

# Review *of* Cornea & Contact Lenses



JUNE 2013

## Understanding the **Psychology** of Non-Adherence

What happens in the minds of patients to keep them from following proper lens wear and care regimens?

### ALSO INSIDE THIS ISSUE:

- My Preferred Replacement Schedule
- Continuous Wear Revisited: What's the Case for it?
- Avoid These Medicolegal Pitfalls

Supplement to

**REVIEW**  
OF OPTOMETRY

JUNE 2013

Earn 1 CE credit in this issue.  
See "Making the Case for Daily  
Disposables," p.26.



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**References:** 1. In a survey of 284 daily and extended wear contact lens patients. Alcon data on file, 2012. 2. In a survey of 311 optometrists in the U.S.; Alcon data on file, 2012.

See product instructions for complete wear, care, and safety information.

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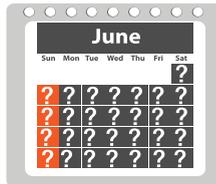
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## Smoke Gets in Your Eyes

It's no news that cigarette smoking has deleterious effects on health. It causes a broad spectrum of harm, including stained teeth, gum disease, wrinkles in the face/sagging skin and oral cancer.<sup>1-3</sup> It increases the risk of osteoporosis, lung cancer and cardiovascular disease. Smokers have reduced athletic ability, reproductive problems and early menopause, not to mention assorted ocular complications.<sup>1</sup>

Large, population-based studies (the Rotterdam, the Physician's Health and Nurse's Health, Beaver Dam, Blue Mountain) have highlighted the perils of smoking and its effects on the eye, starting with the ocular surface and extending to the optic nerve. In addition to an increased risk of cataracts and retinal disease, the jury is still out regarding glaucoma and diabetic retinopathy, but several investigations have also shown an increased risk of these as well.<sup>1</sup>

Thyroid function in smokers is adversely affected. Smokers show decreased levels of TSH and thyroglobulin, have obvious hypoxic effects on muscular tissue, and an overall decreased thyroid function.<sup>3</sup> In addition, smokers appear to have a delayed response to treatment. Their thyroid-related eye disease is almost always exacerbated while smoking.

All forms of AMD carry a higher risk in smokers and former smokers. Studies have theorized that the risks are likely due to lipid peroxidation, decreased plasma antioxidants, retinal hypoxia/ischemia and induced ocular inflammation. Ischemic changes in smokers induced by vasoconstriction, increased blood viscosity, promo-

tion of arteriosclerotic changes and decreased oxygen capacity in hemoglobin also contribute to ischemic optic neuropathy and retinal vascular occlusions.<sup>1,2</sup>

Epidemiologic studies have clearly shown the attendant risks in smoking for contact lens wearers.<sup>4-6</sup> They have reduced corneal sensation, decreased tear film stability and an increased corneal punctate staining along with a tendency for increased lacrimal obstruction and decreased lysozyme concentration.<sup>1,3</sup> Lens wearers who smoke have a 4x greater risk of developing corneal infiltrates and a 3x greater risk of microbial keratitis.<sup>4-6</sup>

### The Lipopolysaccharide Link

Why is chronic smoking/exposure to smoke a risk to lens wearers? Might smoking simply be a surrogate for risky behavior or a link to bad hygiene? More likely, is there a direct, deleterious impact from the toxins rather than a grouping of confounders? The lipopolysaccharide (LPS) connection might just be the answer.

Lipopolysaccharides are the constituents of gram-negative bacteria outer membranes (endotoxins) and also contaminants of tobacco smoke. It can be recovered from the hands of any smoker, because tobacco smoke is contaminated with LPS.<sup>7,8</sup> This serves as a direct vector to the lens, and ultimately ends up in wearers' eyes.

Pulmonologists are intrigued by LPS, which is responsible for the induction of proliferative airway changes in smokers.<sup>7</sup> Chronic exposure to smoke and its toxins through LPS activates the toll-like receptors' signaling pathway. This results in transcription of pro-

inflammatory cytokines and initiation of innate immune responses. In smokers, LPS may be involved in bacterial infection-induced exacerbation in COPD patients. Perhaps this might explain the increased risk of inflammatory, and even infectious, responses in lens wearers who smoke.

As eye care practitioners, we are strategically poised to encourage patients to quit or reduce cigarette smoking, and also to care for those who continue to smoke. Counselors recommend the five "A"s: (1) ask each patient on every annual visit about their tobacco use; (2) administer clear, non-judgmental and personalized suggestions; (3) assess each patient's readiness and interest in quitting; (4) assist and refer to appropriate counselors; and (5) arrange for adequate follow-up.<sup>9</sup>

Stayed tuned for additional information on any LPS connection as eye researchers look closely at the association in signaling pathways/inflammatory cascade thru Toll-like receptors in the cornea. In the meantime, we can have a significant impact with our patients on another front by encouraging smoking cessation. **RCCL**

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## In The News

- Menicon's subsidiary **Lagado** has received FDA clearance for Lagado LSH (mangofilcon A), a new silicone hydrogel lens material. Formulated to meet the growing demand for made-to-order SiHy lenses, this mid-range water content (49%) material can be used in a wide variety of designs.

Lagado LSH lenses will be plasma oxidized to produce a low wetting angle and improved wettability—helping to promote lens comfort, improve visual performance and reduce the potential for deposits, the company says. Additionally, the LSH material's physical properties help make it stable, durable and easy to handle.

- **CooperVision** recently kicked off an awards program that will bring recipients and company scientists together to explore new areas of technology advancement. The effort will address ocular surface health and anterior segment symptomology through advancement of technologies including but not limited to materials, devices and compounds.

"Our goal is to support science and encourage a focus on unmet needs that can be translated back to our community," says chief technology officer Arthur Back. The awards "will provide scientists in academia and research institutes a substantive opportunity to pursue emerging ideas and concepts in a meaningful and focused way," he says.

Two awards will be given, one for research spanning a one-year period (the Seedling Award) and another for multi-year efforts (the Translational Research Award).

