

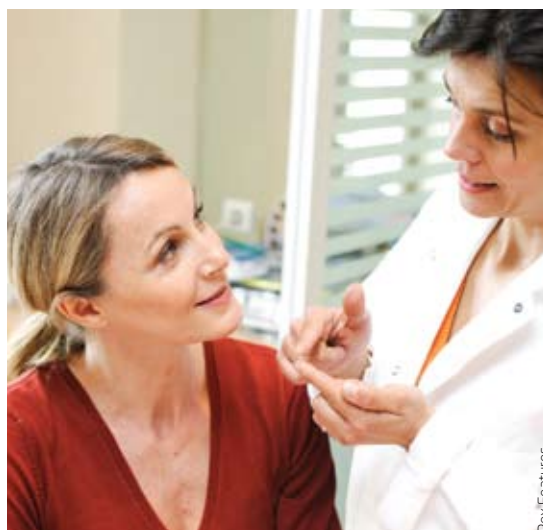
# Do contact lens wearers wash their hands of our advice?

**T**he phrase ‘if it weren’t for the patients, the job would be easy’, says it all. Keeping contact lens patients on the right track with respect to the wear and care of their lenses is probably one of the most challenging aspects of patient care. With great contact lenses and care products, it should be easy; however, in the hands of real patients, things can go awry. This first article reviews a recent international survey of patient compliance and identifies key elements over which practitioners may lever their influence.

## International survey

Over 4,000 patients in 14 countries were surveyed during the latter half of 2010 to establish their routine lens-wearing habits.<sup>1</sup> Particular attention was paid to the steps of lens wear and care which have been shown to be associated with an increased risk of microbial keratitis. The countries were selected on the basis of either high or potentially high use of contact lenses. The contact lens wearing respondents were from an ‘access panel’ of people who have

In the first of two articles dealing with patient compliance, **Sarah Morgan** looks at a study of trends in compliance behaviour in different countries



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volunteered to be involved in surveys of this kind. The participants were contacted via email and were asked to complete a web-based survey. While this may seem to skew the selection of contact lens wearers to those with

internet access, routine internet use is commonplace among the general population (36-82 per cent of the population of countries surveyed, except India at 8 per cent).<sup>2</sup>

This study was novel in that it simultaneously reviewed the behaviours of patients in a range of countries where clinical practice is varied. From this standpoint, the range of outcomes was not predictable. A sample size of at least 200 respondents from each country was considered to be sufficient for statistical analysis.

## Survey participants

Detailed information was collated for each participant which included their age, gender, educational level and country. With respect to their lens wearing experience the duration of lens wear, wearing pattern (ie days per week), and time since their last examination by an eye care professional (ECP) was recorded.

A total of 4,021 contact lens wearers responded and this comprised of 2,141 females and 1,880 males with an age of 36.8 ±11.7 years in a range of 20-60 years. Table 1 shows the distribution of participants by country and by lens type worn. The lens types were categorised into daily disposable (DD), rigid, soft planned replacement daily wear (SPR-DW where lenses were replaced monthly or more frequently), soft planned replacement extended wear (SPR-EW where lenses were replaced monthly or more frequently), soft lenses worn on a daily wear basis but replaced less frequently than monthly (Trad-soft).

**The eye care practitioner must find effective methods to help keep the patient compliant**

## What optimal behaviours are we looking for?

Epidemiological studies have revealed specific risk factors among contact lens wearers with respect to adverse events associated with lens wear.<sup>3-13</sup> Microbial keratitis (MK), is the most concerning of these events due to its potentially sight-threatening consequences. The

**TABLE 1**

**Respondents split by country and lens type**

	DD	Rigid	SPR-DW	SPR-EW	Trad-soft	Grand total
Australia	71	20	76	45	21	233
Canada	46	11	113	26	17	213
China	121	15	135	60	172	503
Germany	61	39	87	24	15	226
Spain	34	10	107	27	32	210
France	40	14	132	20	15	221
India	14	6	53	22	110	205
Italy	133	20	127	21	8	309
Japan	79	76	87	5	3	250
Korea	75	18	29	8	78	208
Poland	41	7	87	51	20	206
Russia	43	4	67	38	65	217
UK	122	47	104	38	9	320
US	56	62	414	121	47	700
<b>Total</b>	<b>936</b>	<b>349</b>	<b>1,618</b>	<b>506</b>	<b>612</b>	<b>4,021</b>



