

INTERNATIONAL CONTACT LENS PRESCRIBING IN 2017

Our 17th annual report in *Contact Lens Spectrum* reveals current global trends in contact lens prescribing.

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For the past 17 years, our international consortium of academics and industry experts has presented an annual report on contact lens prescribing in this journal. We collect prospective fitting information from contact lens clinicians around the world; our total database now includes information about 354,000 contact lens fits undertaken in 62 countries.

For 2017, we obtained information on almost 20,000 fits across 30 markets. We employed the same methodology as in previous years: national coordinators sent out survey forms via mail or electronic means that requested information about 10 patients fit with contact lenses after receipt to contact lens practitioners in their market. Data were requested about the age and gender of the patients; material, design, replacement, and wearing modality information of the lenses; weekly wearing frequency; and care system type. Each fit was weighted relative to the estimated annualized number of fits of the practitioner, and the forms and data were analyzed at the University of Manchester and the University of Waterloo.

KEY WEARER INFORMATION

Table 1 shows the key attributes of contact lens wearers fitted in 2017. The average age at fitting in some markets (United Kingdom and Germany) is now greater

than 40 years. This is likely related to the long-standing nature of these markets (with patients attending repeatedly for refitting as they age) and also to the increasing success of multifocal lenses, which brings a greater number of older wearers to the market. Some evidence also points to younger wearers having a greater tendency to source their lenses online, and this factor might also play a role. On the other hand, some developing markets (such as those in eastern Europe, Israel, and the Philippines) report an average age at fitting of less than 30 years.

As in previous years, two-thirds of lens fits are to females. In addition, about one-third of fits are “new fits” (to patients who have no recent contact lens experience), and most patients (89%) are fitted for lens wear of four days per week or more.

Figure 1 shows the major changes in fitting practices since the start of this survey. Some important trends are evident. The proportion of GP fits has changed from about 20% of fits in the late 1990s to about 10% to 15% over the past decade. Soft extended wear fitting has remained reasonably stable at around 5% to 10% for most of this same period.

The most marked change, of course, has been the uptake in usage of silicone hydrogel (SiHy) lenses. This annual project was initiated prior to the launch of the SiHy lenses, meaning that all soft lenses at the time were traditional hydrogel materials. The first two

SiHy lenses were introduced just before the turn of the century and were soon followed by others, resulting in a rapid increase of the fitting of this material type to the point today at which three-quarters of all reusable soft lenses are SiHy lenses. Interestingly, the rate of uptake of SiHy lenses has slowed over the past five years.

Another important change has been the increase in daily disposable lens prescribing. This lens type accounted for about one in eight lenses fit 20 years ago but accounts for about one in four lenses fit today. The prescribing of SiHy materials for this modality has lagged behind that of reusable lenses, presumably due to the later launch of SiHy daily disposables. However, 2017 marks the first year in which we report more SiHy than traditional hydrogels for daily disposable prescribing.

GP LENSES

GP lenses accounted for 11% of all fits, with an ad-

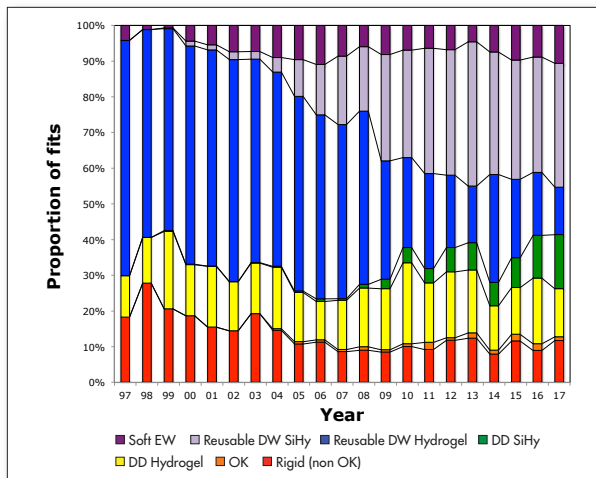


Figure 1. Major global trends in contact lens prescribing from 1997 to 2017.

