

## Impact of COVID-19 on Ophthalmic Care

Skanda Rajasundaram<sup>1,2</sup>, Dalia Abdulhussein<sup>2\*</sup>, Minak Bhalla<sup>3</sup>

<sup>1</sup>Kellogg College, University of Oxford, Oxford, United Kingdom

<sup>2</sup>The Imperial College Ophthalmic Research Group, Imperial College London, London, United Kingdom

<sup>3</sup>The Western Eye Hospital, Imperial College Healthcare NHS Trust (ICHNT), London, United Kingdom

**\*Corresponding author:** Dalia Abdulhussein, The Imperial College Ophthalmic Research Group (ICROG), Imperial College London, London, United Kingdom

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### Mini Review

On 11 March 2020, the World Health Organization declared the pandemic status of Coronavirus Disease 2019 (COVID-19). It was then that the world was gridlocked and plunged into new and uncertain times; the fight of humanity versus COVID-19 became official. Healthcare services became the limelight of society, and the pressure was on to deal with the acutely sick. In response, NHS England called on all specialties to draft plans with the aim of increasing capacity for acute medicine to prepare for the surge of COVID-19 cases [1]. Patients were advised to avoid hospital visits, unless critically unwell, to minimize COVID-19 transmission. The Royal College of Ophthalmologists produced guidance on how ophthalmic services in the UK should be run; this meant virtualising any urgent outpatient appointments and curtailing elective surgical cases [2]. Of course, the impact of these new rules will be different by region and specialty. Nonetheless, the effects will be felt pan-specialty and pan-region. COVID Surg Collaborative evaluated the total number of adult elective operations that would be cancelled worldwide during the 12 weeks of peak disruption due to COVID-19; the overall 12-week cancellation rate would be 72.3% [3]. Ophthalmology is a predominantly outpatient specialty and has had the highest number of outpatient appointments of any specialty for the past 3 years, with over 7.5 million attending per year and >500,000 surgical procedures in the UK per year [4]. And perhaps, it is this, that makes it even more vulnerable to the effects of COVID-19. During the first wave of the pandemic, Ting and colleagues observed a reduction by approximately two-thirds in outpatient and surgical activities in Queen's Medical Centre in the United Kingdom (UK) [5]. This was accompanied by a significant increase in the number of virtual consultants by 1800%. During a 15-week period in the first wave, there was a significant increase in the 18-week referral-to-treatment breaches in outpatient review (by 75%) and surgeries (by 471%), namely cataract surgery (53%), YAG laser procedures (24%) and oculoplastic surgeries (8%) [5].

This finding was not unique to the UK, for example colleagues in India also observed a similar impact on ophthalmology services, with a reduced in clinical and surgical services by >95% [6]. In contrast to UK, there was a low utility of teleconsultations, and this disparity may be attributed to cultural differences, level of education and patient attitudes towards telemedicine [5,6]. At Moorfields Eye Hospital (MEH) in London, Wickham et al noted similar findings. The eye casualty department at MEH saw a 50% reduction of patients [7]. Whereas there are positives to this, such as reduced wait times and better enforcement of social distancing measures, the majority of these attendances were potentially sight-threatening conditions [7]. Even more worryingly, patients attended with more advanced or severe presentations, indicating patients were reluctant to seek medical attention in fear of COVID-19 exposure [7]. This is further compounded by the higher than average 'did not attend' (DNA) rates of 25% in high-risk age-related macular degeneration patients for intra-vitreous injections. In addition, Wickham and colleagues observed a reduction in the number of patients presenting with retinal detachment and a reduction of retinal detachment surgeries by nearly two-thirds, despite the anticipated increase due to closure of surrounding ophthalmic theatres [7]. Similarly, Awad and colleagues found that there was a statistically significant increase in the cases of rhegmatogenous retinal detachment (RRD) with proliferative vitreoretinopathy (a complication of RRD) in the 2-months following lockdown compared to 5-months prior to lockdown [8]. All these point to a worrying trend that patients are neglecting dangerous symptoms of visual loss. Part of the reasons include risk of contracting COVID-19 and poor awareness of ophthalmic care access (since opticians were also closed during this period which limited ophthalmic advice). So not only would we expect a surge in cases but a surge in more complicated and advanced cases post-pandemic. The cancellation of ophthalmic clinical visits and surgeries could lead to significant harm to patient's vision [9]. Indeed, in a survey by Ting and colleagues,

