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AMERICAN ACADEMY OF OPHTHALMOLOGY®

Editorial

Global Trends in Ophthalmic Practices in Response to COVID-19

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It has been more than 18 months since the first case of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection was reported in December 2019. The coronavirus disease 2019 (COVID-19) pandemic remains ongoing, with more than 150 million cases and 3 million deaths worldwide.[1] COVID-19 has had a significant impact on health care, the economy, and society.

Clearly, COVID-19 poses a significant risk to ophthalmologists and patients, and disrupts the routine delivery of ophthalmic care. The initial response to the pandemic involved the cessation of all nonurgent ophthalmic services; the American Academy of Ophthalmology released a statement recommending this on March 18, 2020. This temporary cessation was intended to preserve scarce personal protective equipment and to reduce the risk of transmission of the virus. As it became apparent that the pandemic was going to persist, along with the ever-present need to provide timely ophthalmic care for patients at risk of visual morbidity, the American Academy of Ophthalmology called for the careful and calibrated reopening of ophthalmic care approximately 1 month later. Around the world, most ophthalmic institutions followed similar patterns, with initial closures followed by careful reopening of services in subsequent months. At the time, some early reports of conjunctivitis occurring in COVID-19 infection appeared, and a few reports of SARS-CoV-2 RNA detected from ocular secretions of these patients also appeared.[2–4] This limited, but concerning, information on the potential risk of COVID-19 transmission via the eye, and the lack of clear consensus guidelines, resulted in a large variation in practice patterns among ophthalmic practices globally.

We published an editorial in May 2020 surveying risk mitigation strategies to prevent COVID-19 transmission in various ophthalmic practices around the world.[5] At the time, it was unclear how long the COVID-19 pandemic would last. More than one year later, it is clear that the pandemic will persist beyond 2021, but there have also been significant new developments in the fight against COVID-19. Therefore, we provide herein an updated review of practice patterns across a diversity of ophthalmic clinics and institutions globally, to better inform risk mitigation measures around the world.

New Developments: Vaccines, Variation, and Variants

The most significant development in the last year has been the successful development of effective vaccines against the virus. The BNT162b2 mRNA vaccine developed by Pfizer and BioNTech SE was the first vaccine against COVID-19 approved for emergency use by the Medicines and Healthcare Products Regulatory Agency in the United Kingdom on December 2, 2020, and by the Food and Drug Administration in the United States on December 11, 2020.[6] Multiple other vaccines against COVID-19 have been approved since for emergency use and are in use worldwide. To date, more than 1.4 billion doses of COVID-19 vaccines have been delivered worldwide.[1] Achieving widespread vaccination is seen as a key pillar in the overall strategy to combat the pandemic.[7]

Nevertheless, the relative scarcity of COVID-19 vaccines and unequal access to vaccination programs have resulted in a significant geographic variation in population vaccination rates worldwide. Furthermore, local COVID-19 incidence and transmission are dependent on a multitude of factors, including vaccination rates, public health control measures, social distancing restrictions, and international travel patterns, along with other as-yet unknown factors. This has also led to a significant geographic variation in the incidence of COVID-19 in different countries—with numbers of new COVID-19 cases reported over 7 days per 100 000 population varying from 0 in some countries, to more than 1000 in others.[1] Therefore, health care systems in certain countries, such as India, were recently overwhelmed by surges in COVID-19 cases, resulting in widespread shortages in hospital beds and oxygen supply, whereas other countries, such as Israel, have (at the time of writing) returned primarily to non-COVID-19 patient care and are currently almost going about "business as usual." Nevertheless, even in countries with currently low levels of COVID-19 incidence, the possibility of resurgent waves of infection exists.