DEMOGRAPHIC INFORMATION FOR ALL SURVEYED MARKETS

TABLE 1

Country	Total fits	Mean (\pm SD) age	% female	% new fits	% part time (\leq 3 days)
Argentina (AR)	420	37.6 \pm 16.0	62%	22%	5%
Austria (AT)	100	39.6 \pm 14.7	64%	27%	8%
Australia (AU)	362	37.2 \pm 16.6	68%	40%	29%
Bulgaria (BG)	450	27.8 \pm 9.1	69%	67%	3%
Canada (CA)	1,115	37.2 \pm 16.9	69%	41%	21%
Switzerland (CH)	684	37.4 \pm 16.0	65%	36%	13%
Czech Republic (CZ)	441	31.4 \pm 13.6	68%	44%	30%
Germany (DE)	151	40.6 \pm 15.3	61%	24%	2%
Denmark (DK)	303	37.1 \pm 15.7	61%	38%	1%
Spain (ES)	698	31.8 \pm 15.4	63%	70%	19%
Finland (FI)	84	36.3 \pm 14.6	69%	37%	34%
France (FR)	640	37.6 \pm 16.7	69%	38%	10%
Greece (GR)	731	30.5 \pm 11.0	61%	26%	12%
Hungary (HU)	157	28.4 \pm 12.6	62%	55%	1%
Israel (IL)	577	28.7 \pm 11.5	64%	36%	4%
Iran (IR)	846	26.9 \pm 4.5	67%	48%	27%
Italy (IT)	350	34.0 \pm 15.7	59%	45%	11%
Japan (JP)	4,029	29.5 \pm 15.3	69%	46%	0%
Lithuania (LT)	400	30.8 \pm 11.2	63%	21%	20%
Moldova (MD)	164	23.1 \pm 9.0	71%	68%	2%
Netherlands (NL)	875	39.0 \pm 16.9	68%	33%	4%
Norway (NO)	275	38.0 \pm 16.0	65%	30%	11%
New Zealand (NZ)	780	37.2 \pm 16.6	65%	32%	17%
Philippines (PH)	2,551	28.2 \pm 9.3	71%	18%	2%
Portugal (PT)	131	31.7 \pm 14.3	64%	42%	13%
Singapore (SG)	111	30.4 \pm 10.5	67%	19%	18%
Slovenia (SI)	133	36.2 \pm 15.2	52%	35%	4%
Taiwan (TW)	711	32.0 \pm 11.4	75%	18%	0%
United Kingdom (UK)	1,010	40.2 \pm 16.6	65%	52%	25%
United States (US)	319	37.0 \pm 16.5	69%	15%	8%
Overall	19,598	32.7 \pm 14.8	66%	37%	11%

ditional 1% of fits for orthokeratology. These figures represent a small increase over 2016. Orthokeratology accounts for 4% or more of all fits in France, Hungary, and the Netherlands, although it is barely fit (1% or less) in most markets (Table 2).

High-Dk GPs are the material of choice, representing around 50% of GP fits (Table 3). Spherical lenses account for just under half of GP fits, with torics (17%) and multifocal/monovision lenses (18%) the next most widely prescribed lens designs. Forty-two percent of GP lenses are prescribed on a planned replacement basis, with 8% of prescribed as extended wear.

SOFT LENSES

Soft lenses continue to dominate lens prescribing, accounting for 89% of new fits and 87% of refits world-

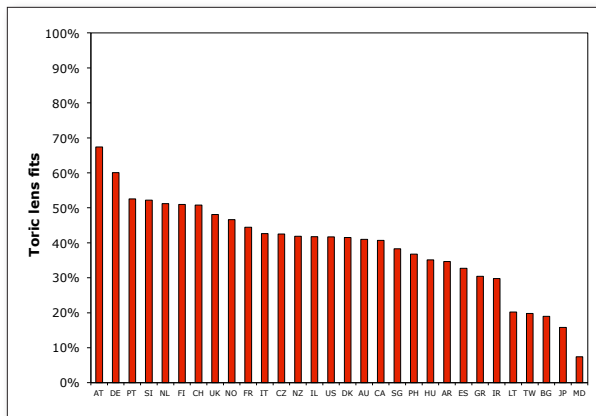


Figure 2. Prescribing of toric lenses as a proportion of spherical + toric lenses only.

