INTERNATIONAL CONTACT LENS PRESCRIBING IN 2020

We report on the trends in prescribing highlighted by our 20th global survey in a year rocked by a global pandemic.

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This article is our 20th consecutive annual report of international contact lens prescribing for *Contact Lens Spectrum*. The premise of the work is simple. As an alternative to asking a cross section of contact lens wearers about the lenses that they use and the basis on which the lenses are worn, we move upstream in the process and directly survey those who are fitting contact lenses in numerous markets around the world. This presents a more "leading edge" indicator of contact lens fitting habits; the lenses fitted today are those sold tomorrow. The aim here is to provide summary information for colleagues in clinical practice, industry, and academia about contact lens prescribing behaviors to inform their patient management, research and development, and educational curricula, respectively.

Since the start of this initiative, numerous colleagues have come forward to help coordinate work in their country or region *pro bono*. They each select a representative group of contact lens practitioners in their area (typically optometrists, opticians, and/or ophthalmologists) and supply a survey form either in hard copy or as an online questionnaire. The participating practitioners provide generic information about up to 10 contact lens fits including data on the age and sex of each patient and descriptors of the lens material, design, replacement frequency, wearing modality, anticipated weekly usage, and care system prescribed. Over time, we have collected information on about 414,000 contact lens fits in 71 markets. Here, we report our overview of the contact lens prescribing situation for 2020.

KEY WEARER INFORMATION

For 2020, data on about 100 or more fits were received from 24 markets, providing details of about 13,311 contact lens fits (Table 1). This is the lowest survey return in recent years and is explained by the difficulty in gathering this information during the global COVID-19 pandemic; this both limited the number of contact lens fits in many markets and also hindered the operation of survey-based work such as this. For example, New Zealand, which has contributed data to this initiative each year from 2004 to 2019, was not able to participate this year due the impact of national lockdowns on day-to-day optometric activity. Where data were made available, it was generally for contact lens fitting conducted during the middle or late northern hemisphere summer, with the excep-

> The rate of GP prescribing has remained relatively constant due to increasing diversity of utilization.

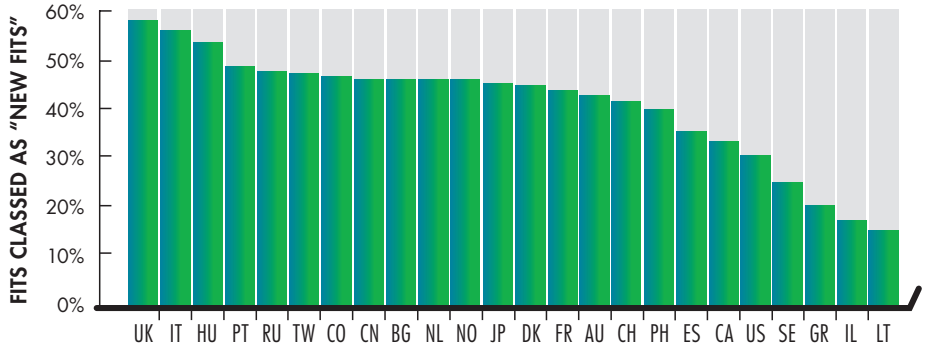

Figure 1. The proportion of lens fits described as "new fits" in 2020. See Table 1 for country abbreviations.

tion of a small number of markets (e.g., Australia and the United Kingdom) where sufficient information could be collected before the slow-down or closure of contact lens practice from March 2020 onward.

Our dataset reveals that the mean age at fitting is similar to previous years (32.4 ± 15.6 years), with 65% of lenses prescribed to females. Twelve percent of wearers fitted are anticipated to use their lenses on

