**Discuss the Impact of COVID-19 on Ophthalmic Care**

*“It is not the strongest of the species that survives, not is it the most intelligent. It is the one that is most adaptable to change”* – Charles Darwin

In December 2019 we heard rumblings of a novel coronavirus spreading rapidly in China. Initially dismissed as a bad cold, in January 2020 the first cases of COVID-19 emerged in the UK.[[1]](#footnote-1) In March 2020 cases surged; we were plummeted into lockdown and panic ensued. Toilet paper suddenly had the power to instigate violence, and fear mongering memes of ‘*stay home unless you want to be intubated by an ophthalmologist*’ circulated on social media. A mantra of *‘stay home, save lives, protect the NHS’* became the government’s new slogan amid fears of the collapse of our treasured healthcare service. There was widespread effect on patient care as services were heavily rationed, and resources diverted to tackle the tsunami of COVID-19 patients predicted to rapidly overwhelm our already strained system.

Difficult decisions ensued; the risk of harm from COVID-19 infection was weighed against the harm of delaying treatment of a serious eye condition. Thousands of routine clinic appointments and elective theatre lists were cancelled, whilst serious eye conditions remained prioritised.[[2]](#footnote-2) However, despite sight being the sense people most fear losing,[[3]](#footnote-3) many patients were more fearful of COVID-19 and therefore too frightened to leave their homes to attend essential, potentially sight-saving, clinic appointments.[[4]](#footnote-4)

Ophthalmology is a close proximity speciality, with high volume clinic and theatre lists which maximise exposure to potentially infectious patients. Perhaps it is not surprising that one of the harbingers of COVID-19, who would unfortunately succumb to the virus himself, was the Chinese ophthalmologist Li Wenliang.[[5]](#footnote-5) The mortal risk to patients and clinicians posed by face-to-face interactions during the pandemic was an omnipresent danger that could not be ignored.

A crisis leads to innovation however, and as a clinic heavy speciality, rapid implementation of novel ways of working was essential. Of all the specialities, ophthalmology is a paragon of technology augmenting healthcare. What better marriage then, than the union of technology and ophthalmology at a juncture as crucial as the pandemic.

**A Paradigm Shift**

Teleophthalmology derives from the Greek prefix *‘tele’* meaning *‘far away’,* andrefers to ophthalmology delivered remotely. Even before the pandemic, teleophthalmology was heralded as a priority in response to growing demand for ophthalmology due to an ageing population.[[6]](#footnote-6)

Teleophthalmology is a nascent field. ‘Virtual clinics’ are not new, with advances in digital retinal photography and OCT imaging allowing remote screening in diabetic retinopathy, glaucoma and retinopathy of prematurity.[[7]](#footnote-7) The pandemic propelled teleophthalmology into the mainstream however, as a valuable means of avoiding unnecessary patient contact.

To reduce A&E attendance during the pandemic, a successful virtual eye casualty was developed at Moorfields Eye Hospital via the advanced video conferencing platform *Attend* *Anywhere*. Via direct patient to clinician link, acute eye presentations were triaged, and subsequently reduced A&E attendance by almost 80% over a six week period, with improved efficiency and reduced cost also demonstrated.[[8]](#footnote-8) Another NHS trust successfully replaced a face-to-face oculoplastic clinic with video conferencing, noting that patients preferred it, citing convenience, safety and efficiency as the main advantages.[[9]](#footnote-9) With the advent of apps to test visual fields and visual acuity, a smartphone equipped patient or relative could access an ophthalmology assessment without leaving the home.[[10]](#footnote-10)

Whilst digital slit lamps have been around for some time,[[11]](#footnote-11) recent pioneering technology created a smartphone interface, taking virtual clinics one step further.[[12]](#footnote-12) A game changer in the pandemic, a slit lamp examination could be accessed remotely by an ophthalmologist, reducing exposure risk generated by the usual referral pathway. Video conferencing platforms also allow for input of multiple clinicians, creating a powerful real-time decision support tool.

The pandemic emphasised the importance of our community partnerships, particularly with optometrists. Optometrist-led community hubs such as the COVID-19 Urgent Eye Service (CUES)[[13]](#footnote-13) and Emergency Eye Treatment Centres (EETC)[[14]](#footnote-14) were successful in providing acute eye care without the need for hospital attendance. When used in conjunction with smartphone adapted slit lamps and OCT mirroring, patients could be effectively triaged and consulted remotely by an ophthalmologist as appropriate.[[15]](#footnote-15) In some cases, patients were even consented and booked for theatre directly from the community.[[16]](#footnote-16) Clever community initiatives also sprung up during the pandemic, such as drive-through IOP for glaucoma screening, illustrating how inherent gaps in teleophthalmology can potentially be plugged.[[17]](#footnote-17)

The potential for teleophthalmology to reduce nosocomial infection in a pandemic is obvious. However, the secondary benefits of improved efficiency, reduced cost, and reduced socioeconomic burden are potentially revolutionary for ophthalmic care. Patients find its convenience pleasing, unsurprising in today’s world of Uber Eats and Amazon Prime; why shouldn’t healthcare be yet another commodity accessible from the couch? Teleophthalmology is also kinder to the planet, as reduced patient travel equates to reduced CO2 emissions.

