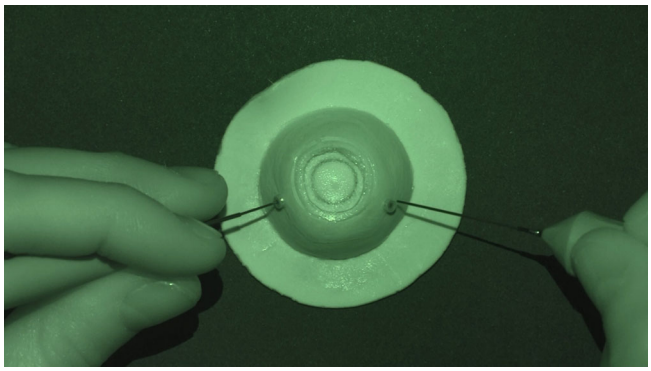

FIGURE 2 Infrared footage of standard 25-gauge trocar cannulas under mesopic conditions

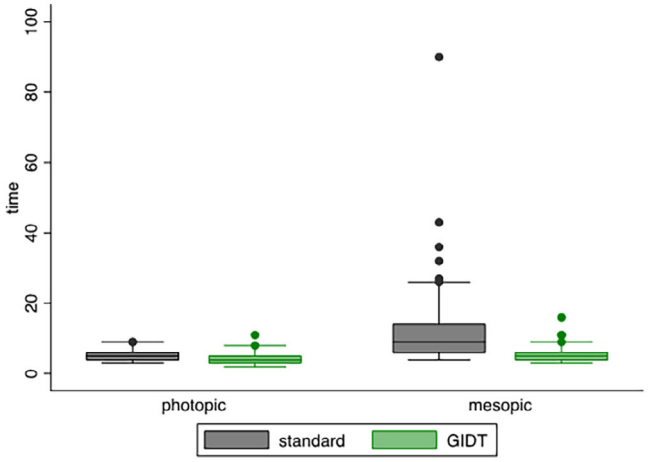

FIGURE 3 Box plot demonstrating mean time to task completion in mesopic (2.0-3.0 lux) and photopic (>200 lux) conditions for standard and glow-in-the-dark trocar cannulas

There were significantly lower error counts per attempt in mesopic conditions with GIDTC ($P < 0.001$), but not under photopic conditions.

Small sample size is a limitation of this study; however, there was a clear and significant reduction in mean time to task completion with GIDTC in both the VR and non-VR groups, suggesting that GIDTC use has the potential to reduce procedure time for both experienced VR surgeons and surgical trainees. Under mesopic conditions, ocular touch errors are also reduced by using the phosphorescent cannulas. Self-illuminating cannulas for small-gauge PPV decrease procedure time and reduce error rates during low-light instrument exchange. The benefits of these instruments potentially extend to both experienced and inexperienced VR surgeons.

CONFLICT OF INTEREST

None declared.

Weng Onn Chan MPhil FRANZCO[1,2,3]
Melissa K. Shields MBBS MMed[2]
Robert J. Casson DPhil FRANZCO[1,3]
Shane R. Durkin FRANZCO[1,2]

[1]*The Department of Ophthalmology, Royal Adelaide Hospital, Adelaide, South Australia, Australia*
[2]*The Department of Ophthalmology, Queen Elizabeth Hospital, Woodville South, South Australia, Australia*
[3]*South Australian Institute of Ophthalmology, University of Adelaide, Adelaide, South Australia, Australia*

Correspondence
Dr Melissa K. Shields, The Department of Ophthalmology, Queen Elizabeth Hospital, Woodville South, South Australia 5011.
Email: melissa.kate.ellis@gmail.com

ORCID
Melissa K. Shields https://orcid.org/0000-0002-9775-2684
Robert J. Casson https://orcid.org/0000-0003-2822-4076

Cataract surgical patients as a candidate sentinel population for SARS-CoV-2 surveillance