TABLE 1

DEMOGRAPHIC INFORMATION FOR ALL SURVEYED MARKETS

Country	Total fits	Mean ± SD age	% female	% new fits	% part time (≤ 3 days)
Australia (AU)	192	37.5 ± 18.6	60%	43%	28%
Bulgaria (BG)	440	28.5 ± 10.9	69%	46%	8%
Canada (CA)	1,938	35.1 ± 17.2	67%	34%	15%
Switzerland (CH)	143	37.0 ± 17.0	56%	41%	10%
China (CN)	130	28.0 ± 12.9	67%	46%	6%
Colombia (CO)	320	31.1 ± 12.1	67%	46%	2%
Denmark (DK)	278	37.6 ± 17.2	59%	44%	0%
Spain (ES)	510	32.0 ± 16.0	63%	34%	8%
France (FR)	320	36.1 ± 17.6	62%	43%	6%
Greece (GR)	771	30.2 ± 9.9	57%	18%	14%
Hungary (HU)	100	29.0 ± 14.9	59%	53%	16%
Israel (IL)	374	30.3 ± 10.8	63%	15%	9%
Italy (IT)	465	33.3 ± 16.0	57%	55%	7%
Japan (JP)	3,402	29.1 ± 15.2	65%	45%	11%
Lithuania (LT)	450	31.3 ± 10.4	66%	12%	23%
Netherlands (NL)	439	37.3 ± 18.8	59%	46%	6%
Norway (NO)	190	34.2 ± 17.0	57%	46%	10%
Philippines (PH)	192	29.7 ± 11.1	72%	38%	7%
Portugal (PT)	119	31.3 ± 14.9	61%	48%	7%
Russia (RU)	303	26.2 ± 10.2	71%	47%	3%
Sweden (SE)	424	36.9 ± 15.8	60%	25%	10%
Taiwan (TW)	423	28.1 ± 9.6	85%	47%	0%
United Kingdom (UK)	761	38.7 ± 17.1	66%	57%	30%
United States (US)	627	37.0 ± 16.8	63%	29%	6%
OVERALL	**13,311**	**32.4 ± 15.6**	**65%**	**36%**	**12%**

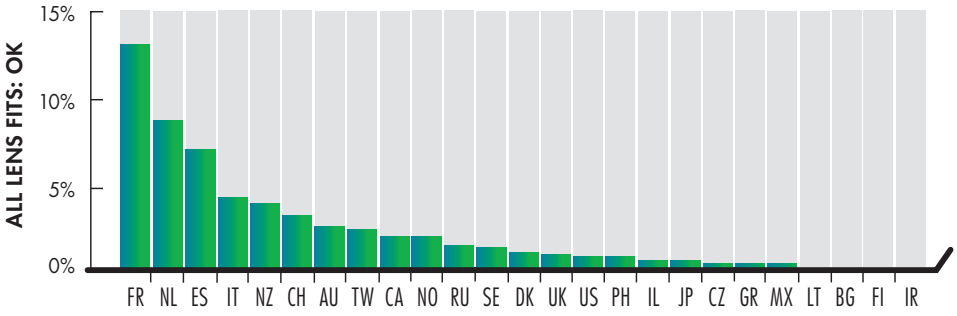

Figure 2. The proportion of all lens fits reported as orthokeratology from 2016 to 2020 for markets reporting at least 1,000 fits. See Table 1 for country abbreviations. NZ = New Zealand, CZ = Czechia, MX = Mexico, FI = Finland, IR = Iran.

a part-time basis (i.e., three days per week or fewer). Overall, 36% of lenses are prescribed on a "new fit" basis. This can be interpreted as an indirect measure of the health of a contact lens market. A higher proportion of new fits signals a greater uptake of contact lenses by those who have no previous experience with lens wear and may indicate a growing market. On the other hand, when this metric is low, it means that many fits are to existing wearers who are prescribed a modification to their current lenses or an upgrade to

