Guidelines of the Polish Ophthalmological Society on how to deal with ophthalmic patients during the COVID-19 epidemic*

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ABSTRACT
SARS-CoV-2 is a coronavirus that causes COVID-19 (coronavirus disease 2019). In March 2020 the World Health Organization (WHO) declared a coronavirus pandemic. Individuals employed at ophthalmic departments and clinics are especially exposed to transmission of the virus due to the specific nature of an ophthalmic examination. The Polish Ophthalmological Society presents Guidelines that recommend implementation of an appropriate level of safety measures in ophthalmic care provided to patients.

KEY WORDS: COVID-19, SARS-CoV-2, ophthalmological examination.

GENERAL INFORMATION
SARS-CoV-2 is a coronavirus that causes COVID-19 disease (coronavirus disease 2019). The viral particle contains single-stranded RNA composed of approximately 30 thousand nucleotides, and has a diameter of 60-140 nm, which makes it one of the largest RNA viruses [1]. The virus spreads through droplets. The incubation period is 1-14 days (approx. 5-7 days from exposure to symptom appearance) [2]. Its presence may be detected in secretions from the nose, throat, blood, sputum, stool, and tears. The first reports mentioning infections with the virus came from Wuhan in China (November 2019) [3]. Symptoms of the infection include, first and foremost, cough and fever (Table I). The virus has a predilection for the respiratory tract and may infect the eyes through conjunctiva, cornea, or tear film.

*Guidelines of scientific societies and associations (including the Polish Ophthalmological Society) do not constitute binding laws and do not determine the only correct procedures; they are only an opinion of a group of experts from a given field. The opinion reflects the current state of knowledge based on available scientific research results.

The guidelines do not exempt healthcare workers from personal liability with regard to making the correct decisions for individual patients. Personal responsibility for the used therapeutic methods rests with all individuals who practise medicine. It should be based on thorough knowledge and practical skills, while observing necessary safety measures with regard to oneself and the patient.

Readers of this paper are obliged to make themselves familiar with current information on the presented treatments and pharmacotherapies with special attention paid to manufacturers’ information on doses, time, and administration as well as side effects of the used drugs.

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announced a coronavirus pandemic [6]. As of today, over 271 thousand patient cases and over 11 thousand deaths have been confirmed due to COVID-19 (data as of 21 March 2020) [7]. COVID-19 should be suspected in an individual who has at least one of the following symptoms: fever > 38°C, cough or expectoration (with blood) [3]. COVID-19 should be suspected in an individual who has been confirmed due to COVID-19 (data as of 21 March 2020) [7].

Zhou et al. reported a higher prevalence of concomitant diseases such as arterial hypertension (30%), diabetes (19%), coronary arterial disease (8%), and chronic obstructive pulmonary disease (COPD) (3%) in patients requiring hospitalization due to COVID-19 in Wuhan [5]. On 11 March 2020, the World Health Organization (WHO) announced a coronavirus pandemic [6]. As of today, over 271 thousand patient cases and over 11 thousand deaths have been confirmed due to COVID-19 (data as of 21 March 2020) [7]. COVID-19 should be suspected in an individual who meets one of the following criteria:

- a severe (requiring hospitalization) course of a lower respiratory tract infection
- a severe (requiring hospitalization) course of a lower respiratory tract infection is confirmed with lack of another aetiology that could explain the clinical presentation.

So far, neither effective causal treatment nor vaccines preventing the disease have been developed. Only symptomatic treatment is available, and therefore preventive actions are of the essence [8].

### OPHTHALMIC SYMPTOMS

Ophthalmic symptoms that may appear during the course of SARS-CoV-2 infection result from the presence of the virus in the tear film and conjunctival secretions [10]. So far, only cases of conjunctivitis and chemosis caused by SARS-CoV-2 have been described.

### PROPHYLAXIS

Employees of ophthalmic departments and units are especially exposed to transmission of the virus due to the specific nature of an ophthalmic examination (the distance between the patient’s face and the physician in the slit lamp is < 1.8 m, which is considered a high risk factor for transmission of the virus).

Available forms of personal protection include:
- disposable gowns,
- masks: surgical, FFP2, FFP3,
- face shields, goggles,
- gloves [11].

It should be remembered to regularly disinfect one’s hands, the slit lamp, and objects that have contact with patients. Rec-
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a) usage of slit-lamp barriers (breath shields) that separate patients from physicians. It decreases the risk of ophthalmic personnel aspirating the air exhaled by the patient that potentially contains SARS-CoV-2 particles; b) frequent disinfections of hands and equipment in the ophthalmologist's room; c) daily measurements of body temperature; reporting the following symptoms to the employer: shortness of breath, cough, fever, emesis, and diarrhoea.

Disinfection of equipment:

- recommended disinfectants include a 70% solution of ethyl alcohol, 0.1% sodium hypochlorite, 5% bleaching agent, and hospital antiseptic viricidal agents [12]. Every piece of ophthalmic equipment should be disinfected before and after contact with every single patient (slit lamp, Goldmann applanation tonometer, three-mirror lens).

Due to the pandemic, we recommend introducing a three-stage path of taking precautions while providing ophthalmic care for patients [13]:

1. Level one includes:
   a) limiting routine appointments and elective procedures (excluding conditions that pose a risk of irreversible vision worsening); postponing planned ophthalmic procedures; introducing telemedical advice services, and electronic prescriptions;
   b) introducing an epidemiological questionnaire (1. Contact with a person who has COVID-19 symptoms or who is infected with SARS-CoV-2; 2. Staying in areas with a high percentage of infections during the last 14 days; 3. Symptoms: body temperature > 38°C, cough, shortness of breath) that is the basis of triage of patients who report to the ophthalmologist;
   c) discontinuation of procedures that produce aerosol, e.g. non-contact tonometry (air puff), endoscopic tear duct drainage, general anaesthesia;
   d) training for the medical personnel on how to minimize the risk of infection in the face of the pandemic.

2. Level two includes:
   a) usage of slit-lamp barriers (breath shields) that separate patients from physicians. It decreases the risk of ophthalmic personnel aspirating the air exhaled by the patient that potentially contains SARS-CoV-2 particles;