BREAKDOWN OF ALL LENS FITS INTO SEVEN KEY CATEGORIES OF LENSES

TABLE 2

Country	Rigid (non OK)	OK	DD hydrogel	DD SiHy	Reusable DW hydrogel	Reusable DW SiHy	Soft EW
AR	6%	0%	9%	1%	31%	47%	5%
AT	49%	1%	7%	4%	7%	32%	1%
AU	7%	3%	15%	38%	3%	30%	5%
BG	5%	0%	1%	5%	6%	71%	11%
CA	7%	0%	15%	30%	3%	44%	1%
CH	10%	1%	20%	9%	8%	35%	18%
CZ	0%	0%	10%	21%	7%	57%	5%
DE	72%	1%	2%	1%	18%	8%	0%
DK	5%	1%	36%	28%	5%	18%	8%
ES	9%	2%	7%	27%	32%	19%	5%
FI	3%	0%	14%	31%	1%	44%	6%
FR	23%	4%	7%	17%	5%	44%	0%
GR	3%	0%	12%	10%	30%	41%	3%
HU	14%	4%	11%	32%	6%	33%	1%
IL	5%	0%	29%	15%	19%	26%	5%
IR	5%	0%	1%	0%	47%	37%	10%
IT	12%	3%	14%	30%	7%	29%	4%
JP	13%	0%	30%	18%	14%	24%	0%
LT	0%	0%	8%	18%	2%	43%	29%
MD	0%	0%	3%	2%	41%	29%	26%
NL	26%	6%	4%	6%	11%	45%	2%
NO	4%	2%	29%	35%	6%	16%	9%
NZ	7%	1%	11%	27%	6%	47%	1%
PH	1%	0%	1%	2%	14%	43%	39%
PT	2%	0%	15%	17%	16%	48%	2%
SG	2%	0%	44%	18%	8%	28%	0%
SI	48%	0%	2%	10%	4%	36%	0%
TW	4%	0%	45%	12%	33%	5%	0%
UK	4%	1%	30%	28%	5%	30%	3%
US	4%	0%	12%	7%	8%	55%	15%
Overall	11%	1%	14%	15%	13%	35%	11%

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

wide (Table 4). SiHy lenses account for two-thirds of soft lenses prescribed, and with the notable exception of Taiwan (18%), all markets prescribe at least 41% of soft lenses as SiHy lenses. This figure is highest in Bulgaria, with more than 90% of fits.

Spherical fits were a slight majority of those reported (52%), with patients prescribed at least one toric lens in 26% of fits. This latter value varies considerably by country (Figure 2). If only spherical and toric lens fits are considered (i.e., multifocal, monovision, colored, and myopia control lenses are disregarded), then the proportion of toric lens fits varies from 7% in Moldova to close to 70% in Austria. In general, around 45% of a contact lens-wearing population has 0.75D or more of astigmatism in one or both eyes, so we might expect the level of toric lens prescribing to be at approximately the same level. Indeed, many markets are close to this prescribing threshold, which probably signals increasing confidence in prescribing toric lenses due to improved designs, a wider portfolio of materials and modalities, and more consistent manufacturing. Only 1% of soft lenses are prescribed for myopia control. With soft lenses now commercially available for such use in some markets, we expect our survey to act as a good tracker for development in this area.

The most widely prescribed replacement interval is monthly (43% of fits), closely followed by daily disposables (37%). Daily disposables are now the most widely

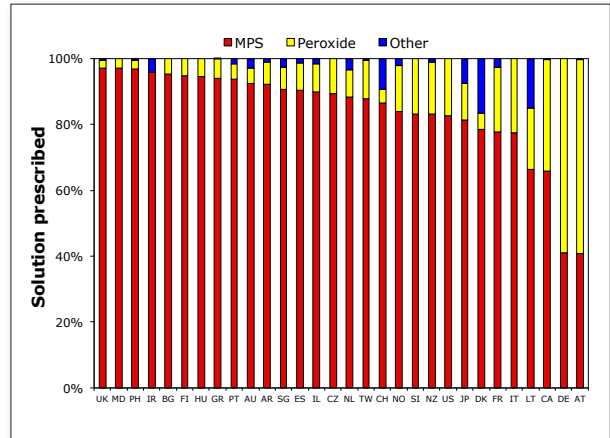


Figure 3. Care regimens prescribed in 2017.

fitted replacement modality in 11 of the markets surveyed. Extended wear accounted for 13% of soft contact lenses prescribed.