TABLE 2

BREAKDOWN OF ALL LENS FITS INTO SEVEN KEY CATEGORIES OF LENSES

Country	Rigid (non-OK)	OK	DD hydrogel	DD SiHy	Reusable DW hydrogel	Reusable DW SiHy	Soft EW
AU	9%	2%	5%	52%	7%	21%	4%
BG	14%	0%	4%	6%	10%	58%	8%
CA	8%	3%	12%	33%	6%	32%	5%
CH	34%	7%	2%	30%	3%	21%	4%
CN	0%	4%	14%	27%	24%	21%	9%
CO	21%	0%	1%	2%	10%	65%	1%
DK	11%	0%	34%	20%	6%	20%	9%
ES	16%	14%	7%	9%	12%	41%	2%
FR	36%	**10%**	4%	21%	3%	27%	0%
GR	2%	0%	8%	5%	26%	59%	0%
HU	11%	20%	4%	40%	0%	17%	8%
IL	4%	0%	22%	24%	17%	31%	1%
IT	15%	**8%**	10%	28%	7%	31%	1%
JP	12%	0%	28%	23%	12%	25%	0%
LT	0%	0%	3%	27%	1%	39%	30%
NL	35%	6%	15%	13%	4%	24%	3%
NO	5%	2%	15%	36%	9%	26%	6%
PH	7%	1%	2%	6%	24%	50%	12%
PT	8%	0%	10%	25%	15%	41%	0%
RU	0%	0%	0%	7%	7%	79%	7%
SE	17%	2%	11%	23%	2%	41%	4%
TW	5%	0%	46%	12%	29%	8%	0%
UK	3%	0%	17%	44%	3%	31%	2%
US	5%	0%	6%	28%	8%	49%	3%
OVERALL	**10%**	**3%**	**14%**	**24%**	**9%**	**35%**	**5%**

SEE TABLE 1 for country abbreviations. **OK** = orthokeratology **DD** = daily disposable **DW** = daily wear **EW** = extended wear

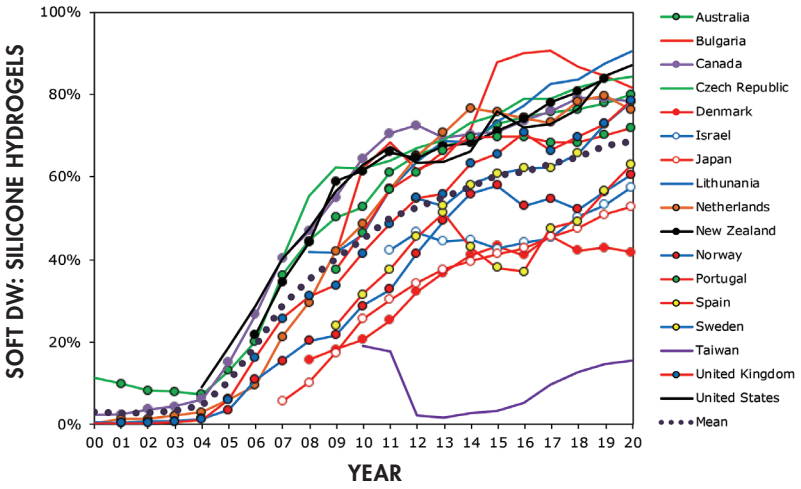

Figure 3. Silicone hydrogel prescribing since 2000 for 17 markets in 2020. Data points are three-year moving averages.

their lens design or material—a sign that relatively few new wearers are being attracted to the market. In 2020, a small number of markets have more than a 50% new-fit rate (United Kingdom, Italy, and Hungary), with this rate less than 20% for Greece, Israel, and Lithuania (Figure 1).

Table 2 shows the main classifications of lenses prescribed. The rate of GP lens prescribing has remained stable at 13%, comprising 10% standard GP fits and 3% orthokeratology lenses. For daily wear soft lens fits, reusable lenses are prescribed slightly more commonly (44% of all fits, made up of 9% hydrogels and 35% silicone hydrogels) compared to daily disposable lenses (38% of all fits, broken down into 14% hydrogels and 24% silicone hydrogels). Five percent of all fits are reported to be soft extended wear contact lenses.

GP LENSES

It seems that the rate of GP lens prescribing has remained relatively constant in recent years due to an increasing diversity of utilization for this family of lens types (Table 3). One example here is scleral lens fitting, which was negligible 15 to 20 years ago but now accounts for around 3% of all patients fitted. Orthokeratology lens fits account for a similar fraction of overall activity, and Figure 2 shows a summary of differences between markets. This form of correction is relatively common in some European markets including France, Netherlands, Spain, and Italy. High-oxygen-permeable corneal GP lenses (Dk greater than 90 units) account for about half of all GP lens fits.

