

SURVEY

Survey of ESCRS members' attitudes toward operating room waste



David F. Chang, MD, Sjoerd Elferink, MD, Rudy M.M.A Nuijts, MD, PhD

In a survey of ESCRS member cataract surgeons, 92% felt that operating room waste is excessive and should be reduced; 99% were concerned about global warming and climate change. Most respondents cited restrictions on reuse by manufacturers and regulatory bodies as major drivers of this waste. There was a strong desire to have more reusable options for instruments, devices, and supplies. In comparable percentages with an earlier survey of North American cataract surgeons using the identical questionnaire, there was a strong willingness to reuse many surgical supplies, as well as topical and

intraocular medications. This was true even though ESCRS members were much more likely to practice in hospitals (68% vs 35%). The similarities of these results to the North American survey suggest that these attitudes toward sustainability are in fact global and universal. The strong concordance between the 2 surveys suggests that global collaboration is both possible and necessary.

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The sizable contribution of the healthcare sector to greenhouse gas emissions is drawing increasing attention. Health Care Without Harm has estimated that 4.4% of the global greenhouse gas emissions originate from the healthcare sector.¹ The United Kingdom's National Health Service 2020 report "Delivering a 'Net Zero' National Health Service" indicated that procurement and disposal of medications and medical supplies are a major source of the total greenhouse gas emissions attributable to surgery.² Because cataract surgery is the single most common surgical procedure performed worldwide, ophthalmologists have an opportunity to significantly affect sustainability in the healthcare sector.³

The first major survey of cataract surgeons' attitudes toward surgical waste was published in 2020.⁴ The survey was conducted by the Ophthalmic Instrument Cleaning and Sterilization (OICS) Task Force. Co-chaired by one of the authors (D.F.C.), this multisociety North American task force is composed of representatives from the ASCRS, the American Academy of Ophthalmology (AAO), the Outpatient Ophthalmic Surgery Society (OOSS), and the Canadian Ophthalmological Society (COS). A link to the online survey was emailed to all ASCRS, OOSS, and COS members and a sample of AAO members who performed cataract surgery; 1241 surgeons responded. More than 90% of the respondents were concerned about global warming, felt that surgical waste was excessive, felt that approaches to reduce waste were needed, wanted manufacturers to offer

more reusable instruments and supplies, and wanted more discretion to reuse devices and supplies.

Because most of the survey respondents (86%) were from the United States, it is not clear whether these results can be extrapolated internationally. For this reason, we surveyed members of the ESCRS regarding surgical waste from cataract surgery. To facilitate comparisons of the results, we used the same online questionnaire developed and administered by the OICS Task Force.⁴

METHODS

As described in their report, the online questionnaire developed by the OICS Task Force consisted of 23 multiple-choice questions.⁴ A link to the online survey was emailed to the ESCRS membership (approximately 6600 members) on December 1, 2020. The online survey remained open until February 5, 2021. Duplicate responses were prevented by requiring a name and email address for access to the survey and allowing only 1 submission for each email address. Respondents were asked to complete the survey only if they performed cataract surgery. Responses were deidentified for analysis. The ESCRS responses were compared with those from the prior OICS survey.

RESULTS

Demographics

A total of 458 respondents answered the survey (7% response rate). The respondent demographics are listed in [Table 1](#), in which they are also compared with the demographics of the OICS survey respondents. The majority of ESCRS survey respondents (77%) practice in Europe. Similar to the OICS survey, most respondents were male (62%) and had been in

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From the University of California, San Francisco, San Francisco, California (Chang); Flevoziekenhuis, Almere, the Netherlands (Elferink); Maastricht University Medical Center+, Maastricht, the Netherlands (Nuijts).

Corresponding author: David F. Chang, MD, 762 Altos Oaks Drive, Los Altos, CA 94024. Email: dceye@earthlink.net.