Analysis of presbyopes revealed an ongoing increase in the use of multifocal lenses. The prescribing of such designs has doubled over the past decade, presumably again reflecting better products and perhaps an increasing demand in established markets as patients fitted in their 20s and 30s reach presbyopia. Currently, about half of all presbyopic-age patients are fitted with a multifocal option, with a further 9% fit with monovision.

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

	MATERIALS															Overall
	AR	BG	CA	CH	DE	ES	FR	IR	IT	JP	NL	NZ	SI	UK		
Rigid lenses for new fits	8%	3%	10%	7%	77%	11%	39%	3%	18%	5%	23%	17%	18%	3%	11%	
Rigid lenses for refits	5%	12%	8%	11%	70%	10%	25%	7%	16%	21%	31%	17%	64%	9%	13%	
Low-Dk (<40)	35%	0%	3%	6%	14%	59%	0%	0%	4%	11%	17%	0%	0%	0%	13%	
Mid-Dk (40-90)	53%	18%	32%	27%	75%	16%	12%	0%	33%	27%	43%	5%	39%	71%	38%	
High-Dk (>90)	12%	82%	64%	68%	10%	24%	88%	100%	49%	60%	40%	95%	61%	29%	48%	
Sphere	92%	86%	17%	27%	37%	66%	34%	13%	18%	80%	26%	35%	61%	28%	45%	
Toric	0%	0%	2%	22%	30%	5%	16%	0%	18%	1%	21%	17%	22%	8%	17%	
Multifocal/monovision	0%	0%	48%	43%	20%	1%	19%	9%	6%	12%	29%	8%	0%	36%	18%	
Ortho-k	5%	0%	7%	7%	1%	17%	15%	0%	20%	2%	18%	17%	0%	11%	9%	
Myopia control	0%	14%	25%	0%	6%	0%	0%	2%	6%	0%	4%	22%	0%	1%	3%	
Other	3%	0%	1%	1%	6%	10%	16%	76%	32%	5%	2%	0%	17%	17%	8%	
Planned replacement	34%	100%	39%	67%	17%	25%	82%	63%	60%	17%	33%	39%	100%	80%	42%	
Extended wear	0%	0%	4%	9%	2%	15%	18%	0%	22%	0%	15%	2%	0%	7%	8%	

SEE TABLE 1 for country abbreviations.

For care systems, multipurpose solutions were prescribed for 86% of lens fits (among modalities for which a care solution is required). The use of peroxide was considerable in Germany and Austria in particular (Figure 3) and also was notable in key markets such as Canada, France, the United States, and Japan. **CLS**