More recently, the emergence of new COVID-19 variants has threatened to derail some of the progress made toward gaining control over the pandemic. Some new COVID-19 variants are more transmissible, whereas early data suggest

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Table 1. Mitigation Measures Adopted by Ophthalmic Institutions around the World in 2020, at the Height of the Coronavirus Disease 2019 Pandemic

	Ophthalmologists							Digital Health Solutions			Outpatients			
Countries	*Face Mask*	*Gloves*	*Goggles*	*Cap*	*Slit-Lamp Shield*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Virtual Clinic*	*Artificial Intelligence-Enabled Care*	*Digital Home Monitoring*	*Face Mask*	*Temperature Screening*	*Digital Contact Tracing Measures*	**Comments**
Asia-Pacific														
Australia														
Sydney (Sydney Eye Hospital)	Y	O	O	N	Y	Y	Y	Y	N	N	Y	Y	Y	
Sydney (Westmead Hospital)	Y	N	N	N	Y	Y	Y	L	N	Y	Y	Y	Y	Digital home-monitoring for IOP only
China														
Beijing (Peking Union Medical College Hospital)	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	
Hong Kong (C-MER Dennis Lam & Eye Partners Eye Center)	Y	N	N	N	Y	Y	N	Y	N	N	Y	Y	N	
Shenzhen (C-MER [Shenzhen] Dennis Lam Eye Hospital)	Y	N	N	N	Y	Y	N	Y	N	N	Y	Y	N	
India														
Chennai (Sankara Nethralaya)	Y	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	
Indonesia														
Jakarta (Jakarta Eye Center)	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	
Israel														
Tel Aviv (Tel Aviv Medical Center)	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	N	
Japan														
Kagoshima (Kagoshima University Hospital)	Y	O	N	N	Y	Y	N	N	N	N	Y	Y	N	
Osaka (Osaka University Hospital)	Y	Y	Y	N	Y	Y	Y	N	N	N	Y	N	Y	
Tokyo (Tokyo Medical and Dental University)	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	

Table 1. (Continued.)

Countries	Ophthalmologists							Digital Health Solutions			Outpatients			Comments
	Face Mask	*Gloves*	*Goggles*	*Cap*	*Slit-Lamp Shield*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Virtual Clinic*	*Artificial Intelligence-Enabled Care*	*Digital Home Monitoring*	*Face Mask*	*Temperature Screening*	*Digital Contact Tracing Measures*	
Singapore														
Singapore (Singapore National Eye Centre)	Y	N	N	N	Y	Y	Y	Y	N	L	Y	Y	Y	
Taiwan														
Taoyuan (Chang Gung Memorial Hospital)	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	
Thailand														
Bangkok (Rajavithi Eye Clinic, Rajavithi Hospital)	Y	O	O	O	Y	Y	N	N	N	N	Y	Y	Y	
Europe														
Denmark														
Odense (Odense University Hospital)	Y	N	N	N	Y	N	N	N	N	N	Y	N	N	
Germany														
Heidelberg (Medical Faculty Mannheim, Heidelberg University)	Y	N	N	N	Y	N	N	N	N	N	Y	N	N	
Italy														
Forlì (Ospedali Privati Forlì "Villa Igea")	Y	Y	N	N	Y	Y	Y	N	N	N	Y	Y	Y	
Spain														
Barcelona (Institut Clinic de Oftalmologia, Hospital Clinic de Barcelona)	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	Y	N	
United Kingdom														
Cambridge (Addenbrooke's Hospital)	Y	Y	N	N	Y	N	N	Y	N	N	Y	N	N	
Liverpool (St. Paul's Eye Unit)	Y	Y	N	N	Y	N	Y	Y	N	N	Y	N	Y	
London (Moorfields Eye Hospital)	Y	Y	Y	N	Y	Y	N	Y	N	N	Y	Y	N	

(*Continued*)

Table 1. (Continued.)

	Ophthalmologists							Digital Health Solutions			Outpatients			
Countries	*Face Mask*	*Gloves*	*Goggles*	*Cap*	*Slit-Lamp Shield*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Virtual Clinic*	*Artificial Intelligence-Enabled Care*	*Digital Home Monitoring*	*Face Mask*	*Temperature Screening*	*Digital Contact Tracing Measures*	**Comments**
United States of America														
Atlanta, GA (Emory Eye Center)	Y	N	Y	N	Y	Y	N	Y	N	N	Y	Y	N	
Boston, MA (Massachusetts Eye and Ear)	Y	N	Y	N	Y	N	Y	Y	N	Y	Y	N	Y	
Cleveland, OH (Cleveland Clinic)	Y	N	N	N	Y	Y	N	Y	N	N	Y	Y	N	
Durham, NC (Duke Eye Center)	Y	O	O	O	Y	Y	N	O	N	N	Y	Y	N	
Los Angeles, CA (USC Roski Eye Institute)	Y	Y	N	N	Y	N	N	Y	N	N	Y	Y	Y	
Miami, FL (Bascom Palmer Eye Institute)	Y	N	N	N	Y	N	N	Y	N	Y	Y	N	N	
Milwaukee, WI (The Eye Institute, Medical College of Wisconsin)	Y	N	N	N	Y	Y	N	Y	N	N	Y	Y	N	
Omaha, NE (Truhlsen Eye Institute)	Y	N	Y	N	Y	Y	N	Y	N	N	Y	Y	N	
Palo Alto, CA (Byers Eye Institute, Stanford University School of Medicine)	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	
Philadelphia, PA (Wills Eye Hospital)	Y	Y	N	N	Y	Y	N	Y	N	Y	Y	Y	N	