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# Omega-3s Aid Dry Eye

**O**mega-3s taken for a 30-day period significantly reduced dry eye symptoms in a new study.<sup>1</sup> Researchers also found a decrease in tear evaporation rate and an increase in tear secretion.

Sixty-four dry eye patients were randomized into two groups. The treatment group received two capsules of omega-3 (each containing 180mg eicosapentaenoic acid and 120mg docosahexaenoic acid) daily, and the placebo group received two medium-chain triglyceride oil capsules daily, for one month.

At day 30, mean tear break-up time increased from 3.9 to 5.67 seconds in treated patients and 4.5 to 4.7 in controls—a 71% improvement for patients taking omega-3s.

Scores on the Ocular Surface Disease Index improved by 26% in the treatment group, and worsened by 4% in the control group. Schirmer's

score improved by 22.3% in the omega-3 group and 5.1% in the placebo group.

"The study is valuable on two fronts," says Paul Karpecki, OD, corneal services and ocular disease research director at Koffler Vision Group in Lexington, Ky. First, he says, it confirms essential fatty acids are beneficial in the treatment of dry eye symptoms.

"But perhaps more impressive is that Schirmer's scores, TFBut and patient symptoms all improved rather quickly," with statistical significance achieved at 30 days, he says. "This is valuable in terms of clinical application and setting expectations on when nutritional efforts such as this could start showing statistical improvement in dry eye patients."

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# Valeant to Buy B+L

**T**he company that first introduced the soft contact lens is changing hands. Canada's Valeant Pharmaceuticals will acquire Bausch + Lomb for \$8.7 billion.

Just what does this mean for the contact lens arm of B+L's business? According to a company spokesman, it's too soon to tell.

"Until the companies receive regulatory approval and consummate the transaction, there will be no immediate changes to day-to-day operations," says Adam Grossberg, B+L's vice president of global communications and branding. He expects the deal to close sometime during the third quarter of this year.

Bausch + Lomb will retain its name and become a division of Valeant, whose existing ophthalmology businesses will be integrated into the Bausch + Lomb division, creating a global eye health platform with estimated pro forma 2013 net revenue of more than \$3.5 billion. The combined business will also benefit from access to a strong product portfolio and a late-stage pipeline of innovative new products, the company says.

"It is too early to share any specific details about Valeant's integration plan but our goal is to retain the best talent from both companies," says a Valeant spokesman.



# Know Your Enemy

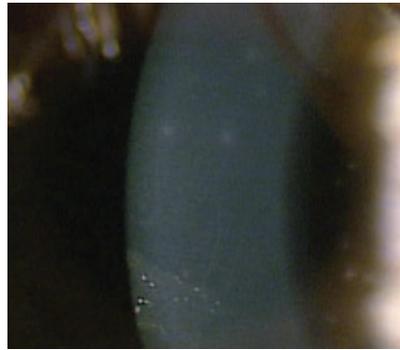
The importance of differentiating corneal opacities in contact lens wearers.

A common theme of this column has been effectively keeping patients in contact lenses by making sure to pay attention to those factors likely to erode the experience if not addressed aggressively. Compliance is certainly a pivotal component to that effort. We know that non-compliance can result in uncomfortable lenses as well as more serious complications, including corneal infiltrates and conjunctival injection.<sup>1,2</sup>

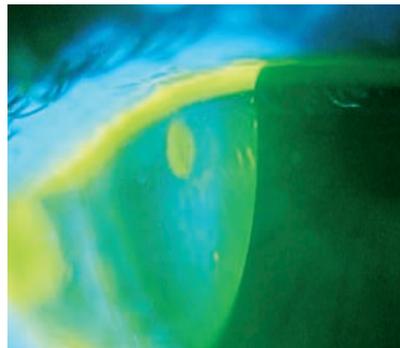
This month, we discuss the differential diagnosis for contact lens wearers who present with corneal opacities. Keep in mind that other conditions can mimic contact lens-induced complications and need to be ruled out first if we are to bring these patients back to baseline and ultimately allow them to successfully wear lenses long term.

• **Infiltrates in Contact Lens Wearers.** Infiltrates can occur for a variety of reasons in our contact lens wearers. There are two main categories of infiltrates: non-infectious and infectious. The former tend to occur in multiple areas over the cornea (*figure 1*). They can be located around the limbus or diffusely seen over the cornea.<sup>3</sup> There will usually be minimal or no corneal staining. Symptoms are usually mild to moderate for these patients. Risk factors for non-infectious infiltrates include non-compliance, non-daily disposable lens use, extended wear and silicone hydrogel lenses.<sup>2,4</sup>

Although these risk factors should be considered, clinically the incidence of symptomatic non-infectious infiltrative keratitis is low—just 0.5-3.3% of those wear-



**1. Multiple focal infiltrates characteristic of non-infectious CLAIK.**



**2. Corneal edema typically accompanies infectious infiltrate.**

ing daily wear contact lenses.<sup>2,5</sup>

Infectious infiltrates usually present as a much more painful event. There is typically one large area that stains with fluorescein, representing the area invaded by the infecting organism, usually surrounded by corneal edema (*figure 2*). Additionally, these patients often have an anterior chamber reaction.<sup>6</sup>

• **Thygeson's Superficial Punctate Keratitis.** This is a poorly understood condition of unclear etiology.<sup>7</sup> Originally described as a transient, bilateral disease, having coarse corneal epithelial opacities and no associated stromal involve-

ment, there is now research that suggests that it may be an anterior stromal condition with manifestations in the epithelium.<sup>8</sup> If so, it can involve the subepithelial stroma and presents with small stellate opacities with overlying areas of corneal staining (*figure 3*). Presenting symptoms are highly variable, with some patients very symptomatic and others asymptomatic.<sup>9</sup>

The ultimate differentiating factor is the appearance of the corneal lesions. They have a classic stellate pattern that is much more reflective when viewed with a slit lamp. Under low magnification view, they may appear similar to diffuse corneal infiltrates in lens wearers. On high magnification, however, it becomes evident that these lesions are much different than a non-infectious infiltrate (*figure 4*). It should certainly be considered in the differential diagnosis for those patients with irregular infiltrates.