Table 1. ESCRS survey respondent demographics^{a,b}

Primary practice region	Europe	Asia	Africa	North America	South America	Australia
Respondents: n = 418	77	10	4	2	5	2
Type of operating facility	Public hospital	Academic hospital outpatient department	Private hospital outpatient department	Freestanding ASC (multispecialty)	Freestanding ASC (ophthalmology only)	Others
Respondents: n = 422 (1244)	40	13 (21)	15 (14)	5 (23)	27 (38)	1 (5)
To which gender do you most identify?	F	M	Not answered			
Respondents: n = 421 (1246)	35 (30)	62 (69)	0.2 (1)			
Years of practice	Currently in training	1-5 y	6-10 y	11-25 y	>25 y	
Respondents: n = 428 (1063)	5 (5)	14 (12)	16 (13)	40 (38)	25 (32)	
Average annual no. of cataract surgeries	<200	200-500	501-1000	>1000		
Respondents: n = 433 (1058)	18 (18)	44 (43)	26 (28)	12 (11)		

ASC = ambulatory surgical center

^aAll numbers % except where indicated otherwise.

^bComparison with OICS survey respondents shown in parentheses

practice for more than 10 years (65%); 38% were higher volume surgeons (>500 cases per year). The major difference was that 68% of ESCRS respondents operated in hospitals, whereas 61% of OICS respondents operated in ambulatory surgery centers (ASCs).

Opinions Regarding Surgical Waste

Compared with the OICS survey respondents, the ESCRS survey respondents were even more concerned about global warming and climate change (99% vs 91%); 72% (vs 59%) were “very concerned,” and 1% (vs 9%) were “not

Table 2. Drivers of operating room waste^a

ESCRS (OICS): n = 334 (1101)	High impact ESCRS (OICS), %	Moderate impact ESCRS (OICS), %	Little or no impact ESCRS (OICS), %
How would you rate the impact of each of the following as drivers of waste/trash generation in ophthalmic operating rooms?			
Perceived safety benefits of disposable items	71 (74)	26 (22)	3 (4)
Perceived performance benefits of disposable items	40 (33)	44 (44)	15 (24)
Surgeon preference for single-use items	42 (26)	40 (45)	18 (28)
Surgeons do not reuse supplies when possible	41 (33)	41 (37)	18 (30)
Surgical teams open too many supplies during surgery	38 (37)	38 (39)	24 (24)
Single-use items packaged in ways that create unnecessary waste	70 (71)	26 (24)	24 (5)
Hospital/facility policies limit surgeon discretion for reusing supplies	58 (74)	36 (21)	6 (5)
Regulatory agencies limit surgeon discretion for reusing supplies	65 (82)	28 (15)	7 (3)
Patients want single-use instruments	17 (7)	23 (19)	60 (74)
Manufacturers mandate single-use IFU (instruction for use) to limit liability	67 (70)	27 (26)	6 (4)
Manufacturers drive the market toward more profitable single-use products	74 (77)	24 (20)	1 (3)
Lack of environmental/carbon footprint considerations	73 (65)	23 (26)	4 (10)
In your opinion, what are the primary drivers for single-use instruments in ophthalmic surgery?			
Instrument performance	47 (38)	35 (42)	18 (20)
Liability reduction	50 (66)	36 (26)	14 (8)
Patient safety	64 (49)	25 (40)	11 (12)
Staff safety	26 (16)	36 (48)	38 (36)
Patient desirability or preference	10 (6)	28 (29)	61 (65)
Cost savings to hospital/facility	41 (26)	34 (36)	26 (39)
Reduced staff processing requirements (eg, cleaning and sterilization)	55 (45)	38 (45)	8 (10)
Improved OR efficiency	45 (37)	42 (47)	13 (16)
Lack of environmental/carbon footprint considerations	53 (40)	30 (28)	17 (32)
Manufacturer profit	50 (62)	27 (20)	23 (18)
Easier regulatory approval pathway	48 (65)	40 (26)	12 (9)

IFU = instructions for use; OICS = Ophthalmic Instrument Cleaning and Sterilization

^aComparison with OICS survey respondents shown in parentheses

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Table 3. Global strategies to reduce waste^a