IOP = intraocular pressure; L = limited; N = no; O = optional; USC = University of Southern California; Y = yes.
Vaccination against coronavirus disease 2019 (COVID-19) was not available until December 2020. In some locations, vaccination against COVID-19 started in December 2020. However, this table represents mitigation measures and practice patterns in mid 2020, at the peak of the COVID-19 pandemic, and therefore vaccination has not been included in this table for any of these institutes. Mitigation measures and practice patterns are specific to the ophthalmic institutions listed in this table, and are not representative of other ophthalmic institutions in the respective cities or countries.

Table 2. Mitigation Measures Adopted by Ophthalmic Institutions around the World in May 2021, 18 Months after the First Reported Cases of Coronavirus Disease 2019

	Ophthalmologists								Digital Health Solutions			Outpatients				
Countries	*Face Mask*	*Gloves*	*Goggles*	*Cap*	*Slit-Lamp Shield*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Vaccination*	*Virtual Clinic*	*Artificial Intelligence-Enabled Care*	*Digital Home Monitoring*	*Face Mask*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Vaccination*	**Comments**
Asia-Pacific																
Australia*																
Sydney (Sydney Eye Hospital)	Y	**N**	**N**	N	Y	Y	Y	**Y**	Y	N	N	Y	Y	Y	**Y**	
Sydney (Westmead Hospital)	Y	N	N	N	Y	Y	Y	**Y**	L	N	Y	**N**	Y	Y	**Y**	Digital home monitoring for IOP only
China*																
Beijing (Peking Union Medical College Hospital)	Y	**O**	**N**	**O**	Y	Y	**N**	**Y**	Y	N	**N**	Y	Y	N	**Y**	Public vaccination only partial
Hong Kong (C-MER Dennis Lam & Eye Partners Eye Center)	Y	N	N	N	Y	Y	N	**Y**	Y	N	N	Y	Y	N	**Y**	
Shenzhen (C-MER [Shenzhen] Dennis Lam Eye Hospital)	Y	N	N	N	Y	Y	N	**Y**	Y	N	N	Y	Y	N	**Y**	
India‡																
Chennai (Sankara Nethralaya)	Y	N	N	Y	Y	**N**	Y	**Y**	Y	**Y**	Y	Y	**N**	Y	**Y**	
Indonesia†																
Jakarta (Jakarta Eye Center)	Y	N	Y	Y	Y	Y	Y	**Y**	Y	N	N	Y	Y	Y	**Y**	
Israel*																
Tel Aviv (Tel Aviv Medical Center)	Y	Y	Y	N	Y	N	N	**Y**	Y	Y	Y	Y	Y	N	**Y**	
Japan†																
Kagoshima (Kagoshima University Hospital)	Y	O	N	N	Y	Y	N	**Y**	N	N	N	Y	Y	N	**Y**	
Osaka (Osaka University Hospital)	Y	Y	Y	N	Y	Y	Y	**Y**	N	N	N	Y	**Y**	Y	**Y**	
Tokyo (Tokyo Medical and Dental University)	Y	Y	Y	N	Y	N	N	**Y**	N	N	N	N	N	N	**Y**	

(*Continued*)

Table 2. (Continued.)