• **Epidemic keratoconjunctivitis.** EKC, caused by specific serotypes of adenovirus, is highly contagious and usually associated with significant conjunctival injection.<sup>10</sup> It can cause a corneal infiltrative response and should be ruled out whenever patients present with corneal infiltrates.<sup>11</sup> Clinically, we have been surprised several times by patients presenting with a diffuse infiltrative keratitis who have been diagnosed with EKC. The ultimate question becomes: How do you distinguish between non-infectious lens-induced infiltrative keratitis and one associated with EKC?

The recently introduced Adeno-Plus test (Nicox), which detects all known serotypes of adenovirus,

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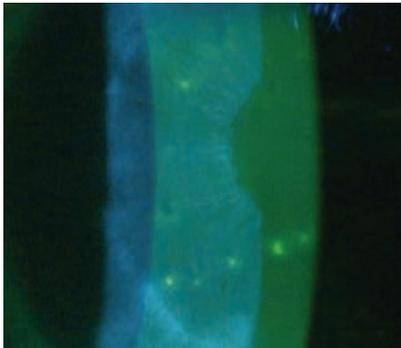
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**3. Stellate opacities with overlying areas of staining in Thygeson's SPK.**



**4. High-magnification view of Thygeson's SPK is useful in differential diagnosis.**

can be used in-office to determine whether the virus is present. With this test, a sample is collected by dabbing and dragging the applicator along the lower palpebral conjunctiva of the worse eye. The sample collector is then snapped into the test cassette and dipped into a buffered solution for 20 seconds. In 10 minutes, the test will yield a result on whether or not the patient is positive for adenovirus.<sup>12</sup>

This test may prove to be invaluable for clinicians; it ultimately gives us true diagnostic certainty in the exam room and helps differentiate adenoviral keratoconjunctivitis from contact lens infiltrates or

CLAIK. In our office, it is performed by our technicians for every patient entering the office with a non-obvious reason for the red eye (i.e., someone who complains of a known incident of foreign body presence in their eye would not need the test performed).

- **Adult Inclusion Conjunctivitis.** AIC is the clinical manifestation of chlamydial infection. Most often, these patients will have an injected, red eye of varying severity. The palpebral conjunctiva will have a mixed papillary and follicular response.<sup>13</sup> Although less common, these patients may have infiltrates present as well. In a contact lens wearer, this can often be confused for an acute red eye or a solution sensitivity. This condition, although usually monocular, can present bilaterally. It is important to rule out AIC if subepithelial opacities are noted.

## Conclusion

We must always be attuned to all conditions that cause ocular redness and inflammation, making sure we keep these in our differential diagnosis as we examine contact lens wearers who seemingly present with lens-induced complications. Ultimately, the cause may be unrelated to contact lens wear at all. With corneal opacities present, too much is at stake not to pursue certainty whenever possible. **RCCL**

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Additional references at [www.reviewofcontactlenses.com](http://www.reviewofcontactlenses.com).

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# Does Lubricity = Biocompatibility?

Can we finally tackle the challenge of patient dropout with an emphasis on contact lens “lubricity” and its effect on comfort?

Contact lens dropout due to dryness is the greatest threat to the contact lens industry. While new wearers are constantly being added to the modality, an estimated 16% per year—that’s one in six wearers!—choose to stop lens wear due to discomfort, creating a stagnant market.<sup>1</sup> Keeping our patients comfortable, healthy and happy is our goal as doctors. To this end, we must better understand the concept of lubricity, or the smoothness/slipperiness of one surface relative to another.

A contact lens’s lubricity determines how it moves on the eye and how the lids blink over the surface. We blink up to 14,000 times each day.<sup>2</sup> A dry ocular surface experiences increased friction with the eyelid, elevating the potential to damage either the lid or the ocular surface. Korb found that 74% of contact lens wearers with symptomatic ocular irritation showed signs of lid disruption (lid wiper epitheliopathy) compared to 16% of asymptomatic CL wearers.<sup>3</sup> Traumatized lid wiper epithelium may have exposed nerve endings and increased sensitivity, thereby lowering the threshold for dry eye symptoms.<sup>4</sup>

Studies have also demonstrated that symptoms of dryness are related to the surface wettability/lubriciousness of a contact lens.<sup>5</sup> It has been stated that the coefficient of friction is the principal factor associated with end-of-day discomfort.<sup>6</sup> Therefore, increasing wettability of the lens surface has been a long-standing strategy for enhancing patient comfort throughout

the entire wear period and, as a consequence, keeping patients in contact lenses.

## Slippery When Wet

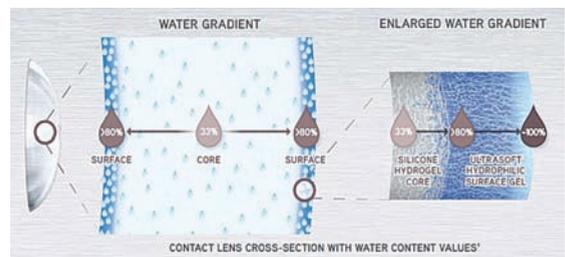
It has always been a challenge to balance the physical properties of contact lenses, including water content, oxygen transmissibility, modulus and surface lubricity. Silicone is best for oxygen transmission, but hydrophobic by nature and requires surface coatings or surfactants to create a wettable surface.

Surface-active agents (surfactants) have bipolar molecules, containing both hydrophilic and hydrophobic ends. When surfactants are used, the hydrophobic ends bind to the dry surface, while the hydrophilic end interacts with the tear film and lid. How strongly the surfactant binds depends on the size of the molecule and the attraction to the lens material; therefore, there are limits to how long a surfactant is active on a lens surface.