46% of people with some form of visual impairment expressed fear of further sight loss due to delayed review or treatment [10]. They also highlighted that 55% of patients had anxiety related to hospital visits. More worryingly, fear of exposure to COVID-19 has been shown to be associated with a 4-fold increase in the odds of loss of patients to follow-up [11]. Undoubtedly, the lockdown and the period following it has had a lasting effect on people's lifestyle. A survey from Fight for Sight indicated that approximately 50% of British adults report increased screen use since the pandemic, with 38% believing their eyesight worsened due to this [12]. This trend is, unfortunately, not exclusive to adults. These changes may lead to an increase in pandemic-related eye complaints and presentations including refractive errors and dry eye disease.

Thus, not only do we expect a surge in the number of patients post-pandemic but also an increase in more complicated management. The focus now shifts away from the patient towards the clinician; is the ophthalmology workforce ready to cope with these new demands? Unfortunately, during the pandemic the dramatic decrease in clinical activity in ophthalmology departments resulted in the redeployment of specialty trainees to frontline hospital environments to aid the COVID-19 response. Furthermore, there was suspension of key post-graduate learning opportunities such as training courses and ophthalmic congresses. Hussain et al. surveyed 111 ophthalmology trainees over a 1-week period to assess the impact of COVID-19 on training in the UK [13]. 87% of trainees were concerned about the impact of COVID-19 on training, mostly about cataract surgery (the most performed surgery in ophthalmology). Sadly COVID-19's impact on ophthalmic training also had a negative impact on the mental health of approximately 42% of trainees surveyed. Encouragingly, this survey also showed a positive response towards online teaching and webinars, with a desire to continue this method of teaching post-pandemic; though these cannot fully replace practical hands-on experiences which are essential in the making of an ophthalmic surgeon. As well as impacting the way in which we deliver clinical services to patients, COVID-19 affected the way in which academic institutions were able to carry out research. All research, unless COVID-19 related, was suspended. This has significant repercussions on research and trial recruitment across many specialties [14]. This was immediately apparent to me during my academic placement in foundation training. At a local tertiary eye centre, we observed a 77% reduction in recruitment of patients to ophthalmic trials. Recruiting patients to clinical trials and maintaining follow-up is notoriously difficult. Fear of exposure to the hospital environment has been a common culprit cited in many studies relating to DNA rates and delayed presentations, and this will undoubtedly extend over into the academic sphere which will make trial recruitment even more difficult now. Disruption to research will likely exacerbate the existing health inequalities, especially as sight impairment differentially affects the most vulnerable members of society.

So far, we have only considered the negative impacts of COVID-19 on ophthalmic care and, for the optimists out there, we need to

take into consideration that the glass may be half-full. COVID-19 provided an unexpected, yet much needed, pause which provides perfect ground to reflect, adapt and discover ways of running healthcare services more efficiently. Undoubtedly, it has served as a catalyst for innovation and investment in healthcare services around the world with drastic changes instigated at lightning fast-speed. Lessons learnt during this period are invaluable and will drive change in the way services are run in the future. Most notably, telemedicine took centre stage during the pandemic [15]. It provides the perfect solution to many of the barriers the pandemic has erected. So far, telemedicine has mainly been implemented in the form of 'virtual consultations' during the pandemic. Unfortunately, this cannot be used as the sole form of patient management, particularly in ophthalmology where certain sub-specialties rely on key ancillary data to guide clinical decision making [16]. Although there exist technological solutions to some of these, such as home intra-ocular pressure and visual fields monitoring, we have a lack of robust clinical data that validates the introduction of these tools into formal clinical practice. Hence, further emphasizing the importance of continued ophthalmic research. The pressure on ophthalmology services is likely to increase in the coming months. Not only will ophthalmic services need to deal with the backlog of patients already under their care, but also an influx of new patients who, due to fear of COVID-19, have been neglecting some of their symptoms, resulting in more complicated presentations. Effective rehabilitation of patients together with more robust virtual services and increased utilization of telemedicine will be key in the fight for vision.

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