	Ophthalmologists								Digital Health Solutions			Outpatients				
Countries	*Face Mask*	*Gloves*	*Goggles*	*Cap*	*Slit-Lamp Shield*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Vaccination*	*Virtual Clinic*	*Artificial Intelligence-Enabled Care*	*Digital Home Monitoring*	*Face Mask*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Vaccination*	**Comments**
Singapore*																
Singapore (Singapore National Eye Centre)	Y	N	N	N	Y	Y	Y	**Y**	Y	N	L	Y	Y	Y	**Y**	
Taiwan†																
Taoyuan (Chang Gung Memorial Hospital)	Y	Y	Y	Y	Y	Y	Y	**Y**	N	N	Y	Y	Y	Y	N	Public vaccination not yet started
Thailand†																
Bangkok (Rajavithi Eye Clinic, Rajavithi Hospital)	Y	O	O	O	Y	Y	N	**Y**	N	N	N	Y	Y	Y	**Y**	
Europe																
Denmark‡																
Odense (Odense University Hospital)	Y	N	N	N	Y	N	N	**Y**	N	N	N	Y	N	N	N	Health care workers have been prioritized for vaccination
Germany†																
Heidelberg (Medical Faculty Mannheim, Heidelberg University)	Y	N	N	N	Y	N	N	**Y**	N	**Y**	N	Y	N	N	**Y**	
Italy†																
Forlì (Ospedali Privati Forlì "Villa Igea")	Y	**N**	N	N	Y	Y	Y	**Y**	N	N	N	Y	Y	Y	**Y**	
Spain†																
Barcelona (Institut Clinic de Oftalmologia, Hospital Clinic de Barcelona)	Y	**N**	**N**	**N**	Y	N	N	**Y**	Y	N	N	Y	**N**	N	**Y**	Public vaccination only partial
United Kingdom†																
Cambridge (Addenbrooke's Hospital)	Y	Y	N	N	Y	N	N	**Y**	Y	N	N	Y	N	**Y**	**Y**	

Table 2. (Continued.)

Countries	Ophthalmologists								Digital Health Solutions			Outpatients				Comments
	Face Mask	*Gloves*	*Goggles*	*Cap*	*Slit-Lamp Shield*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Vaccination*	*Virtual Clinic*	*Artificial Intelligence-Enabled Care*	*Digital Home Monitoring*	*Face Mask*	*Temperature Screening*	*Digital Contact Tracing Measures*	*Vaccination*	
Liverpool (St. Paul's Eye Unit)	Y	Y	N	N	Y	N	Y	**Y**	Y	N	N	Y	N	Y	**Y**	
London (Moorfields Eye Hospital)	Y	**N**	**N**	N	Y	**N**	N	**Y**	Y	N	N	Y	Y	**Y**	**Y**	
United States of America[†]																
Atlanta, GA (Emory Eye Center)	Y	N	Y	N	Y	Y	N	**Y**	Y	N	N	Y	Y	N	**Y**	
Boston, MA (Massachusetts Eye and Ear)	Y	N	Y	N	Y	N	Y	**Y**	Y	N	Y	Y	N	Y	**Y**	
Cleveland, OH (Cleveland Clinic)	Y	N	N	N	Y	Y	**Y**	**Y**	Y	**Y**	**Y**	Y	Y	**Y**	**Y**	
Durham, NC (Duke Eye Center)	Y	O	O	O	Y	**N**	N	**Y**	**N**	N	N	Y	**N**	N	**Y**	
Los Angeles, CA (USC Roski Eye Institute)	Y	Y	N	N	Y	N	N	**Y**	Y	N	N	Y	Y	Y	**Y**	
Miami, FL (Bascom Palmer Eye Institute)	Y	N	N	N	Y	N	N	**Y**	Y	N	Y	Y	N	N	**Y**	
Milwaukee, WI (The Eye Institute, Medical College of Wisconsin)	Y	N	N	N	Y	Y	N	**Y**	Y	N	N	Y	Y	N	**Y**	
Omaha, NE (Truhlsen Eye Institute)	Y	N	**N**	N	Y	Y	N	**Y**	**N**	N	N	Y	Y	N	**Y**	
Palo Alto, CA (Byers Eye Institute, Stanford University School of Medicine)	Y	Y	Y	N	Y	Y	Y	**Y**	Y	N	Y	Y	Y	Y	**Y**	
Philadelphia, PA (Wills Eye Hospital)	Y	Y	N	N	Y	Y	N	**Y**	Y	N	Y	Y	Y	N	**Y**	