The combination of high oxygen permeability provided by silicone-containing lenses and a biomimetic material used to increase hydrophilic properties and decrease protein/lipid build-up is the ultimate goal of lens manufacturers, and potentially the most comfortable lens for our patients.

Clinicians look forward to seeing how this concept performs in practice with the forthcoming launch of the Dailies Total1 lens (Alcon),

made of delefilcon A material. This water gradient lens has 33% water content silicone hydrogel core that gradually transitions to over 80% water content in the surface gel, approaching nearly 100% at the very outer surface (which is a



Schematic of the delefilcon A water gradient design.

6µm-thick hydrophilic polymer network). The polymer network is anchored to the silicone core and binds water to the lens surface similarly to the way microvilli hold water to the ocular surface, improving biocompatibility with the ocular surface and tear film.

Studies by the manufacturer show that the lens is highly lubricious and maintains its lubricity throughout the day. With sustainable, all-day comfort as our goal, we welcome a new tool that might help thwart contact lens dropout by improving the contact lens-wearing experience. [RCCL](#)

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## When Astigmatism Tops Keratoconus

Contact lens specialists face many challenges—sometimes in the same patient. What do you do when a patient has both astigmatism and keratoconus?

In fitting a patient who presents with both keratoconus and astigmatism, the need for adding some type of toricity is not always clear. In general, though, we tend to ignore the corneal astigmatism because, in the big picture, the keratoconus is often more significant.

Then again, what about the individual who has severe astigmatism but less severe keratoconus? In this instance, the best approach is usually to address the astigmatism primarily and the keratoconus secondarily. Consider the following case.

### Trouble With the Curve

A 27-year-old white male presented for a contact lens fitting upon referral from a LASIK center. He was told he was not a candidate for LASIK due to keratoconus, and was sent to us for new contact lenses.

He reported that he already had GP lenses but, due to the discomfort and instability, he used them only when he played golf. The rest of the time he could function without correction.

His visual acuity without correc-

tion was 20/40+1 OD and 20/30-2 OS. Autorefractometry yielded OD -1.25-5.75 x 180 and OS -1.75-5.50 x 175. Autokeratometry measured OD 45.75 x 53.50 x 90 and OS 46.25 x 53.25 x 85. We performed corneal topography (figure 1), which correlated well with the autokeratometry results.

Pachymetry measured central corneal thicknesses of 455µm OD and 459µm OS. The combination of steep curvature and thin corneal tissue, as well as the irregular reflex on retinoscopy, indicated that this patient did indeed have mild keratoconus.

Performing manifest refraction was difficult, with poor endpoints and no real improvement in vision no matter what lens was used. This may have been due partially to his adaptation to never having worn correction for the astigmatism, or more likely to the keratoconus creating a muddled endpoint. Whatever the reason for his lack of ability to distinguish clarity between any of the lenses, he preferred a final refraction of OD -0.50 sph to 20/30-1 and -1.00 sph to 20/30 to anything with cylinder in it.

I asked him to insert his current lenses for evaluation. Both lenses—spherical corneal GPs with a diameter of 9.5—fit with significant inferior edge lift and were unstable with eye movement, with his vision correcting to 20/25+1 in each eye with the lenses in. An over-refraction revealed residual astigmatism, likely from lens flexure.

### To Toric or Not to Toric?

After discussing his options—including the possibility of trying to adjust his current lens fit, or attempting hybrid or scleral lenses—he decided that he wanted to stay with corneal lenses first. Based upon his corneal topography, I decided to fit him in a bi-toric base curve lens with spherical peripheral curves (figure 2).

The patient returned the following week for a dispensing visit. Upon insertion, he instantly noted that the new lenses felt much less noticeable compared to the old ones. His visual acuity was 20/25 in each eye while wearing the lenses, but a spherocylindrical over-refraction of +2.25-1.00 x 95 OD +1.25-1.25 x 85 OS improved each eye to 20/20 easily.

Because the over-refraction indicated a change in the sphere and cylinder numbers that aligned to the major meridians of the patient's corneal astigmatism, we were able

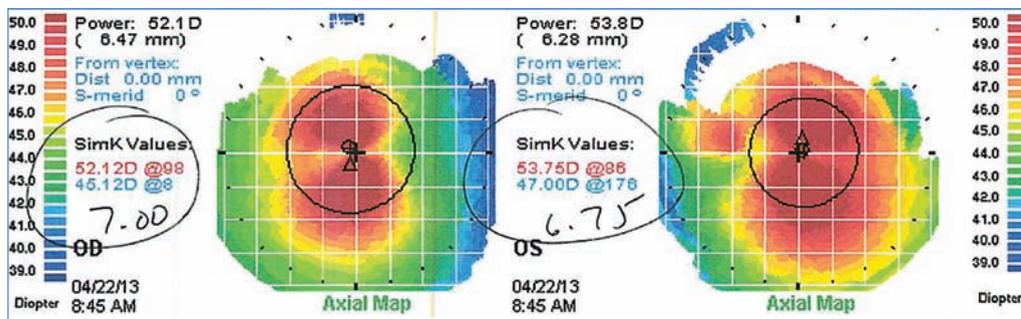
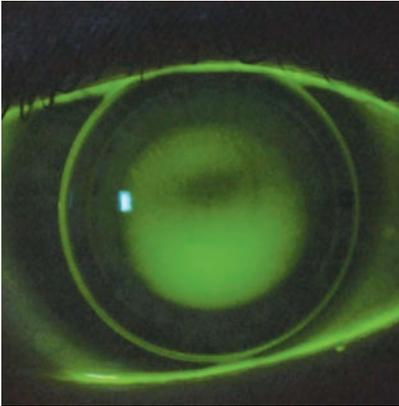


Figure 1. Corneal topography demonstrates steep, highly astigmatic corneas.