**TABLE 2**  
Relative risk of microbial keratitis with improper vs proper patient behaviours

Behaviour	Lens type	Relative risk	% wearers non-compliant
No disinfectant used	DW, EW	55.9 <sup>9</sup> - 21.8 <sup>5</sup>	18%
EW beyond six nights	EW	6.7 <sup>12</sup>	15%
Lenses worn beyond replacement schedule	DD, DW, EW	4.8 <sup>10</sup>	63%
No hand-washing prior to lens handling	DD, DW, EW	4.5 <sup>13</sup> - 1.5 <sup>2</sup>	60%
Overnight wear (when not prescribed)	DD, DW	4.0 <sup>12</sup>	47%
Inadequate case cleaning	DW, EW	4.0 <sup>5</sup>	96%
No rub & rinse step (when product specifies)	DW, EW	3.5 <sup>8</sup>	80%
Topping up solution in lens case	DW, EW	2.5 <sup>10</sup>	37%

risk factors can be further described in their association of an increasing likelihood of MK during contact lens wear (Table 2).

### The ECP viewpoint

The risk factors can be considered by ECPs in terms of those which they have the opportunity to influence (eg reminding the patient about case care) and those over which they have none (eg patient age, gender, socio-economic status). While the latter might influence patient selection when first fitting contact lenses, once a wearer is ensconced in lens wear, it is useful for ECPs to be conscious of where they might best focus their attention during subsequent progress visits and examinations. This includes attention to specific elements of the education provided at the initial instructional visit when a patient commences lens wear, considerations of risk factors specific to the patient type, and how the ECP subsequently best spends the

chair-time during follow-up visits. In all patient-contact scenarios, 'advice time' may be utilised in those areas of potential non-compliance which carry the greatest risk of, and potential for, subsequent undesirable consequences, such as MK.

### Defining compliance

'Compliance' among contact lens wearers may be defined as the wearer adhering to the recommended instructions provided by both the ECP in addition to those provided by the manufacturers of the contact lenses and care products. The survey identified a total of eight modifiable behaviours, which in epidemiological studies have been shown to increase the likelihood of contact lens-associated MK (Table 2). Most relate to all daily wear patients wearing re-usable lenses, with some applicable to extended wear and/or daily disposable use. Three key behaviours were identified

to be pertinent to daily disposable users. For extended wear and daily wear of reusable lenses, a total of seven behaviours were described as key instructions to be followed to minimise the risk of MK (Table 2).

When reviewing the 'ideal' behaviours, any 'misbehaviour' that carries with it an increased risk of MK requires ECP intervention. A good example of this is the risk associated with not disinfecting reusable lenses before they are re-worn.<sup>5,9</sup> While only 18 per cent of patients in the survey were non-compliant with this behaviour, given that the increased risk of MK could be as much as 55.9 times, discovering those patients who fail to do this step and providing the necessary re-education is important and potentially sight-saving. While a patient may be asked at aftercare 'what solution do you use' and recording that response, saying 'tell me what you do when you remove your lenses' or perhaps 'how often do you change the solution in your case' can be a rather more illuminating approach into the actual behaviour.

In spite of the variety of countries surveyed, non-compliance with case care appears to be widespread globally. Some care products are supplied with a new lens case to help promote regular case replacement, but the survey results suggest that almost all patients require further education regarding appropriate case cleaning and care (Figure 1).

When the responses from all countries were analysed as one data set, the following observations were made:

- Some extended wear patients sleep in their lenses beyond the recommended period (15 per cent wearers non-compliant)
- 37 per cent of wearers 'top up'