The ongoing coronavirus disease 2019 (COVID-19) pandemic requires significant mitigation efforts including large-scale testing programmes to detect new cases and to keep infection rates under control. Despite the presence of asymptomatic transmission, passive and random testing of unselected asymptomatic individuals may be inefficient.[1] In contrast, sentinel surveillance, whereby a pre-selected set of healthcare facilities routinely conducts testing of a defined patient population, may offer a way to efficiently measure infection rates to allow the prevalence in the community at large to be estimated, as well as to predict outbreaks.[1] Sentinel surveillance of those at

TABLE 1 Comparison of risk factors for severe COVID-19 disease between NEHS participants who reported having cataract surgery within the previous year vs those who did not, and between Melbourne Collaborative Cohort Study participants who reported receiving a cataract diagnosis within the previous year vs those who did not

	NEHS self-reported cataract surgery in last year			
	No (n = 4639)	**Yes (n = 167)**	**OR[a] (95% CI)**	***P*-value**
Age ≥ 65 years, n (%)	1869 (40.3%)	130 (77.8%)	4.91 (3.32-7.27)	<.001
Male sex, n (%)	2053 (44.3%)	84 (50.3%)	1.22 (0.90-1.67)	.204
Self-reported diabetes, n (%)	1021 (22.0%)	50 (29.9%)	1.66 (1.16-2.38)	.006
Self-reported stroke, n (%)	288 (6.2%)	20 (12.0%)	1.74 (1.06-2.85)	.029
	Cataract diagnosis in last year			
	No (n = 30 236)	**Yes (n = 719)**	**OR[b] (95% CI)**	***P*-value**
Age ≥ 65 years, n (%)	9260 (30.6%)	521 (72.5%)	5.96 (5.05-7.03)	<.001
Male, n (%)	12 579 (41.6%)	216 (30.0%)	0.54 (0.46-0.64)	<.001
Self-reported asthma, n (%)	3420 (11.3%)	100 (13.9%)	1.28 (1.03-1.59)	.026
Self-reported liver disease, n (%)	609 (2.0%)	11 (1.5%)	0.77 (0.42-1.41)	.402
Self-reported hypertension, n (%)	7290 (24.1%)	272 (37.8%)	1.38 (1.18-1.61)	<.001
Self-reported diabetes, n (%)	1264 (4.2%)	72 (10.0%)	1.91 (1.48-2.46)	<.001
Self-reported history of cancer, n (%)	2706 (8.9%)	88 (12.2%)	1.08 (0.86-1.36)	.503
Self-reported history of stroke, n (%)	454 (1.5%)	21 (2.9%)	1.19 (0.76-1.86)	.450
Body mass index ≥ 30, n (%)	5350 (17.7%)	142 (19.7%)	1.17 (0.97-1.41)	.101
Self-reported heart disease, n (%)	2084 (6.9%)	88 (12.2%)	1.13 (0.89-1.42)	.315

Abbreviations: CI, confidence interval; COVID-19, coronavirus disease 2019; NEHS, National Eye Health Survey; OR, odds ratio.
[a]Estimated via multivariable logistic regression adjusting for age and Indigenous status.
[b]Estimated via multivariable logistic regression adjusting for age.

high risk for infection, transmission or complications, such as the elderly or hospital patients, may support infection control efforts.[2]

Elective surgeries present a risk of nosocomial severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission amongst patients and healthcare workers, warranting screening of incoming surgical patients—particularly amongst high-risk elderly patients undergoing common elective surgeries such as orthopaedic or ophthalmic procedures. Therefore, we propose cataract surgery patients as good sentinel surveillance candidates because: (a) they may have higher susceptibility to SARS-CoV-2 infection[3] as well as complications from COVID-19 due to their older age and high rates of comorbidities[4]; (b) cataract surgery is one of the most common elective surgical procedures worldwide, permitting monitoring of a large and representative high-risk population; and (c) the ophthalmic setting is a potentially a high-risk environment as phacoemulsification has been shown to generate aerosols.[5]