# Review of Cornea & Contact Lenses

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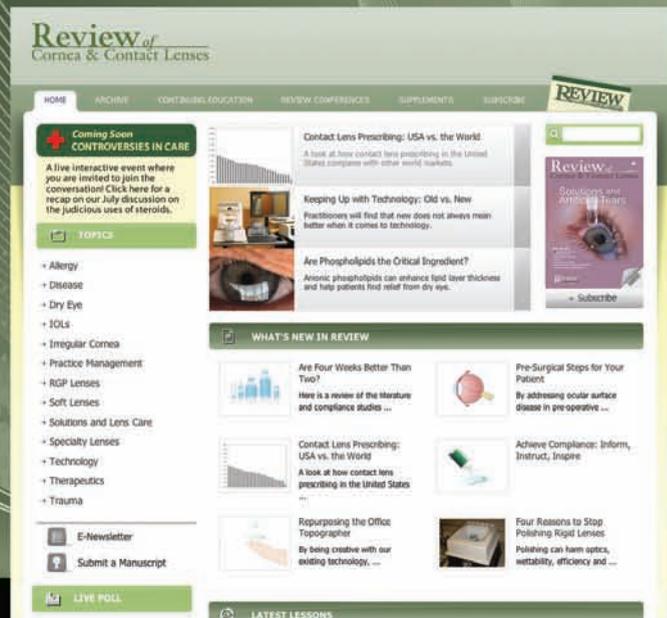
**Figure 2. Right eye of patient after being refit with a bi-toric. Note the apical clearance fit and marking at 3 o'clock, demonstrating rotational stability.**

to incorporate this change in his lenses. In addition, the lenses were marked for rotation, and evaluation revealed a stable fit with no rotation.

The lenses were ordered with the over-refraction incorporated, which provided an excellent fit and clear stable vision OU.

When assessing the need for a toric lens in cases of irregular astigmatism, it's helpful to place a spherical lens on the eye to assess the fit. If the lens appears to fit as if the eye is highly astigmatic, a toric GP design should work. In this case, the patient's current lens fit indicated that the astigmatism—more than the keratoconus—was the bigger problem.

Of course, a scleral lens or perhaps even a hybrid would have been just as satisfactory. But the toric back surface corneal lens was at least as effective, and much simpler for all involved. [RCCL](#)



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## What's The Solution

By Christopher W. Lievens, OD, MS, and Crystal Brimer, OD

# Remembering the Importance of Lens Care in the Workplace

As eye care practitioners, we evolve into better clinicians over time. This process is influenced by the continual influx of new information that we continuously incorporate into our exam room. So, what should we do in light of recent FDA research?

FDA-sponsored research found that, in *in vitro* testing over time, uptake of polyhexamethylene biguanide (PHMB) into certain lenses affects the PHMB concentration in a multipurpose solution and reduces its residual biocidal efficacy against both *Staphylococcus aureus* and *Fusarium solani* in as little as six hours.<sup>1,2</sup> If the FDA is currently considering revisions to contact lens product testing and regimens, this should certainly motivate us to review our office protocol as well.

### New Mentality

Our patients often think that all lens care systems will ultimately work the same. We may sometimes agree. But even solutions with the same surfactants can work differently for different patients.

Disinfecting lens care options can be broken into several categories, including multipurpose solutions preserved with or without PHMB, and peroxide-based systems. Knowing that certain lens/solution interactions might be no more biocompatible than others, it is important that we consider how we make these decisions. Consider corneal staining as one example. Certain lens/solution combinations result in greater amounts of solution induced corneal

staining (SICS) than others.<sup>3</sup>

It is important to understand that SICS results from the release of the disinfectant after lens insertion from the lens into the tear film.<sup>4</sup> Larger areas of SICS represent greater amounts or certain concentrations being released, which may indicate more uptake of disinfectant by the lens. The FDA reported that the uptake is responsible for affecting the PHMB concentration in the solutions and decreasing the resulting antimicrobial and antifungal activity remaining in the solution; moreover, the resultant staining can signify a break in the barrier function, which is essential in protecting the cornea from microbial entry.<sup>1,2,5,6</sup>

### Office Interactions

Patients may believe that all contact lens solutions are the same, and they may not know that many “store brand” multipurpose contact lens solutions are made with different ingredients, like PHMB, than other branded solutions on store shelves.

It is important that we take the time to educate our contact lens patients on the differences and make firm recommendations. In a recent survey, 95% of doctors claimed to always give contact lens patients a solution sample; however, only 31% of patients reported receiving a specific recommendation for which product to use.<sup>7</sup>

Be very deliberate in your instructions. We suggest that you clearly reiterate when handing over a trial kit that this is the solution you want your patient to use. In fact, take

the next step and tear the label off the box and ask them to put it in their wallet or purse, so they know exactly what to buy when they go to the store. This is a very direct approach in which the patient is clear on your instructions.

Enlist a well-trained staff member to repeat your directive. Doctor recommendations that are echoed by the staff are the ones most remembered and practiced. It is crucial that everyone in the office understands and believes that lens care choice and compliance are critical in the comfort and success of the wearer.

As eye care professionals, you are in the position to influence the behavior of your patients. Keep your patients committed to contact lens wear. Stress the lenses and lens care solution that will ensure a successful lens wearing experience.

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# One-a-Day Isn't Just for Vitamins

Have you noticed more patients asking about or opting for daily disposable lenses? Perhaps even more are just awaiting your recommendation.

Daily disposable contacts have long been our lens of choice for pediatric and teenage patients, but we now offer them to patients of all ages, especially those interested in part-time wear for social or sports usage, those with a history of contact lens-related complications, dry eye or allergy.

The perceived roadblock of higher cost as compared to two- or four-week replacement lenses seems to have been removed in the minds of many patients—and they appreciate and desire the comfort, convenience, increased hygiene and decreased risk of complications.

Plus, the lenses are now available in sphericals, torics and multifocals, so more patients have the ability to choose this modality if it suits them.

Is this a trend that's happening throughout the eye care community? It appears so. Let's look at the numbers.