ESCRS (OICS): n = 336 (1101)	Strongly agree ESCRS (OICS), %	Somewhat agree ESCRS (OICS), %	Neither agree nor disagree ESCRS (OICS), %	Somewhat disagree ESCRS (OICS), %	Strongly disagree ESCRS (OICS), %
To what extent do you agree or disagree with the following?					
Device and supply manufacturers should use recycled content in packaging for medical supplies	76 (72)	18 (18)	4 (7)	1 (1)	1 (1)
Device and supply manufacturers should consider the environment/carbon footprint in their product design	85 (76)	10 (16)	3 (5)	0 (1)	1 (1)
Manufacturers should offer more reusable instruments and supplies as an option	74 (81)	18 (13)	5 (5)	1 (1)	1 (0)
Device and supply manufacturers should allow surgeons more discretion in their IFU (eg, suggest single use but allow reuse)	60 (75)	29 (18)	5 (5)	4 (2)	1 (1)
Regulatory bodies should allow surgeons more discretion in reusing supplies, drugs, and devices	64 (81)	25 (14)	6 (3)	4 (1)	1 (0)
Healthcare systems should adopt practices and policies that reduce carbon footprint in operating rooms	83 (78)	12 (14)	4 (5)	0 (1)	1 (2)
The medical societies to which I belong should advocate for the reduction of carbon footprint in operating rooms	79 (71)	15 (16)	4 (7)	1 (3)	1 (3)
We need more studies to assess the safety of reuse of supplies, drugs, and devices	67 (68)	19 (19)	10 (7)	2 (3)	2 (2)

IFU = instructions for use; OICS = Ophthalmic Instrument Cleaning and Sterilization

^aComparison with OICS survey respondents shown in parentheses

concerned.” Compared with the OICS survey, a nearly identical number of ESCRS respondents considered the amount of trash produced during cataract surgery to be excessive (92% vs 93%), with 63% (vs 68%) rating this as “far too much”; 7% (vs 5%) felt that the amount of trash generated was appropriate. An identical 96% in both surveys felt that we should seek ways to reduce surgical waste in surgery.

Table 2 tabulates what the respondents felt were the main drivers of operating room (OR) waste. The results closely mirror those from the OICS survey, with the highest impact drivers being perceived safety benefits of disposable items (71%), single-use items packaged in ways that create unnecessary waste (70%), manufacturers driving the market toward more profitable single-use products (74%), manufacturers mandating single use to limit liability (67%), and lack of environmental/carbon footprint considerations (73%). Fewer ESCRS respondents listed hospital/facility policies (38% vs 74%) and regulatory agencies (65% vs 82%) as having a high impact on OR waste.

In terms of global strategies to reduce surgical waste, most ESCRS respondents want device/supply manufacturers to use recycled content in packaging (94%) and consider environmental impact in their product design (95%) (Table 3). They want manufacturers to offer more reusable instruments and supplies (92%) and prefer that manufacturers and regulatory bodies allow more surgeon discretion in reusing products (89%). These data were very similar to those from the OICS survey.

Opinions Regarding Reuse of Surgical Products, Pharmaceuticals, and Instruments

As a major factor driving preference for single-use instruments, patient safety was the most frequently listed (64%) (Table 2). OICS surgeons most frequently cited liability reduction (66%), easier regulatory approval (65%), and manufacturer profit (62%). Patient preference was listed least often by both ESCRS (10%) and OICS (6%) surgeons as a major driver for single-use instruments.

Mirroring their counterparts in the OICS survey, most ESCRS respondents are either reusing or willing to reuse topical or intraocular pharmaceuticals and many surgical supply items (Table 4). However, more ESCRS surgeons than OICS surgeons were currently reusing intraocular antibiotics (48% vs 32%), miotics (28% vs 20%), lidocaine (39% vs 30%), capsular dye (21% vs 10%), phacoemulsification tips (48% vs 38%) and tubing (21% vs 7%), irrigating solution (26% vs 8%), cystotomes (32% vs 13%), and disposable surgical devices (16% vs 9%).