TABLE 3

DETAILED INFORMATION FOR ALL PRESCRIBED GP LENSES ONLY FOR MARKETS REPORTING > 35 GP LENS FITS

		AU	BG	CA	CH	CO	ES	FR	IT	JP	NL	SE	UK	US	OVERALL
DESIGN	Rigid lenses for new fits	9%	17%	13%	42%	17%	21%	60%	16%	4%	36%	20%	2%	8%	**13%**
	Rigid lenses for refits	13%	12%	11%	40%	25%	34%	35%	32%	19%	45%	21%	4%	4%	**15%**
	Scleral	12%	0%	25%	24%	4%	30%	30%	28%	0%	34%	33%	4%	50%	**23%**
MATERIALS	PMMA	0%	0%	0%	0%	16%	1%	0%	2%	1%	1%	0%	0%	0%	**1%**
	Low Dk (< 40)	0%	0%	3%	3%	5%	2%	4%	1%	10%	3%	35%	5%	0%	**4%**
	Mid Dk (40-90)	8%	0%	50%	15%	32%	18%	1%	13%	20%	31%	4%	67%	39%	**23%**
	High Dk (> 90)	80%	100%	22%	58%	43%	48%	64%	56%	69%	31%	28%	23%	12%	**49%**
DESIGN	Sphere	49%	99%	19%	3%	51%	42%	53%	24%	78%	13%	56%	32%	16%	**38%**
	Toric	5%	0%	11%	35%	27%	4%	11%	23%	2%	49%	15%	12%	20%	**19%**
	Multifocal	0%	0%	7%	20%	3%	6%	3%	12%	11%	18%	0%	33%	20%	**9%**
	Monovision	14%	1%	3%	13%	0%	0%	0%	1%	1%	1%	0%	5%	4%	**2%**
	OK	20%	0%	31%	17%	1%	46%	22%	34%	2%	15%	10%	6%	7%	**22%**
	Myopia control	11%	0%	29%	12%	0%	2%	0%	2%	0%	3%	19%	13%	7%	**6%**
	Other	1%	0%	1%	0%	18%	1%	11%	4%	6%	1%	0%	1%	25%	**4%**
	Planned replacement	48%	100%	47%	84%	78%	92%	92%	62%	23%	57%	99%	55%	77%	**66%**
	Extended wear	38%	0%	36%	8%	0%	46%	0%	7%	0%	10%	0%	15%	6%	**18%**

SEE TABLE 1 for country abbreviations. **PMMA** = polymethylmethacrylate **OK** = orthokeratology

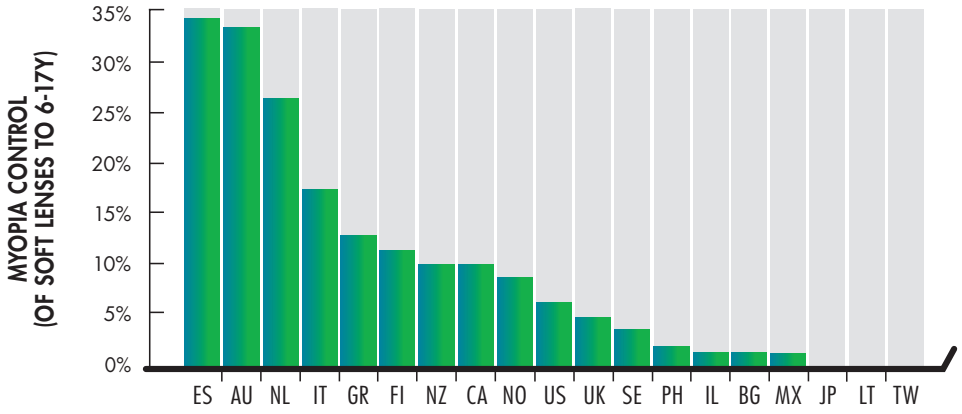

Figure 4. The proportion of lenses classified as "myopia control" of those fitted to patients aged 6 to 17 years from 2018 to 2020. See Table 1 for country abbreviations.