However, teleophthalmology is not the panacea it may at first appear. By the very nature of eye disease, many of our patients are older and less likely to be *au fait* with video conferencing and mobile apps. Some patients may even struggle with telephone consults, particularly those who are hard of hearing or suffer with dementia. Indeed, some older consultants may also struggle with video conferencing platforms. Technology in untrained hands is potentially risky; incorrect testing of visual acuity at home for example may at best result in inefficiency, at worst, blindness. Clinicians may find some aspects of a face-to-face interaction are lost in a video call; non-verbal communication can be vital in some instances, a relative’s subtle roll of the eyes for example, indicating something is amiss. Also, is it wise to have complete reliance on telecommunications? What happens to the unfortunate patient presenting with pain and acute vision loss at a time when the networks are down?

**Clapped Out**

It is important to remember that not only did the pandemic grossly affect patient care, it severely disrupted ophthalmology training. Trainees were redeployed to unfamiliar clinical areas and forfeited educational experiences, such as clinic, theatre and teaching sessions, that would normally be considered fundamental to training and progression.[[18]](#footnote-18) Although training may now be back on track, these forgone opportunities will inevitably impact the quality of ophthalmic care received by patients in the long run.

This year’s national training survey (NTS)[[19]](#footnote-19) revealed that over a third of all speciality trainees showed signs of burnout, the highest figure ever reported. Concerningly, ophthalmology trainees were disproportionately affected, with more than twice the number of trainees affected by burnout in 2021 compared with 2019 (13% and 5% respectively), the highest increase seen of all specialities.

Although virtual learning environments were successfully utilised during the pandemic, ophthalmology training relies on practical experience. With so many opportunities lost over the past 18 months, measures to facilitate increased surgical exposure must be implemented. In addition, given that reliance on technology is likely to increase, it is prudent to incorporate new skills in virtual and IT assisted assessment into the curriculum to ensure sustainability.

**Beyond the Pandemic**

The use of teleophthalmology was fundamental to ophthalmic care provision during the pandemic, and now presents an immense opportunity to revolutionise ophthalmology services going forward. With the many advantages to teleophthalmology against a backdrop of ever-increasing demand and fewer clinicians, one must wonder if there is a need to return to face-to-face consultations post-pandemic?

The most sensible answer would likely involve a ‘blended model’, where some patients are seen in person, others via ‘asynchronous clinics’, where information is gathered and stored digitally, able to be viewed by an ophthalmologist at a later time.[[20]](#footnote-20) Unprecedented improvements in telecommunications, computational capacity, data storage and processing speed make all of this possible, inevitable even; it is likely that COVID-19 has merely nudged us in this direction a little sooner.

**Final Thoughts**

COVID-19 blindsided us, the effects upon the NHS were unprecedented, the consequences for patient care likely to be seen for years to come. Unfortunately, coronavirus is here to stay, and there will never be a return to ‘normal’. One cannot simply keep calm and carry on, pandemic working is now the new normal, and adaptation is key.

The silver lining perhaps is that the pandemic has allowed innovation and technology in ophthalmology to flourish. Rather than lament our misfortune, perhaps we should be grateful that COVID-19 coincided with the digital age, with a plethora of technological advancements revolutionising how we deliver patient care. The pandemic gave technology and innovative ways of working that have been waiting in the wings their moment to shine, and it is up to us to maintain the benefits presented to ophthalmic care.

With an ever-increasing demand on ophthalmology services, smarter and more streamlined ways of working were long overdue, and COVID-19 appears to have been the catalyst to bring these to the forefront. Ophthalmologists must be flexible and receptive to these new ways of working in order to traverse the new and unfamiliar landscape of the pandemic era. It is crucial we maintain pace with the technological advances that maximise precious resources, as NHS services inevitably become increasingly strained.