IOP = intraocular pressure; L = limited; N = no; O = optional; USC = University of Southern California; Y = yes.
Values in boldface indicate a change from 2020 practice. Mitigation measures and practice patterns are specific to the ophthalmic institutions listed in this table and are not representative of other ophthalmic institutes in the respective cities or countries.
Rows for each country are coded based on the number of new coronavirus disease 2019 (COVID-19) cases reported over 7 days per 100 000 population from the World Health Organization COVID-19 Dashboard (accessed on May 23, 2021) into
*low-risk (< 10),
[†]moderate risk (10−<100), and
[‡]high-risk (≥100) categories.

that current vaccines may have minimally reduced rates of efficacy against these variants.[8,9] The impact of these variants on ocular transmission remains unclear. Design of new vaccines and updates to current vaccines are thought to be important strategies to deal with emerging dominant variants, in addition to potentially achieving herd immunity.

Better Understanding of Coronavirus Disease 2019 and the Eye

Initial case reports of conjunctivitis occurring as a feature of COVID-19, and SARS-CoV-2 RNA being detected in ocular secretions, led to early recommendations for eye protection with goggles or shields for health care providers examining patients.[2,3] Since then, larger series have confirmed that bilateral follicular conjunctivitis is the most common ocular manifestation of COVID-19, with isolated reports of other, much rarer, manifestations, including hemorrhagic or pseudomembranous conjunctivitis, keratitis, and retinal abnormalities.[10] Various published series have reported the prevalence of conjunctivitis in COVID-19, with a typical range being from 0% to 8%.[4,11,12] One study reported ocular involvement in 31.6% of COVID-19 patients, but this high prevalence rate is a far outlier and likely related to cohort selection, because the study included only hospitalized, mostly ill patients, without a corresponding control group.[13] A recent meta-analysis provided an overall prevalence estimate of 6.2% for conjunctivitis among patients with laboratory-confirmed COVID-19, although even this was skewed heavily by the aforementioned outlier.[14] The overall consensus from the existing literature is that ocular manifestations of COVID-19 are uncommon.[4,11,12,14] In addition, only a small minority (estimated 2.7% in the same meta-analysis) of these patients will have detectable SARS-CoV-2 RNA in their ocular secretions.[11,14,15]

Nevertheless, data that have emerged from multiple in vitro studies on conjunctival explants and postmortem tissues seem to demonstrate clearly that SARS-CoV-2 does exhibit tropism for tissues of the ocular surface and that the ocular surface is possibly a portal for entry and transmission of COVID-19.[16–18] Therefore, the American Academy of Ophthalmology continues to recommend the routine use of slit-lamp shields, as well as eye protection (goggles or shields) when examining patients "to the extent practical," acknowledging that wearing eye protection is not feasible during certain aspects of ophthalmoscopy and examination.[19] Guidelines published by other professional ophthalmic bodies such as the Asia Pacific Academy of Ophthalmology, the Spanish Society of Ophthalmology, and the All India Ophthalmological Society provide similar guidance.[20–25] However, it remains to be seen if these guidelines will be modified in the future for clinicians and patients who are fully vaccinated.

Survey of Global Practice Patterns—Then and Now

Given the absence of overall consensus guidelines, we anticipated that significant heterogeneity and variation in COVID-19 mitigation measures remain among ophthalmic institutions worldwide. We also expected that the COVID-19 pandemic might have catalyzed the increased adoption of digital health solutions in ophthalmic practice, in efforts to reduce face-to-face consultations. Therefore, we set out to survey practice patterns for COVID-19 risk mitigation in a number of diverse ophthalmic practices, clinics, and institutions around the world. Members of the COVID-19 Ophthalmology Interest Group were surveyed via e-mail in May 2021 and were asked to detail the COVID-19 mitigation measures in their respective ophthalmic institutions in mid 2020 and to detail latest practice in 2021. A summary of these measures for 2020 and 2021 can be found in Tables 1 and 2, respectively. Recognizing that local factors such as COVID-19 incidence and vaccination rates are likely to influence the intensity of these measures significantly, the countries in Table 2 have been categorized into low-risk, moderate-risk, and high-risk locations based on the number of new COVID-19 cases reported over 7 days per 100 000 population from the World Health Organization COVID-19 Dashboard, which was accessed on May 23, 2021.[1]