SOFT LENSES

Soft lenses account for 87% of lens fits, with this lens type now dominated by silicone hydrogel materials (72% of soft lenses prescribed) (Table 4). Figure 3 shows the increase in prescribing silicone hydrogel materials over the past 21 years for 17 markets for which we hold long-term data. The trend here is clear. Since the launch of silicone hydrogel lenses for daily wear use in 2004, there was a dramatic rise in the uptake of these lenses from 2004 to 2011, followed by a slower increase. In recent years, there is evidence of an emergence of a subset of markets (Spain, United

TABLE 4

DETAILED INFORMATION FOR ALL PRESCRIBED SOFT LENSES FOR MARKETS REPORTING > 100 SOFT LENS FITS

		AU	BG	CA	CN	CO	CZ	DK	ES	FR	GR	IL	IT
	Soft lenses for new fits	91%	83%	87%	93%	83%	100%	86%	79%	40%	98%	99%	84%
	Soft lenses for refits	87%	88%	89%	98%	75%	100%	91%	66%	65%	98%	95%	68%
MATERIALS	Low water content (< 40%)	12%	0%	3%	12%	0%	10%	1%	2%	4%	1%	1%	2%
MATERIALS	Mid water content (40-60%)	0%	11%	8%	5%	4%	2%	22%	5%	5%	4%	3%	8%
MATERIALS	High water content (> 60%)	2%	7%	11%	28%	10%	4%	28%	20%	3%	30%	38%	13%
MATERIALS	Silicone hydrogel	86%	83%	78%	56%	86%	85%	49%	73%	87%	66%	59%	78%
DESIGN	Sphere	37%	63%	38%	71%	44%	38%	33%	48%	39%	59%	52%	25%
DESIGN	Toric	37%	15%	32%	6%	32%	57%	26%	25%	28%	26%	40%	34%
DESIGN	Cosmetic tint	0%	0%	1%	15%	2%	0%	3%	0%	0%	4%	0%	0%
DESIGN	Multifocal	16%	19%	23%	4%	10%	5%	22%	13%	30%	9%	8%	30%
DESIGN	Monovision	5%	1%	5%	3%	6%	0%	16%	1%	1%	0%	0%	2%
DESIGN	Myopia control	5%	0%	1%	0%	3%	0%	1%	13%	1%	1%	0%	8%
DESIGN	Other	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	1%
REPLACEMENT	Daily	67%	13%	54%	48%	4%	46%	68%	22%	45%	13%	49%	50%
REPLACEMENT	1-2 weekly	12%	10%	6%	7%	0%	8%	2%	2%	14%	34%	25%	3%
REPLACEMENT	Monthly	12%	73%	40%	31%	74%	45%	28%	66%	41%	51%	23%	37%
REPLACEMENT	3-6 monthly	1%	4%	0%	6%	12%	0%	2%	8%	0%	1%	0%	8%
REPLACEMENT	Annually	7%	0%	0%	4%	3%	1%	0%	1%	0%	0%	3%	1%
REPLACEMENT	Unplanned	0%	0%	0%	4%	6%	0%	0%	0%	0%	0%	0%	1%
	Extended wear	5%	9%	6%	10%	1%	1%	10%	2%	0%	0%	1%	1%
	EW with silicone hydrogels	100%	81%	99%	19%	93%	100%	94%	92%	100%	•	67%	100%
	MPS	92%	97%	80%	98%	97%	95%	60%	95%	93%	92%	85%	76%
	Presbyopes multi/mono	49%/13%	65%/2%	54%/12%	53%/33%	43%/23%	52%/0%	36%/27%	58%/4%	74%/4%	60%/2%	83%/0%	76%/4%

See Table 1 for country abbreviations. **EW** = extended wear **MPS** = multipurpose solution

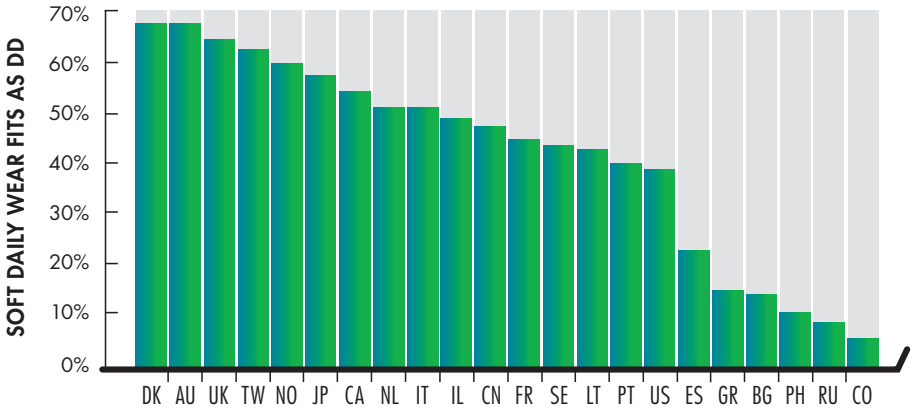

Figure 5. Daily disposable prescribing in 2020. See Table 1 for country abbreviations.