We investigated data from two epidemiological studies conducted in Australia to understand whether people undergoing cataract surgery might have a greater burden of risk factors that portend worse COVID-19 outcomes and thus may constitute an appropriate sentinel population. We used multivariable logistic regression to compare the rates of known risk factors for COVID-19 complications between participants in the National Eye Health Survey (NEHS, 2015-2016) who had undergone cataract surgery and those who had not undergone cataract surgery within the year preceding the survey. Similar comparisons were made for participants in the Melbourne Collaborative Cohort Study (MCCS) who reported diagnosis with cataract within the year preceding follow-up study wave 1 (1995-2002) and those who had not.

In total, 4806 NEHS participants (aged 40-98 years) were included. Of these, 167 (3.5%) reported having undergone cataract surgery within the past year and were more likely than those who had not to have diabetes (odds ratio [OR]: 1.66, 95% confidence interval [CI]: 1.16-2.38 adjusted for age and Indigenous status), a history of stroke (adjusted OR: 1.74, 95% CI: 1.06-2.85) and to be ≥65 years old (adjusted OR: 4.91, 95% CI: 3.32-7.27) (Table 1).

Of the 30 236 MCCS participants (aged 40-80 years), 719 (2.4%) reported a cataract diagnosis within the previous year. Compared to those reporting no cataract diagnosis, they had higher odds of reporting a history of asthma (age adjusted OR: 1.28, 95% CI: 1.03-1.59), hypertension (adjusted OR: 1.38, 95% CI: 1.18-1.61) and diabetes (adjusted OR: 1.91, 95% CI: 1.48-2.46), and of being ≥65 years old (OR: 5.96, 95% CI: 5.05-7.03) but not of having liver disease, cancer, stroke, obesity or heart disease (Table 1).

One limitation of this study is that self-report for cataract diagnosis and comorbidities may have underestimated their true prevalence, thereby attenuating estimates of association. Furthermore, these findings are based on Australian data, and although similar associations have been reported in other high-income countries, their relevance to countries requires consideration of local contexts. Nonetheless, these findings indicate that people undergoing cataract surgery are a group with risk factors for transmission, infection, complications and death from COVID-19. Sentinel surveillance of this high-risk group using preoperative screening questionnaires and perioperative testing may yield dual benefits of protecting patients and healthcare workers whilst supporting infection control amongst a high-risk segment of the population.

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FINANCIAL DISCLOSURE

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CONFLICT OF INTEREST

None declared.

ETHICS STATEMENT

Ethics approval for the NEHS was granted by the Royal Victorian Eye and Ear Hospital Human Research Ethics Committee. Ethics approval for MCCS was granted by the Human Research Ethics Committee of the Cancer Council Victoria.

Joshua Foreman PhD[1,2]
Myra McGuinness PhD[1,2,3]
David A. Mackey MD FRANZCO[2,4,5]
Peter van Wijngaarden PhD FRANZCO[1,2]

[1]*Department of Surgery, Ophthalmology, University of Melbourne, Melbourne, Victoria, Australia*
[2]*Centre for Eye Research Australia, Royal Victorian Eye & Ear Hospital, Melbourne, Victoria, Australia*
[3]*Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Victoria, Australia*
[4]*Department of Ophthalmology, Menzies Institute of Medical Research, University of Tasmania, Hobart, Tasmania, Australia*
[5]*Centre for Ophthalmology and Visual Science, Lions Eye Institute, University of Western Australia, Perth, Western Australia, Australia*

Correspondence
Dr Joshua Foreman, Department of Surgery, Ophthalmology, University of Melbourne, Melbourne, VIC, Australia.
Email: foremanj@unimelb.edu.au

ORCID

Joshua Foreman https://orcid.org/0000-0002-3685-4054
Myra McGuinness https://orcid.org/0000-0002-5422-040X
David A. Mackey https://orcid.org/0000-0001-7914-4709
Peter van Wijngaarden https://orcid.org/0000-0002-8800-7834

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