## Making the Daily Switch

Recent data indicates that daily disposables are the largest-growing segment in the contact lens market.<sup>1</sup> In fact, more than 17% of fits and refits in 2012 were for daily disposables, and the modality represented almost 40% of worldwide sales through the end of the 2012 third quarter.<sup>1</sup>

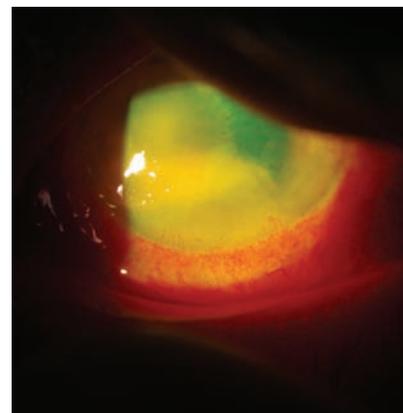
Furthermore, two-thirds of current contact lens wearers say they would be open to switching to daily disposables, and 75% of spectacle wearers would consider trying them, if recommended

by their doctor.<sup>2</sup> These figures indicate that the public is aware of the benefits of daily disposables; perhaps they just need to be offered the option by their eye care practitioners.

Consider this: Daily disposable contact lens wearers have the highest compliance rates (88%) when compared with their two-week (48%) and one-month (72%) counterparts.<sup>3</sup> It is noncompliance with manufacturers' and practitioners' recommended replacement frequency that is associated with discomfort, discharge, redness, photophobia, pain, conjunctivitis and abrasions.<sup>4</sup>

As we all know, comfort is key to contact lens wear. With the summer months upon us, more of our patients will present with signs and symptoms of allergic conjunctivitis, which can make comfortable contact lens wear a challenge. Some of these patients will certainly discontinue lens wear—and possibly never resume, as discomfort is the most commonly cited cause of lens dropout.<sup>5</sup> According to the 2012 Jobson Optical Research Contact Lens Wearers Insight Survey, 72.3% of previous contact lens wearers said they will “probably not” or “definitely not” return to wearing contact lenses.<sup>6</sup> Refitting patients into daily disposables may allow them to continue—or resume—wearing their lenses, and wear them comfortably.

Clearly, both doctors and patients are showing a growing desire for daily disposables due to their many advantages: ocular



**Failure to adhere to lens care recommendations exposes patients to severe consequences, such as this *Pseudomonas* ulcer.**

health, convenience, comfort and increasing range of available refractive parameters and materials.

Consider being proactive in discussing the option of one-day lenses for your patients, putting aside any presumptions that an added cost outweighs the added value. In particular, daily lenses can be a better option for patients with a history of non-compliance, contact lens- or lens solution-related complications, dry eye and ocular allergy. [RCLL](#)

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# Understanding the Psychology of Non-Adherence

What happens in the minds of patients to keep them from following proper contact lens wear and care regimens? And, what can we do about it?

By Margo M. Szabo, BS, Paul T. Enlow, BS, and Christina L. Duncan, PhD



*Dr. Duncan is an associate professor of psychology at West Virginia Uni-*

*versity and coordinator of the clinical child psychology doctoral program. Possessing a PhD in clinical psychology, her areas of research expertise include pediatric psychology, adherence to pediatric medical regimens, and the transition from pediatric to adult health care. She has garnered funding for her research at the local, national and federal levels.*

**T**he issue of non-adherence to medical regimens is a common, contemporary problem across health conditions, including contact lens care regimens.<sup>1</sup> However, recent studies in contact lens care still use the outdated and pejorative term “non-compliance” to characterize this phenomenon, despite a shift in the medical and psychological literature toward using the term “non-adherence.”<sup>2-4</sup>

Compliance, defined as “the extent to which a person’s behavior coincides with medical advice,” suggests that it is a patient characteristic only and does not account for the provider’s potential role in non-compliance.<sup>4,5</sup> Moreover, a patient who fails to comply with a provider’s instructions is often deemed uncooperative.<sup>3</sup>

In contrast to compliance, adherence has been defined as an “active, voluntary and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result.”<sup>6</sup>

Thus, using the term “adherence” underscores the importance of the provider-patient relationship and patient-centered focus to care by suggesting both patients and providers are involved in the process of establishing and following a patient’s treatment regimen.

This relationship is critical, as it sets the stage for accurately assessing and addressing adherence issues through honest, empathic communication between the provider and patient, such as discussions regarding patient-reported barriers to implementation of the care regimen.<sup>7,8</sup>

This article reviews the literature on adherence to contact lens care regimens, provides recommendations for future research and discusses implications for clinical practice from a patient-centered focus.

## Characteristics of Non-Adherence

In contact lens care research, non-adherence rates typically have been reported to range from as low as 40% to as high as 91%.<sup>1,9,10</sup> These rates are comparable to, or higher than, other areas of adherence research, such as asthma and diabetes.<sup>11-13</sup> The high variability in rates of adherence suggests that patient non-adherence is influenced by a variety of factors. Studies have found that although most patients are able to demonstrate knowledge of their treatment plan, few realize that they are not adherent.<sup>14</sup>

Furthermore, adherence to contact lens care regimens may be complicated by the preventive nature of the treatment. Specifically, adherence to preventive treatments tends to be less reinforcing, as there often is no direct effect (e.g., decrease in symptoms) from following the treatment. So, patients may not perceive the treatment to be effective or necessary and are less likely to follow the prescribed regimen. Results from past studies corroborate the idea

that adherence to preventive care is problematic; for example, one study found that asthma patients are less adherent to the proactive components of their treatment regimens.<sup>15</sup> While there is no singular component that is of primary concern, common areas of non-adherence to contact lens care include hand hygiene, rinsing and

adherence in contact lens wearers are direct methods (e.g., microbiological assays, home spot checks) and indirect methods (e.g., surveys, demonstration of cleaning).<sup>1</sup> While direct methods may provide a more objective assessment, they are impractical and expensive.