ESCRS and OICS respondents were very similar in their ranking of factors affecting their willingness to reuse supplies and medications on multiple patients (Table 5). More ESCRS surgeons considered the risk of endophthalmitis to be a major factor (64% vs 48%); fewer ESCRS surgeons were strongly influenced by cost savings (47% vs 63%), efficiency (49% vs 63%), and malpractice liability (41% vs 51%). Reducing environmental footprint was more likely to be a major factor for ESCRS surgeons to use reprocessed single-use supplies and devices (79% vs 58%).

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Table 4. Willingness to use products on multiple patients^a

	Currently use as multidose ESCRS (OICS), %	Willing to consider multidose use ESCRS (OICS), %	Unwilling to use as multidose ESCRS (OICS), %	Unsure ESCRS (OICS), %
ESCRS (OICS): n = 326 (1044)				
Rate your willingness to use the following on multiple patients in cataract surgery				
Topical pharmaceuticals from bottles (multidose)				
Mydriatics	43 (48)	48 (51)	7 (1)	2 (1)
Antibiotics	43 (45)	43 (53)	10 (1)	4 (1)
NSAIDs	34 (38)	52 (59)	9 (1)	5 (2)
Anesthetic	42 (43)	48 (55)	7 (1)	2 (1)
IOP-lowering meds	32 (42)	55 (55)	10 (1)	3 (1)
Intraocular pharmaceuticals				
ESCRS (OICS): n = 326 (1050)				
Antibiotics	48 (32)	39 (63)	10 (3)	3 (2)
Alpha-agonists/mydriatics	33 (34)	50 (61)	13 (2)	3 (3)
Miotics	28 (20)	53 (73)	15 (3)	5 (2)
Lidocaine	39 (30)	45 (65)	12 (3)	4 (2)
Capsular dye	21 (10)	53 (80)	20 (7)	6 (3)
Corticosteroids (eg, triamcinolone)	21 (16)	55 (76)	18 (4)	7 (4)
Commercially packaged solutions (in general)	19 (11)	61 (84)	12 (3)	7 (2)
Compounded solutions (in general)	15 (12)	60 (74)	15 (7)	10 (7)
Solutions mixed by OR nurse (in general)	23 (15)	47 (67)	22 (10)	9 (8)
Supply items (assuming that they are cleaned and sterilized appropriately)				
ESCRS (OICS): n = 332 (1070)				
Phacoemulsification tips	48 (38)	42 (54)	8 (5)	2 (3)
Irrigation-aspiration (IA) tips	48 (41)	40 (49)	9 (6)	3 (4)
Phacoemulsification and IA tubing	21 (7)	55 (69)	17 (17)	8 (7)
Irrigating solution/bottle (ie, use open bottles for more than 1 patient)	26 (8)	47 (70)	21 (15)	7 (6)
Capsulotomy needle/cystotome	32 (13)	33 (59)	29 (22)	7 (6)
Small gauge cannulas	18 (27)	38 (47)	36 (21)	8 (6)
Metal blades	18 (14)	43 (64)	31 (18)	8 (4)
Nonmetal surgical devices (iris and capsule retractors, pupil expansion rings)	16 (9)	48 (63)	27 (20)	9 (8)
Sutures (eg, other half)	12 (3)	33 (56)	44 (32)	11 (9)

OICS = Ophthalmic Instrument Cleaning and Sterilization; OR = operating room

^aComparison with OICS survey respondents shown in parentheses

Table 6 shows that ESCRS and OICS respondents are similarly motivated or interested in adopting a variety of waste-reducing strategies. In declining order of interest, this includes eliminating the full-body drape (88%), short-cycle autoclave sterilization (83%), sending unused topical pharmaceuticals home with patients (82%), not changing patients into hospital gowns (77%), and not changing surgical gowns (55%) or gloves (17%) between every case.

DISCUSSION

Most of the cataract surgeons responding to the earlier OICS survey were American (86%), whereas the current survey respondents were predominately European (77%).⁴ Using the identical survey methodology and questionnaire permits a direct comparison of the responses from these 2 regions. The attitudes of European and North American cataract surgeons toward surgical waste are strikingly

similar. Specifically, there is a strong consensus that OR waste from cataract surgery is excessive and that many supplies, drugs, and devices could be safely reused rather than discarded after a single use. Demonstrating strong concordance of opinion across 2 different continents is significant. It suggests to hospitals, governmental regulatory agencies, and pharmaceutical and supply manufacturers that these opinions and preferences are likely to be universally held worldwide, rather than shaped primarily by local differences in reimbursement or practice patterns.