A number of trends in practice patterns were noted from 2020 to 2021. First, in general, a de-escalation of the initial COVID-19 mitigation measures seems to have occurred in 2021. In terms of personal protective equipment, most institutions that initially mandated the use of gloves, caps, and eye protection for ophthalmologists since have ceased this practice. This is likely because of the overall reduction in COVID-19 incidence compared with the peak of the pandemic in 2020. In certain institutions, eye protection is still recommended, but is not used frequently in practice because of difficulties with regard to examination. A number of institutions also have ceased routine temperature screening for both staff and patients. Second, despite an overall de-escalation, certain measures remain virtually universal. These include mandatory use of face masks for all staff, face masks for all patients (except for 1 center in Australia, which had very low levels of community transmission at the time of the survey), and use of slit-lamp shields, which are in line with current published professional guidance.[19–22,24,26] Third, vaccination of staff also seems to have been adopted universally, with almost all countries having prioritized vaccination for health care workers. However, vaccination levels of outpatients vary significantly based on availability and access in different countries. Finally, survey of practice in 2021 does seem to suggest increased adoption of digital health solutions. Furthermore, most centers that did adopt virtual clinics and digital home monitoring in their ophthalmic care for patients at the peak of the pandemic in 2020 do seem to have continued these practices into 2021, although the degree to which these digital health solutions are used is unclear.

Digital Health Solutions in Ophthalmology

In 2020, the COVID-19 pandemic necessitated drastic reductions in ophthalmic service delivery, with reductions of

up to 70% to 99% seen in outpatient visits and elective surgical procedures.[27,28] This forced reduction in traditional face-to-face consultations for provision of ophthalmic care accelerated the development and implementation of digital health solutions such as virtual consultations, artificial intelligence-enabled care, and digital home monitoring in many ophthalmic centers worldwide.[29]

For example, virtual consultations were used successfully to triage and manage acute ophthalmic conditions during the height of the pandemic in London, United Kingdom.[30] Li et al[30] demonstrated that video consultations for emergency ophthalmic diseases could reduce effectively the subsequent need for traditional face-to-face review by 45%. More importantly, the video consultation method exhibited a safety profile (0% harm rate) equivalent to the face-to-face review, with perfect intergrader correlation and high patient satisfaction. In terms of home-based monitoring, Mansouri et al[31] used data from an ongoing multicenter study in Switzerland, Germany, and the United Kingdom to show that home-based monitoring of intraocular pressure in patients with glaucoma was feasible, impacted clinical decision-making such as adjustment of glaucoma medical therapy, and helped to avoid in-person consultations during the COVID-19 pandemic. Artificial intelligence algorithms have been shown to be powerful automated diagnostic tools for a wide range of anterior and posterior segment diseases in ophthalmology. Together with virtual consultations, artificial intelligence algorithms have immense potential as effective triaging tools in the COVID-19 pandemic as well as any other future widespread pandemics.[32–34]

The COVID-19 pandemic clearly has provided an impetus for rapid implementation of digital health solutions in ophthalmology. We hope that these positive changes will continue to be used for better ophthalmic service delivery for our patients, even in the "new normal" of the COVID-19 aftermath. Collaborative efforts by ophthalmic institutions in the United States, United Kingdom, India, and Singapore are ongoing to develop a global interinstitutional teleophthalmology program to share best practices, new technical innovations, and regulatory approaches to teleophthalmology. Nevertheless, significant barriers to more widespread adoption of digital health solutions remain, including technology access and country-specific payment or reimbursement mechanisms. Furthermore, the large variety of emerging digital health solutions available to us necessitates some clear guidance in the near future to determine which types of digital solutions are most appropriate for which kinds of ophthalmic visits in the aftermath of the pandemic, or in the next widespread public emergency.

In conclusion, despite the development of effective vaccines, better understanding of the relationship between COVID-19 and the eye, and the implementation of digital health solutions in ophthalmology, significant challenges lie ahead of us. Inequalities in vaccine access, the threat of resurgent waves of infection, and the emerging new variants are some of the ongoing challenges that ophthalmology practices will face in the second year of this pandemic. With greater international collaboration, sharing of best practices, and a continued push toward innovation in ophthalmic care delivery, we can continue to provide the highest quality ophthalmic care for our patients, while also safely mitigating the risks relating to COVID-19.

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J.C.: Consultant — Centers for Disease Control and Prevention

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