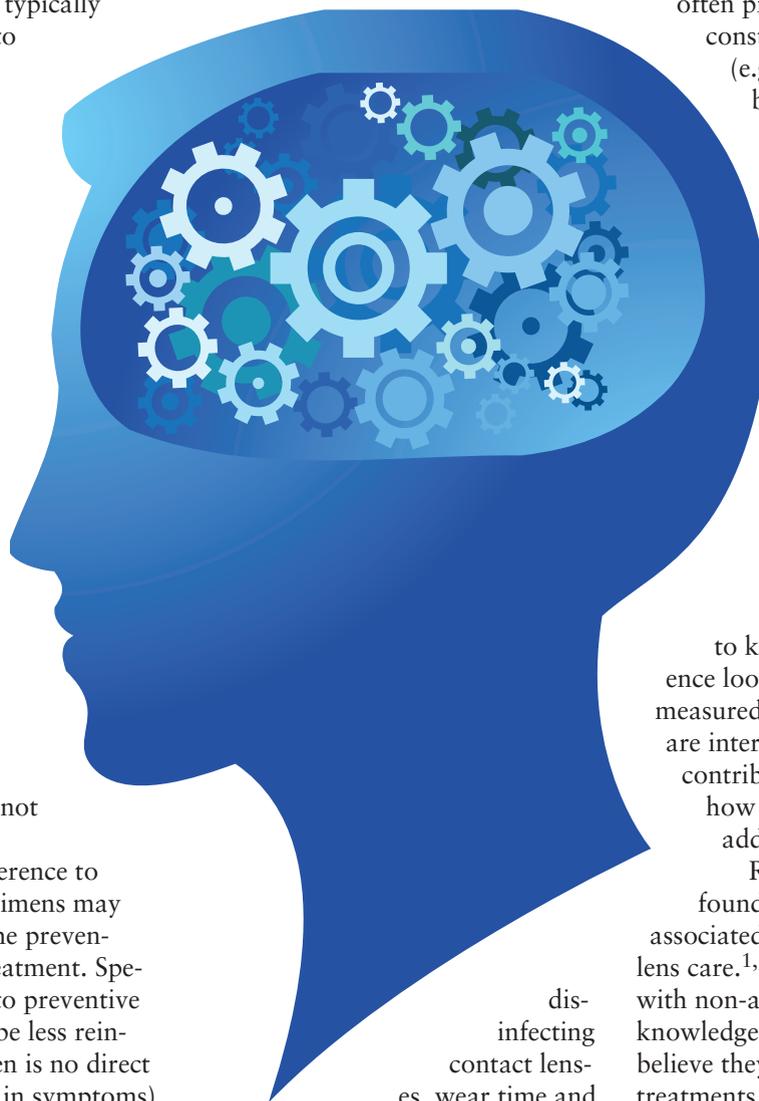
Many physicians rely on indirect methods to assess adherence. However, the indirect methods are often problematic because the constructs that are measured (e.g., knowledge) may not be accurate indicators of adherence behavior and self-reporting measures may be biased by outside factors (e.g., social desirability, or a tendency to want to please the health care provider by reporting adherence).

## Non-adherence Factors

While it is important to know what non-adherence looks like and how it is measured, most researchers also are interested in what factors contribute to this problem, and how non-adherence can be addressed.

Review studies have found that many factors are associated with neglect in contact lens care.<sup>1,10</sup> One factor associated with non-adherence is insufficient knowledge. While many patients believe they are following their treatments, most did not fully understand all of the components of their lens care and, as a consequence, were non-adherent.<sup>1,2,9,14</sup>

Also, patients who have less education or lower income, have worn contacts for a longer period of



disinfecting contact lenses, wear time and replacement time.<sup>1,10</sup>

Finally, it is important to measure whether patients are following their contact lens care regimen, and doing so correctly. Two ways of measuring

time, have briefer lens replacement times, or wear contacts for cosmetic reasons have been found to have increased rates of non-adherence.<sup>10</sup>

Finally, the health-belief model has been applied to this area; this model postulates that adherence to a treatment regimen is due to an interaction of factors, including perceived severity of illness, health benefits of adherence and patient motivation.<sup>16</sup> One study found that the health-belief model accounted for approximately 32% of the variance in adherence to contact lens care regimens in adolescents and adults who wore contacts for at least two years.<sup>17</sup>

Unfortunately, the identification of all aforementioned factors stems from a small body of research. More in-depth studies should be conducted to increase our understanding of what exactly contributes to non-adherence to contact lens care regimens in order to better focus interventions aimed to improve non-adherence.

While there have been many suggestions to alleviate the problem of non-adherence, few interventions have been studied to determine whether they effectively improve this problem behavior. (See “*The Adherence Enhancement Strategy*,”

### **Compliance vs. Adherence: What's the Difference?**

- Compliance, defined as “the extent to which a person’s behavior coincides with medical advice,” is a negative term that puts the onus on the patient and largely excludes the provider’s involvement.<sup>5</sup>

- Adherence, defined as an “active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result,” is a positive term that underscores the provider-patient relationship.<sup>6</sup>

## **The Adherence Enhancement Strategy**

We know that non-adherence is a great problem, yet few interventions designed to improve adherence have actually been tested. But one such example of an intervention is the adherence enhancement strategy.<sup>18</sup> In this study, 80 contact lens patients were randomly assigned either to a group that received standard care or a group that received an intensive education program.

The conclusion: Even though the experimental group received more education as well as strategies to increase knowledge, it had roughly the same adherence to contact lens care as the standard, uneducated group.

What went wrong? The lack of significant results points to possible limitations in the measurement of adherence as well as the interventions used. This intervention focused on increasing adherence by promoting knowledge of the treatment through various methods (e.g., checklists, video and posters). However, past research has shown that while knowledge of treatment is necessary, it is often not sufficient to create change in adherence behaviors.<sup>14</sup> So, this intervention may not have been effective because it focused on areas that, although related to adherence, do not produce change in adherence to treatment regimens.<sup>15</sup>

In addition to improving knowledge, it is also necessary to target the patient’s perceived barriers to treatment (e.g., complexity of regimen) and motivations for being adherent (e.g., less irritation when wearing contacts). Ideally, interventions that effectively reduce barriers (e.g., time taken up by treatment regimen) and make the benefits to following treatment guidelines (e.g., improved vision) more salient, such as outlining the purpose of each part of the regimen, will improve overall adherence to contact lens care regimens.

above.)