The survey results are at odds with the premise that patients and surgeons desire more single-use instrumentation and supplies (Table 2). To the contrary, most surgeons prefer having more reusable supply and device options. If of equal cost and functionality, 77% of ESCRS surgeons preferred reusable instruments and only 10% preferred disposable

Table 5. Factors affecting willingness to use products on multiple patients^a

ESCRS (OICS): n = 321 (1037)	Significant impact ESCRS (OICS), %	Some impact ESCRS (OICS), %	No impact ESCRS (OICS), %
To what extent do the following factors decrease your willingness to use supplies and medications on multiple patients			
Endophthalmitis risk	64 (48)	26 (38)	9 (15)
TASS risk	40 (43)	43 (39)	17 (18)
Concern over staff safety	18 (11)	38 (37)	44 (52)
Decreased efficiency	13 (7)	36 (31)	50 (62)
Malpractice liability	41 (51)	41 (38)	18 (11)
To what extent do the following factors increase your willingness to use supplies and medications on multiple patients			
ESCRS (OICS): n = 313 (1026)			
Cost savings	47 (63)	46 (35)	7 (2)
Waste reduction	76 (78)	21 (20)	3 (2)
Reduced carbon footprint	73 (66)	23 (27)	4 (7)
Improved efficiency	49 (63)	37 (33)	14 (4)
To what extent do the following factors affect your willingness to use reprocessed single-use medical supplies and devices?			
ESCRS (OICS): n = 301 (1009)	Major factor ESCRS (OICS), %	Minor factor ESCRS (OICS), %	Not significant ESCRS (OICS), %
Cost	56 (59)	39 (33)	6 (8)
Safety risk	78 (72)	18 (22)	4 (6)
Performance of the item	77 (79)	21 (18)	2 (3)
Relationship with and/or confidence in vendor	31 (33)	46 (39)	22 (27)
Facility regulations	55 (72)	37 (24)	8 (5)
Patient perception	12 (16)	52 (44)	35 (39)
Environmental/carbon footprint considerations	79 (58)	18 (30)	3 (12)

OICS = Ophthalmic Instrument Cleaning and Sterilization; TASS = toxic anterior segment syndrome

^aComparison with OICS survey respondents shown in parentheses

instruments. OICS surgeons had a similar 10-fold preference for reusable over disposable instruments.⁴

Surgical pharmaceutical waste accounts for significant cost, materials extraction, waste generation, and carbon emissions.⁵ A 2019 study analyzed the economic and

environmental impact of medication waste at 4 cataract surgical facilities.⁶ Discarded topical eyedrops and ointments from unused or partially used containers accounted for a significant share of this waste. Based on their analysis, the authors estimated that drug wastage from cataract

Table 6. Willingness to adopt waste-reducing practices^a

ESCRS (OICS): n = 315 (1031)	Currently done ESCRS (OICS), %	Willing to consider ESCRS (OICS), %	Unwilling to consider ESCRS (OICS), %	Unsure ESCRS (OICS), %
What is your willingness to do the following in cataract surgery?				
Eliminate a full-body drape (use a face drape only)	47 (44)	41 (51)	10 (4)	3 (1)
Do not change the patient into hospital gown (patient stays in own clothing)	50 (56)	27 (34)	19 (7)	4 (3)
Do not change surgical gowns between every case (surgeon and scrub nurse)	10 (4)	45 (60)	38 (28)	6 (7)
Do not change surgical gloves between every case	3 (1)	14 (16)	75 (77)	8 (7)
OR staff use same surgical mask all day	49 (64)	33 (31)	13 (4)	5 (1)
Reprocess and reuse single-use instruments from surgeries (eg, third-party reprocessing contract)	14 (7)	70 (84)	11 (5)	5 (4)
Use short-cycle, sequential same-day sterilization techniques (shortened autoclave cycle)	26 (26)	57 (65)	10 (5)	7 (5)
Immediately sequential bilateral cataract surgery	14 (8)	45 (48)	32 (34)	10 (10)
Send pharmaceuticals (eg, topical antibiotics) home with patients from the OR	27 (26)	55 (67)	9 (4)	9 (2)
Save and donate unused surgical supplies	20 (26)	70 (71)	7 (2)	3 (1)