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

	AR	AU	BG	CA	CH	CZ	DK	ES	FR	GR	HU	IL
Soft lenses for new fits	92%	88%	97%	90%	93%	100%	95%	89%	61%	95%	71%	95%
Soft lenses for refits	95%	92%	88%	92%	89%	100%	94%	90%	75%	97%	92%	96%
Low water content (<40%)	10%	0%	1%	3%	0%	1%	2%	2%	1%	3%	2%	3%
Mid water content (40-60%)	5%	8%	5%	12%	20%	8%	26%	5%	10%	1%	13%	35%
High water content (>60%)	30%	13%	3%	5%	18%	9%	19%	40%	6%	40%	6%	17%
Silicone hydrogel	54%	80%	91%	80%	61%	82%	53%	53%	84%	55%	80%	46%
Sphere	56%	45%	77%	40%	38%	47%	42%	55%	40%	61%	49%	52%
Toric	31%	32%	16%	27%	35%	36%	32%	27%	29%	28%	28%	37%
Cosmetic tint	3%	0%	0%	0%	1%	0%	0%	1%	0%	3%	0%	2%
Multifocal/monovision	10%	21%	2%	27%	24%	17%	25%	14%	31%	8%	22%	9%
Myopia control	0%	2%	5%	5%	1%	0%	0%	3%	0%	0%	0%	0%
Other	0%	0%	0%	1%	2%	0%	1%	0%	0%	0%	0%	0%
Daily	12%	62%	7%	49%	41%	32%	74%	40%	33%	23%	53%	49%
1-2 weekly	35%	10%	6%	15%	4%	7%	3%	5%	14%	19%	2%	17%
Monthly	30%	27%	84%	34%	54%	60%	21%	49%	52%	56%	45%	31%
3-6 monthly	7%	0%	3%	1%	2%	0%	0%	2%	2%	1%	0%	2%
Annually	12%	0%	0%	1%	0%	1%	1%	2%	0%	1%	0%	1%
Unplanned	4%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Extended wear	6%	6%	12%	1%	21%	5%	8%	5%	0%	3%	1%	5%
EW with silicone hydrogels	86%	100%	80%	73%	100%	100%	74%	82%	100%	64%	100%	29%
MPS	92%	95%	95%	66%	87%	89%	80%	90%	78%	94%	95%	91%
Presbyopes multifocal/monovision	12%/4%	40%/13%	25%/0%	45%/22%	47%/10%	51%/7%	42%/10%	60%/7%	70%/1%	46%/5%	86%/5%	62%/3%

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

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IR	IT	JP	LT	MD	NL	NO	NZ	PH	PT	SG	TW	UK	US	Overall
97%	82%	95%	98%	100%	77%	92%	83%	97%	95%	90%	92%	97%	95%	89%
93%	84%	79%	100%	100%	69%	94%	83%	100%	99%	100%	96%	91%	96%	87%
14%	1%	8%	0%	30%	2%	6%	3%	1%	2%	1%	12%	3%	5%	3%
13%	11%	10%	13%	8%	8%	22%	10%	18%	17%	3%	25%	20%	12%	12%
30%	14%	33%	1%	20%	14%	12%	6%	7%	13%	50%	45%	15%	7%	19%
44%	74%	49%	85%	41%	76%	59%	81%	75%	68%	46%	18%	62%	76%	65%
53%	43%	78%	60%	82%	32%	36%	44%	51%	37%	41%	60%	38%	47%	52%
25%	30%	15%	17%	8%	34%	30%	31%	14%	41%	25%	20%	35%	32%	26%
21%	1%	2%	9%	9%	0%	0%	1%	27%	2%	16%	12%	1%	1%	5%
0%	22%	5%	13%	0%	34%	33%	23%	7%	17%	17%	8%	25%	18%	16%
0%	3%	0%	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%	2%	1%
0%	0%	0%	1%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
1%	55%	56%	37%	6%	16%	74%	41%	5%	33%	63%	60%	63%	23%	37%
0%	10%	41%	6%	2%	9%	3%	17%	1%	4%	17%	10%	4%	22%	14%
29%	32%	1%	55%	63%	67%	20%	37%	81%	60%	19%	19%	33%	55%	43%
53%	1%	0%	1%	30%	5%	3%	1%	8%	3%	0%	1%	0%	0%	3%
15%	1%	0%	0%	0%	0%	0%	3%	3%	0%	0%	9%	0%	0%	2%
2%	0%	1%	0%	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	1%
11%	5%	0%	29%	26%	3%	10%	1%	40%	2%	0%	0%	3%	15%	13%
98%	71%	17%	99%	85%	71%	80%	100%	31%	100%	•	•	96%	99%	59%
98%	78%	82%	71%	97%	89%	86%	84%	97%	94%	93%	88%	97%	83%	86%
•	58%/0%	26%/1%	64%/0%	0%/0%	64%/8%	48%/17%	24%/33%	66%/1%	73%/13%	58%/23%	13%/2%	50%/14%	29%/17%	49%/9%

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