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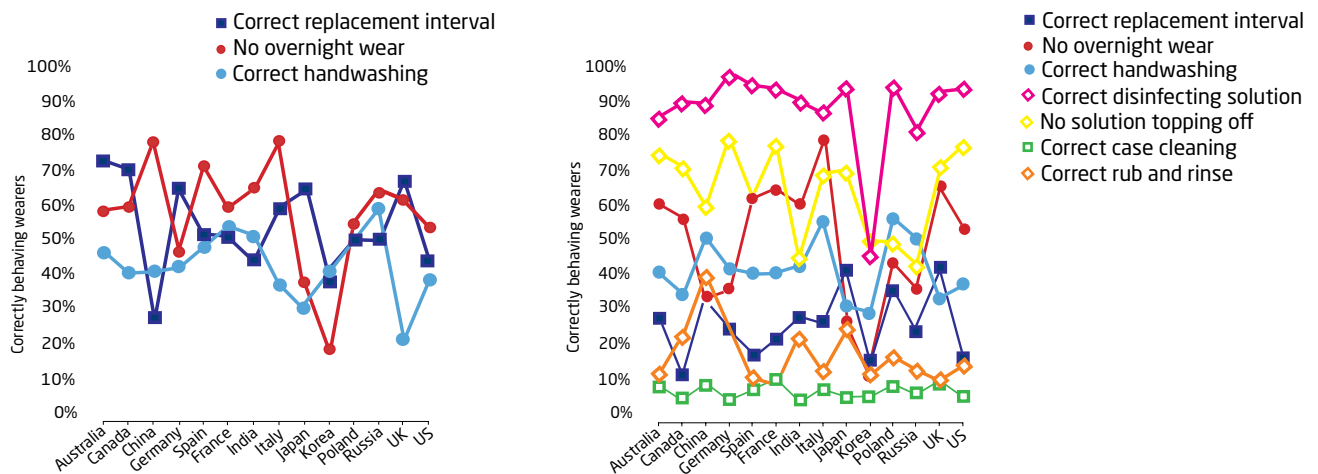
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**Figure 1** Proportion of correctly behaving wearers for DD (left) and SPR-DW (right)

their solutions (ie failing to use new solution for disinfection every time)

- 47 per cent of wearers prescribed lenses for daily wear sleep in their lenses
- Around 60 per cent of wearers do not replace their lenses as recommended and additionally fail to wash their hands correctly
- 80 per cent of wearers do not perform the 'rub and rinse' step (discounting those prescribed a 'no-rub' product)
- Over 90 per cent of wearers did not follow appropriate case care instructions
- 85 per cent of daily disposable lens users were non-compliant in some way (although this group had the highest percentage of fully compliant wearers)
- Non-compliance was close to 100 per cent for all lens types (except daily disposables).

Further analysis of the survey data revealed that certain factors played a role in determining whether or not a wearer was compliant: country, lens type, gender, age, days per week of lens wear, and time since last examination by an ECP.

South Korea stood out to have significantly more non-compliant wearers. The reasons for this are not immediately obvious, and there may be several factors at play including practitioner-patient interaction.<sup>14</sup> Contact lens supply is more deregulated compared with most other markets, and issues with wearers using lenses for overnight use when prescribed for only daily wear and incorrect solution use may be dealt with were there a regulatory requirement to consult an ECP.

Daily disposable lens wear was

associated with the best compliance (Figure 1). This apparent trend may be largely attributed to ease of use and the relatively few steps required to achieve compliance – notably the lack of care regimen and lens case and the accompanying multitude of instructions necessary for appropriate use.

Participants who used their lenses on a part-time basis were more compliant than those wearers using their lenses for full-time wear. Additionally, a recent visit to the ECP was a factor in the participant showing more compliance.

Women were shown to be more compliant than men, and older respondents were more compliant than their younger counterparts. Poorer compliance in males has been reported previously.<sup>15</sup> The medical literature offers some parallels in the area of hypertensive therapy<sup>16</sup> and long-term treatment after myocardial infarction.<sup>17</sup> Intuitively, comparing the potential risk of loss of sight versus life, it is not unreasonable to assume that a higher level of compliance would be seen when there is an increased risk of death. However, the research reveals that non-compliance is prevalent even with the risk of death and mirrors that of the survey results showing women to be more compliant than men, and older patients showing better compliance than younger patients.