Kingdom, Israel, Japan, and Denmark) that fit a somewhat lower proportion of silicone hydrogels compared to most countries including the United States, Lithuania, and Australia.

About half of all soft lenses prescribed are spheres, one-quarter are torics (this would include patients fitted with one spherical lens and one toric lens), and 14% are multifocals. If only presbyopes are considered, 52% are prescribed multifocal lenses and 10% a monovision correction. Overall, 2% of soft lens fits were described as "myopia control" (a term that is now used synonymously with "myopia management"). This lens

JP	LT	NL	NO	PH	PT	RU	SE	TW	UK	US	OVERALL
96%	100%	64%	88%	90%	92%	100%	80%	96%	98%	88%	87%
81%	100%	55%	93%	94%	91%	100%	79%	93%	96%	89%	86%
7%	0%	4%	0%	18%	0%	4%	1%	51%	4%	2%	5%
9%	6%	8%	13%	6%	2%	0%	8%	1%	4%	7%	6%
29%	0%	22%	15%	7%	24%	3%	8%	27%	13%	7%	17%
55%	94%	66%	72%	69%	73%	93%	83%	21%	79%	84%	72%
74%	74%	30%	34%	54%	28%	84%	34%	83%	34%	42%	51%
17%	11%	29%	43%	22%	39%	10%	36%	16%	38%	33%	27%
2%	6%	0%	0%	12%	0%	1%	0%	1%	1%	2%	2%
5%	7%	24%	19%	12%	26%	4%	22%	0%	22%	16%	14%
1%	0%	6%	4%	0%	4%	2%	6%	0%	5%	6%	3%
0%	0%	10%	1%	0%	3%	0%	2%	0%	1%	1%	2%
0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	1%	0%
58%	43%	50%	59%	10%	38%	8%	43%	62%	64%	38%	46%
40%	2%	6%	7%	1%	8%	25%	3%	2%	3%	16%	16%
1%	54%	42%	28%	66%	53%	65%	53%	36%	33%	46%	35%
0%	0%	1%	2%	19%	0%	2%	1%	0%	0%	0%	1%
0%	0%	0%	4%	4%	0%	0%	0%	0%	0%	0%	1%
1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0%	31%	5%	6%	12%	0%	6%	5%	0%	2%	3%	5%
71%	100%	99%	96%	62%	100%	93%	96%	•	100%	51%	93%
82%	84%	88%	85%	92%	97%	97%	95%	99%	96%	90%	88%
28%/2%	48%/2%	58%/14%	49%/11%	51%/0%	70%/17%	39%/0%	53%/14%	6%/0%	56%/10%	52%/17%	52%/10%

The final row indicates the proportion of multifocal and monovision lenses prescribed when patients were over 45 years of age.

type, of course, is generally prescribed to children. Figure 4 shows an analysis of how commonly these lenses are prescribed to patients aged 6 to 17 years for markets for which we hold information about at least 1,000 lens fits from 2018 to 2020. This demonstrates a high proportion of myopia control lenses prescribed for this age group in Spain, Australia, Netherlands, and Italy. This finding is especially important in Spain, where a significant fraction of all contact lenses are prescribed to children (i.e., myopia control lenses represent a "high proportion of a high proportion"), and this signifies an important development in that market in recent years.

In 2020, daily disposable contact lenses were prescribed slightly less (46% of daily wear soft lens fits) compared to reusable lenses (the remaining 54%).

Many markets prescribe around 40% or more of soft contact lenses for daily replacement.

Again, there is considerable variation in prescribing of this lens type (Figure 5), although many markets prescribe around 40% or more of soft contact lenses for daily replacement. Spain, Greece, Bulgaria, the Philippines, Russia, and Colombia are the only markets that do not reach this threshold. **CLS**

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