, the temperature, the relative humidity and the solar radiation, the resistance of microorganisms and viruses to environmental influences, known as tenacity, varies. Tenacity is determined after recovery of the initial inoculum by recultivation. On copper surfaces, the tenacity is lower than on plastic surfaces due to the oligodynamic effect of copper.[36]

At high virus titres and with an initial titre of 5.5 lg TCID50 (Tissue Culture Infection Dose 50, amount of virus infecting 50 % of cells)/ml[37] on stainless steel and 7.9[38] TCID50/ml on plastic substrates, the tenacity was up to 21 days[39] and 28 days,[37] respectively, and up to between 24 hours[38] and 7 days[37] for cotton. At a lower initial inoculum (3.6 lg TCID50/ml), these values were of up to 72 hours on plastic, up to 48 hours on stainless steel, up to 24 hours on cardboard and less than 4 hours on copper.[39] At higher relative humidity (65 %), tenacity at high initial inoculum shortened to 3 hours on paper/tissue, 2 days on wood and clothing, and 7 days on stainless steel and plastic.[40] When embedded in saliva, the titre was reduced linearly by 90 % each time when exposed to simulated sunlight at 1.6, 0.7 and 0.3 W/cm² every 6.8, 8.0 and 12.8 min, respectively, whereas in darkness it was between 0 and 0.15 TCID50/min.[41] When exposed to 79 W/cm², the titre loss was 22.8 %/min at 20 °C and 25.5 %/min at 35 °C; in darkness, however, it was 1.25 %/min at 20 °C after 7 hours.[42] The influence of sunlight was also reproducible in the aerosol.[43] The mean loss rate was 90 % within 19 min in simulated sunlight for winter and early autumn, and within 8 min in summer. On inert surfaces, a mechanistic quantitative model was used to derive for the first time a prediction of how temperature and humidity alter tenacity under nine temperature and humidity conditions. SARS-CoV-2 remained infectious the longest at low temperatures and extreme relative humidity (RH, up to 85 %). The estimated mean half-life of the virus was more than 24 hours at 10 °C and 40 % RH, but around 1.5 hours at 27 °C and 65 % RH. The model uses basic chemistry to explain why the inactivation rate for enveloped viruses increases with increasing temperature and exhibits a U-shaped dependence on humidity.[44]

Because of the experimental conditions, it is likely that time data obtained in vitro are significantly beyond what is clinically relevant. Since SARS-CoV-2 has been detected on surfaces with a correlation between patient proximity and surface contamination,[45] the – albeit small – risk of further spread due to a tenacity of up to 7 days on surfaces must be prevented by careful surface disinfection.[46,47] This applies to all materials, even if their influence on tenacity varies.[48] The recoverable amount of virus decreases almost linearly with time and is uncritical on plastic after 72 hours, stainless steel after 48 hours, cardboard after 24 hours and copper after 4 hours.[36] In one case report, the occurrence of SARS-CoV-2 on surfaces in the household is interpreted in such a way that transmission from surfaces is possible if they have recently been contaminated by coughing or sneezing, touched by a person who then subsequently touched their mouth, nasal vestibules or eyes.[49] As in this assessment, transmission via the respiratory tract cannot be ruled out in the few other cases where transmission via surfaces is suspected.[50] Presumably, the risk of infection from surfaces is not high, because in swab samples from surfaces in an emergency unit and a sub-intensive care unit, small amounts of SARS-CoV-2 RNA were detectable in only two of 26 samples, which did not cause a cytopathic effect in cell culture.[51] It is possible, however, that residues of the surface disinfectants caused reduced tenacity. Similarly, quantitative microbial risk assessment studies indicate that the risk of SARS-CoV-2 infection via the surface transmission route is low, generally less than 1:10,000. This means that the probability of infection for any contact with a contaminated surface is less than 1:10,000.[52-54]