OICS = Ophthalmic Instrument Cleaning and Sterilization; OR = operating room

^aComparison with OICS survey respondents shown in parentheses

surgery cost approximately \$150 per case and generated 23 000 to 105 000 metric tons of unnecessary CO₂e emissions annually in the United States.

In the current survey, most respondents were either currently reusing or willing to consider reusing topical medications from multidose bottles (Table 3). This ranged from at least 86% willing to reuse topical antibiotics and IOP-lowering drops to 91% willing to reuse topical mydriatics and anesthetic. This is similar but slightly lower than that in the OICS survey in which at least 98% were willing to reuse these 4 categories of topical medications from multiuse bottles. Although most ESCRS surgeons apparently felt that this practice was safe, only 42% to 43% were currently reusing antibiotics, mydriatics, and anesthetic, and only 32% were reusing topical IOP-lowering drugs. A similar discrepancy was reported in the OICS survey in which only 42% to 48% were currently reusing these topical medications from multidose bottles. A subsequent subanalysis of the OICS survey data found that surgeons operating in ASCs were much more likely to be reusing pharmaceuticals and supplies, compared with those operating in hospitals.⁷ These findings suggest that regulations imposed by hospitals and regulatory agencies are preventing surgeons from otherwise reusing topical medications from multidose containers perioperatively.

To address this issue, the OICS Task Force released a multisociety position paper on reducing surgical drug waste in April 2022.⁸ Documenting the policies of multiple regulatory and accreditation agencies in the United States, this evidence-based paper clarified that multidose bottles can be used on multiple patients until the labeled date of expiration; they need not be arbitrarily discarded at the end of the day, the week, or the month. The paper also stated the task force consensus that surgical patients requiring a topical medication not used for other patients should be allowed to bring that partially used medication home for postoperative use. These recommendations were endorsed by ASCRS, AAO, OOSS, and the American Glaucoma Society. Subsequently, all 50 American state ophthalmology societies formally endorsed this position statement as well. The current survey data support the rationale for adopting these recommendations worldwide.

Compared with the OICS survey respondents, ESCRS surgeons were more likely to be reusing intraocular pharmaceuticals and surgical supply items (Table 4). That many more ESCRS surgeons were practicing in hospitals compared with OICS surgeons (68% vs 35%) suggests that economic factors, such as physician ownership in ASCs, were not the only drivers of reuse in Europe. Among intraocular drugs, nearly half (48%) were reusing intraocular antibiotics. Intraocular cefuroxime is commercially available in many EU countries and is mixed by adding 5 mL of solvent to a bottle containing 50 mg of cefuroxime powder. The instructions for use specify single use, meaning that only 0.1 mL (1 mg) of reconstituted cefuroxime is used per case. Surgeons may be more inclined to use a single

bottle for multiple patients rather than discard 98% of the drug provided by the manufacturer.

Another notable discrepancy was that 83% of ESCRS surgeons were willing to use shorter autoclave cycles for sequential same-day cases, but only 26% were currently doing so. The OICS survey demonstrated an even greater discrepancy (91% vs 26%). This may reflect that general surgery guidelines often discourage the use of shorter instrument sterilization cycles. However, the OICS Task Force conducted studies supporting the safety of short-cycle steam sterilization for ophthalmic instruments used for sequential same-day cases and defended this practice in its 2018 guidelines for ophthalmic instrument processing.^{9,10}