 **Word count : 1498**

1. British Foreign Policy Group. https://bfpg.co.uk/2020/04/covid-19-timeline/ [↑](#footnote-ref-1)
2. Royal College of Ophthalmologists. Management of Ophthalmology Services during the Covid pandemic [Internet]. [https://www.rcophth.ac.uk/wp-content/uploads/2020/03/RCOphth-Management-of-Ophthalmology-Services-during-the-Covid-pandemic-280320.pdf](https://doi.org/https%3A/www.rcophth.ac.uk/wp-content/uploads/2020/03/RCOphth-Management-of-Ophthalmology-Services-during-the-Covid-pandemic-280320.pdf) (accessed October 10, 2021). [↑](#footnote-ref-2)
3. College of Optometrists. Britain’s Eye Health in Focus. 2011 [↑](#footnote-ref-3)
4. BBC News. Coronavirus: 'Eyesight of thousands at risk due to missed care' <https://www.bbc.com/news/health-52968845> (accessed October 10, 2021) [↑](#footnote-ref-4)
5. Green A. Li wenliang. The Lancet. 2020 Feb 29;395(10225):682 [↑](#footnote-ref-5)
6. NHS Long Term Plan. <https://www.longtermplan.nhs.uk/online-version/chapter-5-digitally-enabled-care-will-go-mainstream-across-the-nhs/> (Accessed October 11 2021) [↑](#footnote-ref-6)
7. Pathipati AS, Moshfeghi DM. Telemedicine applications in pediatric retinal disease. Journal of clinical medicine. 2017 Apr;6(4):36. [↑](#footnote-ref-7)
8. Kilduff CL, Thomas AA, Dugdill J, et al.: [Creating the Moorfields' virtual eye casualty: video consultations to provide emergency teleophthalmology care during and beyond the COVID-19 pandemic](https://dx.doi.org/10.1136/bmjhci-2020-100179?utm_medium=email&utm_source=transaction). BMJ Health Care Inform. 2020, 27:e100179. [10.1136/bmjhci-2020-100179](https://dx.doi.org/10.1136/bmjhci-2020-100179?utm_medium=email&utm_source=transaction) [↑](#footnote-ref-8)
9. Golash V, Athwal S, Khandwala M. Teleophthalmology and COVID-19: the patient perspective. Future Healthcare Journal. 2021 Mar;8(1):e54. [↑](#footnote-ref-9)
10. Tsapakis S, Papaconstantinou D, Diagourtas A, et al. Home- based visual field test for glaucoma screening comparison with Humphrey perimeter. Clin Ophthalmol 2018;12:2597-606. [↑](#footnote-ref-10)
11. Kumar S, Yogesan K, Constable IJ. Telemedical diagnosis of anterior segment eye diseases: validation of digital slit-lamp still images. Eye. 2009 Mar;23(3):652-60. [↑](#footnote-ref-11)
12. NHS Forth Valley <https://nhsforthvalley.com/worlds-first-5g-tele-examination-of-an-eye/> [↑](#footnote-ref-12)
13. College Optometrists [www.college-optometrists.org/the-college/media-hub/news-listing/nhs-england-covid-19-urgent-eyecare-service-cues.html](http://www.college-optometrists.org/the-college/media-hub/news-listing/nhs-england-covid-19-urgent-eyecare-service-cues.html) [↑](#footnote-ref-13)
14. <https://www.grampianonline.co.uk/news/new-emergency-eye-care-centres-help-reduce-the-need-to-attend-hospital-197885/> [↑](#footnote-ref-14)
15. Ghazala FR, Hamilton R, Giardini ME, Ferguson A, Poyser OB, Livingstone IA. Live teleophthalmology avoids escalation of referrals to secondary care during COVID-19 lockdown. Clinical and Experimental Optometry. 2021 May 23:1-6. [↑](#footnote-ref-15)
16. Ghazala FR, Dall'Ozzo S, McGowan G, Livingstone IA. Teleophthalmology-Enabled Direct Vitreoretinal Surgery Listing from Community Optometric Practice: Enhanced Efficiency During Coronavirus Disease 2019, and Beyond?. Telemedicine and e-Health. 2021 Jul 1;27(7):816-9. [↑](#footnote-ref-16)
17. https://www.bbc.com/news/uk-northern-ireland-52786237 [↑](#footnote-ref-17)
18. Ferrara M, Romano V, Steel DH, Gupta R, Iovino C, van Dijk EH, Romano MR. Reshaping ophthalmology training after COVID-19 pandemic. Eye. 2020 Nov;34(11):2089-97. [↑](#footnote-ref-18)
19. GMC. National Training Survey Results 2021. <https://www.gmc-uk.org/-/media/documents/national-training-survey-results-2021---summary-report_pdf-87050829.pdf>. Last accessed 11 October 2021 [↑](#footnote-ref-19)
20. Nikolaidou A, Tsaousis KT. Teleophthalmology and Artificial Intelligence As Game Changers in Ophthalmic Care After the COVID-19 Pandemic. Cureus. 2021 Jul;13(7). [↑](#footnote-ref-20)