Since viruses from the upper respiratory tract can get onto surfaces and remain infectious there for several hours, surfaces with which patients have had direct (or indirect, e.g., after coughing) contact should be wiped with disinfectants as a precautionary measure. Disinfection with surface disinfectants with "limited virucidal effectiveness" safely inactivates any SARS-CoV-2 that might have reached surfaces, so that it no longer poses a risk. Ready-to-use disinfectant wipes eliminate the need to prepare a disinfectant solution for use and to reprocess used wipes.[55] To protect staff and avoid contamination, the wipes must be removed with fresh protective gloves of the appropriate breakthrough class. Unless the wipes have been tested as a unit with the disinfectant, the effectiveness remains uncertain, as fluid absorption and active ingredient adsorption vary depending on the material. Therefore, when selecting from the VAH list, it should be noted whether only the disinfectant solution or the final wipe-disinfectant combination has been tested.[56]

Handling drawers for optometry accessories: They should only be opened briefly in order to limit contamination by air. Visible dust deposits should be removed using disinfection wipes.

Justification: SARS-CoV-2 can remain infectious in room air for up to 16 hours as an aerosol.[57] In aerosol form, the virus titre drops from 3.5 to 2.7 lg TCID50 within 3 hours.[39]

Handling contact lenses: Fitting contact lenses must be free of pathogens when used. This can only be achieved by using effective contact lens care products in combination with hygienic handling.

Justification: Both adenoviruses and enteroviruses have been detected in the storage solution of contact lenses.[59] Only agents that meet the requirements of EN ISO 14729 are suitable for storage. In the testing of 6 commercially available agents, only one product containing 3 % hydrogen peroxide met the efficacy requirement.[60]

In practice, the following procedure has proven effective for soft lenses:[34]

- Hand antisepsis before cleaning the fitting lens.
- Manual cleaning of each fitting lens used immediately after use; then rinsing the cleaning solution with preserved saline or storage solution.
- Storage of the fitting lenses in preserved disinfectant or storage solution; for soft lenses, storage in a sealed container after steam sterilisation in combination with unpreserved saline solution is also possible; if the packaging is intact, the storage period specified by the manufacturer applies.

For rigid lenses, the following procedure is recommended:[34]

- Hand antisepsis before cleaning the fitting lens.
- Manual cleaning of the fitting lenses immediately after use.
- Chemical disinfection and neutralisation of the contact lens with a 3 % hydrogen peroxide system (minimum exposure time: 4 hours).
- Disposal of the liquid, filling of the container with neutral solution and shaking for approx. 10-15 s.
- Disposal of the liquid and storage of the contact lens in this solution for at least 1 hour.
- Removal and drying of the contact lens with a soft paper towel and drying and storing in a clean, sealed container; tap water must not be used to rinse the contact lenses unless a sterile filter is used, as microbial contamination of drinking water, e. g., with P. aeruginosa and Acanthamoeba spp. cannot be ruled out since it is only monitored annually.[61]
- Cleaning and disinfecting again before reuse.

Screening of staff: If personnel present COVID-19 symptoms, they should be tested for SARS-CoV-2 firstly with a lateral flow test. If the result is positive, a PCR test or similar nucleic acid amplification methods should be used.

Justification: Routine screening is not recommended for asymptomatic staff. If symptoms occur, virus detection is the only way to confirm or exclude infection. Positive lateral flow tests always require confirmation by PCR.[58]

Behaviour after high-risk contacts: Employees who have had close contact with COVID-19 patients, SARS-CoV-2 positive persons or who have had high-risk contacts (contact person probably has COVID-19) without adequate protection in private enclosures or in the practice are recommended to carry out daily testing with a lateral flow test before starting work up to and including day 5 after the contact. During this time, they should wear an FFP2 mask at all times in the facility.

Justification: Based on a study with 181 patients infected with COVID-19, the mean incubation time was found to be 5.1 days (95 % confidence interval (CI) 4.5-5.8 days). In 97.5 % of those who developed symptoms, this occurred within 11.5 days (CI 8.2-15.6 days) of infection. These results imply that, under conservative assumptions, 101 out of 10,000 cases develop symptoms after 14 days of quarantine.[62] In a metaanalysis, the pooled mean incubation time in mainland China was 6.5 days, and 4.6 days outside mainland China.[63] In an observational study in China (n = 11,545), the mean incubation time was 7.1 days, which is consistent with the results of the metaanalysis.[63] An earlier metaanalysis concluded that the incubation period was 5.8 days.[64] It should be noted that a reduction of 1-2 days was observed for the alpha and delta variants.[56,66] For the omicron variant, the incubation time was even shorter, at 2.2-3.9 days.[67-70]

Postexposure prophylaxis: Postexposure prophylaxis by means of virucidal gargling and virucidal nasal spray is useful during a period of 5 (to 14) days.