Many long-standing OR protocols are evidence based, rather than evidence based.³ Other universal protocols that are of benefit for general surgical cases may not be necessary for ophthalmic surgery. For example, the Aravind Eye Care System of hospitals has documented an excellent endophthalmitis rate of 0.04% in 2 million consecutive cases despite routinely reusing all the products listed in Table 4.¹¹ This is identical to the 0.04% endophthalmitis rate in 8.5 million cataract surgeries reported from the AAO Intelligent Research in Sight Registry during this same period.¹² In large part because procurement of surgical supplies and pharmaceuticals accounts for the highest percentage of the carbon footprint of phacoemulsification, a single phacoemulsification at Aravind generates 1/20th the carbon emissions of a single phacoemulsification in the United Kingdom.¹³ Further studies are needed to determine whether many potentially wasteful OR regulations are necessary for ophthalmic surgery. For example, a study from the OICS Task Force supported the safety of reusing phacoemulsification tips that are labeled single use.¹⁴ A recent retrospective study at Aravind found that not changing surgical gowns and gloves after every case, not having patients wear hospital gowns over their clothing, not cleaning the OR floor and surfaces after every case, and operating on multiple patients simultaneously in the same OR did not result in a higher rate of endophthalmitis.¹⁵

In line with these study results from Aravind, the ESCRS and OICS surveys found a clear consensus from more than 1500 international cataract surgeons that many pharmaceutical and surgical supplies should be safe to reuse. This does not mean that such reuse should become standard or required in every facility. Rather, in the absence of better evidence to the contrary, surgeons should have more discretion over pharmaceutical and surgical supply reuse. This parallels our ability to prescribe and practice off label by exercising our best scientific judgement. Strict prohibition of reusing the items listed in Tables 4 and Tables 6 should be based on evidence, rather than arbitrary general surgical guidelines.

The majority of ESCRS (94%) and OICS (87%) respondents wanted their medical societies to advocate for reducing the environmental impact of ophthalmic surgery. In 2022, the EyeSustain.org website was launched at the ASCRS annual meeting. Cosponsored by ASCRS, ESCRS, and AAO,

EyeSustain is a global coalition of ophthalmologists and eye societies seeking to collaborate on making ophthalmic care and surgery more economically and environmentally sustainable. Current information and resources for reducing surgical waste and ophthalmology's carbon footprint are collected and made freely available on this website for the global ophthalmic community to access. Furthermore, the ESCRS "Mission Zero" is a plan to improve sustainability in all its activities as a society; this includes zero landfill waste and zero net carbon emissions from its annual congress by 2023.¹⁶

Surveys are subject to selection bias based on who responds. However, taken together, the ESCRS and OICS surveys, with more than 1500 respondents, demonstrate that ophthalmologists worldwide are very concerned about climate change and are strongly motivated to reduce surgical waste. This message must be heeded by manufacturers as well as the hospitals and regulatory agencies that establish OR policies. To find solutions to the disproportionate and expanding carbon footprint of ophthalmic surgery, research and innovation should be prioritized.¹⁷ These surveys provide a strong mandate for ophthalmologists and the pharmaceutical and supply industry to partner in reducing the environmental impact of surgery. Following the example of the recent multisociety position paper on multidose topical medications, our profession can, through collaboration, take major strides toward reducing surgical waste and assuring the financial and environmental sustainability of the vital services that we deliver.^{8,16}

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WHAT WAS KNOWN

- In a 2020 survey, most North American cataract surgeons felt that surgical waste was excessive; in addition to more reusable product options, they wanted more discretion from manufacturers and regulatory agencies to reuse supplies and pharmaceuticals.
- Most were willing to reuse topical and intraocular medications, as well as many surgical devices and supplies.

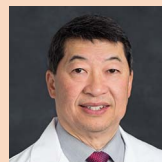
WHAT THIS PAPER ADDS

- ESCRS member cataract surgeons had very similar attitudes toward operating room waste and a similar willingness to reuse medications and supplies.
- Compared with North Americans, ESCRS surgeons were much more likely to operate in hospitals than ambulatory surgery centers. Despite this, even more were currently reusing surgical supply items and intraocular pharmaceuticals, such as intracameral antibiotics.

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First author:

David F. Chang, MD

University of California, San Francisco, San Francisco, California