Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Appointment trends in new and established patients in ophthalmology and optometry during a pandemic

In response to COVID-19 being formally declared a pandemic, US health care systems implemented protocols aimed at mitigating risk for both patients and providers.[1] The American Academy of Ophthalmology and American Optometric Association recommended delaying all elective ambulatory provider visits and rescheduling routine ophthalmic visits.[2,3] Although these measures reduced the potential for transmission, little is known about how outpatient ophthalmic care has been affected. The current study evaluated the effect of the COVID-19 lockdown on both new and established patients of different disease acuity scheduled to be seen in optometry, general, and subspecialty clinics.

A retrospective chart review was performed of all scheduled appointments of adult patients from March 14 through May 4, 2020 (COVID-19 period). A comparable standard operations time was chosen for comparison. Only the first scheduled visit during this period was used so that each visit was associated with 1 unique patient. All patients were stratified by provider subspecialty. To assess the acuity of the disease, established patients were stratified by duration of time between the last visit before the COVID-19 period and the COVID-19 scheduled visit (Group 1 [<6 weeks], Group 2 [6–12 weeks], Group 3 [12–36 weeks], and Group 4 [>36 weeks]). Patients with canceled appointments during the COVID-19 period were also assessed for whether they had a rescheduled and/or completed follow-up visit. Telemedicine and in-person appointments were included. The study was approved by the local ethics committee and adhered to the tenets of the Declaration of Helsinki. No informed consent was needed.

Compared to standard operations, during the COVID-19 period the overall number of scheduled appointments decreased (62 063 visits versus 44 933 visits) as well as the number of new appointments (14 855 [23%] versus 3243 [7%]) and completed appointments (41 284 [66%] versus 10 791 [24%]) (Supplemental Fig. 1, available online). Younger patients (completed: 66 [interquartile range 44–74] versus not: 68 [77–84]; $p < 0.0001$) and those with commercial insurance (completed: 30% versus not: 25%; $p < 0.0001$) were more likely to complete the scheduled appointment (Table 1). Of 28 383 established patients, those who required more frequent follow-up (Group 1: 63%, Group 2: 69%) had fewer cancellations than patients with lower acuity of disease (Group 3: 78%, Group 4: 84%; $p < 0.0001$) (Table 2). However, the time between the intended follow-up and actual follow-up more than tripled in higher acuity patients (Group 1: from 3.37 to 13.51 weeks; Group 2: from 8.02 to 18.14 weeks; Group 3: from 16.47 to 27.42 weeks; Group 4: from 59.73 to 67.71 weeks). Of the cancelled appointments, 69% and 66% rescheduled the missed appointment in Groups 1 and 2, respectively, which was higher than in patients who had lower acuity of disease (Group 3: 63%, Group 4: 60%; $p < 0.0001$).

When analyzed by subspecialty, the highest percentage of completed appointments among all scheduled patients was seen in retina/uveitis (1652 [26%]; Supplemental Table 1, available online), whereas the lowest percentage was seen in glaucoma and oculoplastics (417 [14%] and 133 [13%], respectively). Out of cancelled appointments, 67% of patients with retina/uveitis rescheduled, whereas only 49% of neuro-ophthalmology patients rescheduled (Supplemental Table 2, available online).

This study describes the profound effects of the COVID-19 lockdown within a multispecialty ophthalmology and optometry practice. The access to care was affected for both new and established patients. Although patients with

Table 1—Demographics of patients who completed and did not complete (cancelled or no-show) visits within the COVID-19 period

	Completed visits	Not completed visits (canceled + no-shows)	*P* value
n (% total)	6936 (22%)	24 683 (78%)	
Age (median [IQR]), y	66 [44–74]	68 [77–84]	*< 0.0001**
Gender (Female, %)	3927 (57%)	15 327 (62%)	*< 0.0001*†
Location (Regional, %)	4942 (71%)	17 553 (71%)	0.9524†
In state (%)	6207 (89%)	22 474 (91%)	0.1504†
Insurance type			*< 0.0001*†
Government	4216 (70%)	15 829 (75%)	
Commercial/Other	1806 (30%)	5301 (25%)	

IQR, interquartile range
*Mann-Whitney test
†χ^2 test

Table 2—Percentage of completed, cancelled, and "no-show" scheduled visits; percentage of cancelled visits that were rescheduled; intended time versus actual time between visits

	Group 1	Group 2	Group 3	Group 4	*P* value
Total patients	5288	4984	4757	13354	*< 0.0001**
Completed, n (% total)	1715 (32%)	1355 (27%)	918 (19%)	1883 (14%)	
Canceled, n (% total)	3339 (63%)	3423 (69%)	3696 (78%)	11 216 (84%)	
No show, n (% total)	233 (5%)	205 (4%)	143 (3%)	255 (2%)	
Rescheduled patients, n (% canceled)	2292 (69%)	2259 (66%)	2325 (63%)	6740 (60%)	*<0.0001**
Intended time between visits, weeks (95% CI)	3.37 (3.32–3.41)	8.02 (7.96–8.07)	16.47 (16.37–16.58)	59.73 (58.8–60.67)	
Time between visits after rescheduling, weeks (95% CI)	13.51 (13.16–13.86)	18.14 (17.82–18.46)	27.42 (27.12–27.73)	67.71 (66.64–68.79)	

*χ^2 testPatients were divided in 4 groups of disease acuity based on the time of their scheduled follow-up visit.

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more acute conditions were seen more frequently and had higher rescheduling rates, the follow-up time was triple that intended. The discrepancy seen between subspecialties is multifactorial and deserves further analysis on multi-institutional level. Although the findings may not be generalizable to all settings, they provide a unique analysis of how a pandemic affects outpatient clinical care, which is the first step in implementing changes that minimize interruptions in care and prepare for transitions back toward a standard practice.[4]

Supplementary Materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jcjo.2021.02.003.

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