Justification: Both gargling with virucidal solutions and the use of virucidal nasal spray have not only been proven to have a prophylactic effect, but the severity of the disease can be reduced when used after a known infection, as proven by a positive PCR test, in combination with virucidal eye drops, in the pre-symptomatic stage.[71-75] Since the viral load in the nasopharyngeal swab is higher than in the saliva,[76] both areas should be included in virucidal antisepsis for prevention. For mouth rinsing, oral cavity antiseptics based on essential oils with and without added ethanol (e. g., Listerine formulations) are effective. As regards nasal sprays, the virucidal agent hypochlorite (e. g., Plasma Liquid Nasal Spray Gel) can be considered.[77, 78]

Ventilation of the facilities: If possible, ventilation should be carried out by opening windows and/or doors for about 10 minutes every hour.

Justification: Cross-ventilation can only counteract the indirect risk of infection, but not the direct risk of infection through direct coughing or talking at close range. It is therefore important to continue to maintain sufficiently large distances from other people and to wear mouth-nose protection and, if necessary, also particle-filtering respirators.

In principle, mobile air purifiers with HEPA filters are able to reduce viruses released into the air. The air exchange rate should be at least 2 times per hour and has a positive effect up to 5 times per hour.[79] In a conference room, the use of HEPA air purifiers significantly reduced the exposure of participants and the speaker to airborne particles generated by a simulated infected participant. The air purifiers were most effective when placed in the centre of the room near the aerosol source. In addition, the combination of HEPA air purifiers and face masks was more effective than either measure alone. The use of masks without air purifiers reduced the aerosol exposure of the recipients by 72 %, and the use of air purifiers without masks by up to 65 %. Using HEPA air purifiers and masks together reduced exposure to respiratory aerosols by up to 90 %. The results indicate that the use of portable HEPA air purifiers and protective masks can reduce exposure to simulated SARS-CoV-2 aerosols indoors, with greater reductions when air purifiers and masks are used together.[80]

Individual prophylaxis at home: If regional clusters or high incidences of infection are known, the Ministry of Health in Japan recommends gargling with 0.23 % povidone-iodine solution in the morning and evening and the use of nasal spray with 0.23 % povidone-iodine. Since no such commercial preparations are available in Germany so far, gargling with preparations based on essential oils and the use of nasal sprays based on Carragelose (e. g., Algovir cold spray) are recommended as alternatives.[77, 78]

If the risk of infection is low, gargling with saline solution, alternatively with green tea or with mouthwash based on essential oils is recommended in the morning and evening. For the nasal cavity, the use of a nasal spray based on Carragelose or saline solution as an unpreserved product and without added decongestants (e. g., Hysan Salinspray or Rinupret) is recommended in the morning and evening.[78]

Justification: The recommendations for the use of the above-mentioned options for gargling and nasal sprays are based on evidence of efficacy in vitro and in vivo as well as in clinical and epidemiological studies and have been evaluated in two reviews,[77, 78] so that citation of the literature is omitted here. It should be noted that these measures are also effective prophylactically against other respiratory infections such as viral influenza and the common cold.

Obligatory tasks for practitioners to achieve infection protection:

- According to the German Infection Protection Act (Infektionsschutzgesetz), it must be ensured that the measures required according to the state of medical science for the prevention of communicable diseases are taken. This results in the following tasks: for each optometry practice, the measures for infection protection are to be determined by the operator.
- The necessity of the infection protection rules laid down by the operator should be justified to the team in a constructive dialogue.
- During the COVID-19 pan/epidemic period, the rules for infection control should be reviewed regularly. The legal requirements of the national Ministry of Health and the hygiene regulations of the federal states must be complied with. Recommendations by the authorities that include restrictions/requirements must be carefully checked for medical and scientific evidence. Just as SARS-CoV-2 infection is a dynamic process, scientific knowledge is constantly evolving.

Conflict of interest

The author declares that there is no conflict of interests regarding the methods and devices mentioned in the article, nor regarding patents and income from training.

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