### Key areas to target

The survey highlights a high level of non-compliance over which ECPs have potential influence. Not only is it important to ask appropriate questions during every aftercare visit to elicit the current level of compliance in a given patient, but it is equally important to utilise the

time during the consultation to help steer the patient back to compliant behaviours to help minimise the risk of MK for each individual patient. For each ECP, one of their patients having MK is one patient too many, and this plays a part in the drive to increase compliance in all contact lens wearers. Increasing awareness among ECPs and their assistants about the typical areas of non-compliance, and the groups who are more likely to display non-compliant behaviours, serves to help consider in-practice strategies to optimise success with lens wear.

### Case cleaning

Case care is the one element of lens wear and care which appears to be in need of the most attention (especially given its four-fold increased risk of MK when not performed correctly<sup>5</sup>) with 96 per cent of wearers surveyed non-compliant with the recommended advice. Supplying a new case with every pack of solution is a step in the right direction, but this in itself does not educate the patient about daily case care. Indeed, some patients may not use the new case at all, continuing with their old case, because they are unaware that regular case replacement is the latest advice. With this element of lens wear being universally poor, all practice staff can be made aware of the necessity to update all patients on appropriate case hygiene and replacement. Discarding the old solution, cleaning the case and case caps with disinfecting solution, and leaving the case and case caps face down to air dry to minimise contamination is generally recommended.<sup>18</sup>

### Lens care

Although there has been a recent trend to make lens care more convenient



with the introduction of 'no-rub' products, the action of rubbing and rinsing the lens reduces the microbial load on a contact lens surface by 99.9 per cent.<sup>19</sup> Excepting those wearers in the survey using a no-rub product, 80 per cent of respondents did not perform this step correctly. This further highlights the need to ask all patients at aftercare 'tell me what you do when you remove your lenses' to investigate those who need further instruction on this step in lens care.

## Lens replacement

Only 63 per cent of wearers in the survey do not replace their lenses at the recommended interval. Strategies such as monthly payment plans with lenses and solutions supplied in bulk, and in some cases mailed directly to patients, may serve to reduce the impetus for patients to extend the use of their lenses beyond the recommended replacement schedule. Advising patients to set reminders on their mobile phone may also help to develop good habits in this regard.

## Hand-washing

In the survey, 60 per cent of respondents were non-compliant with hand-washing prior to handling lenses. This outcome reinforces the need to instil good hand hygiene practices at the outset with ongoing reminders at all follow-up appointments.

## The young male

Female patients are consistently flagged in compliance studies as being more compliant than males, and age plays a role with older patients exhibiting more compliant behaviours.<sup>16,17</sup> Young males are notably the least compliant category, with youth having been shown to increase the likelihood of risk taking<sup>20</sup> and males having a stronger tendency to feel immortal and immune from disease.<sup>21</sup>

## Other considerations

It is interesting to note that part-time wearers were found to be more compliant than the full-time wearers in the survey. Perhaps one reason for this may be the lack of familiarity with the routine makes the part-time wearer think more conscientiously of the recommended steps to follow, where the full-time wearer may be more prone to losing some of the steps of the routine as they develop their 'own' system.

The most compliant patient category from the survey appears to

be the older female, part-time wearer who has recently seen her ECP. Therefore, in stark contrast, care must be taken regarding the young male, full-time wearer who fails to attend for aftercare. The patients in the survey who had recently seen their ECP demonstrated better compliance, which may be attributed to the recency of being reminded about correct procedures. Alternatively, it may be that more compliant patients, by definition, are more likely to see their ECP on a regular basis.

## Summary

Among the challenges of delivering successful contact lens wear are two notable issues: (1) end of day comfort and (2) corneal inflammation and infection during lens wear. Practitioner awareness of the key steps of lens wear and care with which patients are likely to be non-compliant helps direct attention to those elements during ongoing aftercare visits. Not only is it important for practitioners to appreciate how rife non-compliance is, but it is also vital that appropriate questions are asked during the patient visit to elicit whether or not the patient in the chair requires behaviour modification.

## How to make it happen

Having taken stock of the contact lens wearing population and their alignment or otherwise to complying, adhering and concordance with advice, the challenge remains for practitioners to find effective methods to steer the patient back to the line of compliance. With greater adherence to the recommended instructions, the risks of lens wear are significantly reduced. Not only will patients be happier and more successful with contact lens wear, but ECPs should find themselves managing fewer problems. The second article will factor in the human element – what subtle steps can ECPs take to have positive results to engage with their patient and increase compliance. ●

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