## **Clinical Practice Implications**

Overall, non-adherence to contact lens care regimens remains a significant problem, and research has demonstrated few effective methods for enhancing adherence in contact lens wearers. However, research in other health populations provides some evidence-based directions for clinical practice and future research to address non-adherence among contact lens wearers.

First, prior to enhancing patient non-adherence, ensure that non-adherence is accurately assessed. Due to the impracticality of direct measurements, indirect measurements such as self-report questionnaires or interviews often are used to assess adherence, despite research concluding that these methods tend to produce inaccurate

rate estimates of adherence rates among other medical populations.<sup>2,4,9,18,19</sup> In addition, several studies have used the demonstration of contact lens cleaning to measure adherence to contact lens care regimens; but, demonstration of cleaning techniques may only assess patient knowledge of the regimen and not actual adherence.<sup>9,18,19</sup>

Current methods used to evaluate adherence to contact lens care regimens may provide inaccurate measurements due to a variety of issues, including social desirability bias associated with self-report measures, assessment of regimen knowledge rather than adherence behavior per se, and “white coat” adherence (i.e., increasing adherence to a regimen prior to a clinic appointment).

So, we should consider using a more objective, indirect method of assessing adherence to contact

lens care regimens—much the way that pharmacy refill data has been found to provide a more adequate estimate of adherence rates among other health populations (e.g., youth with cystic fibrosis).<sup>20</sup>

Additionally, the quality of the provider-patient relationship and the provider's communication style are important factors to consider in the assessment and management of non-adherence issues. Much research has demonstrated that patient adherence is higher with physicians who communicate well.<sup>8,21</sup> When physicians undergo training in effective communication skills, their patients display greater adherence than patients of physicians who did not receive training.<sup>8</sup>

In addition to advocating the importance of effective communication between provider and patient, another strategy is using a patient-centered approach that focuses on patient perceptions of the physician's advice and involves the patient and family in decision-making about treatment plans.<sup>7</sup> Such an approach allows the patient to have more control over his or her own treatment regimen and may improve the patient's adherence.

More specifically, providers can phrase questions about adherence in a manner that normalizes the issue for patients in an attempt to elicit more honest and accurate information regarding their patients' adherence. For example, providers can explain that they do not expect their patients to be perfectly adherent with their contact lens care because many individuals with contact lenses forget to clean them once and a while.

Providers also can take the needs of individual patients into account when prescribing contact lenses (e.g., prescribe monthly dispos-

## Ideas to Improve Adherence

- **Improve communication skills and style.** Adherence is greater among patients whose doctors communicate well. Normalize the problem of non-adherence in an effort to establish an environment where patients will feel more comfortable sharing their concerns with honesty.
- **Take a patient-centered approach.** Ask pointed questions, and involve patients in making decisions about the best contact lens prescription to fit with their lifestyle, routines, preferences, etc.

able lenses to a patient who has difficulty remembering to remove their lenses each night). Taking this approach, a provider might say the following to a patient: "Many people find it difficult to follow standard procedures in caring for and wearing their contact lens. Some of these difficulties may be due to time and hassle, or perhaps financial costs that are hard to afford. I want to be able to prescribe contact lenses that fit with your needs and concerns. What might be some concerns you could have in following your contact lens care routine?"

Based on such research, eye care practitioners should consider undergoing training in communication skills and taking a patient-centered approach to addressing adherence issues for their contact lens patients.

By taking a patient-centered approach to care and implementing some of these suggestions into your practice, you may be able to enhance adherence among your contact lens patients. [RCCL](#)

*Dr. Duncan's co-authors, Ms. Szabo and Mr. Enlow, are both graduate students in the Clinical Child Psychology doctoral program at West Virginia University in Morgantown, W.Va.*

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# My Preferred Replacement Schedule is...

Five doctors, five opinions on the ideal contact lens replacement schedule.

By Ken Krivacic, OD, MBA



*Dr. Krivacic is the founder of Las Colinas Vision Center in*

*Irving, Texas, and has been involved in clinical trial research for Alcon and Ciba Vision. He is a member of the American Optometric Association, the Texas Optometric Association and the North Texas Optometric Society.*

Patients have their pick of hundreds of optometrists—in all kinds of settings—in the Dallas metro area, where I practice. If they come to me, I assume it's because they want my expertise and my opinion—and that's what they get. I recommend the contact lenses that I think offer the best overall package of comfort, ocular health and convenience and are best suited for their ocular anatomy and prescription.

Typically, that is as short a replacement cycle as possible. In more than 30 years of practice, I have learned that a shorter wear schedule means a cleaner lens and fewer complaints. Most importantly, I try not to let cost be a factor—at least in my initial recommendation. If cost becomes a problem, we can re-evaluate that selection and turn to a “next best” solution.

And no matter what replacement schedule one selects, patient compliance with that schedule is the key to comfortable, healthy wear. We perform specular microscopy as part of our routine screening for all contact lens patients, and have found that endothelial cell counts and images of the endothelium are an excellent teaching tool to help us emphasize ocular health, show endothelial cell damage that occurs from overwear,

and reinforce the importance of changing contact lenses on schedule.

I asked several other clinicians to offer their thoughts on the ideal schedule. They said their preferred replacement schedule is....

## ...Daily Disposable

New York City's Denise Whittam, OD, says she strongly prefers daily disposable modalities, recommending them for teens and young wearers, but also suggests that established wearers consider this option. “They dramatically reduce the build-up of lipids and proteins, which can lead to lid irritation, decreased comfort and giant papillary conjunctivitis,” she says.

Dr. Whittam stresses that discomfort and dissatisfaction with contact lenses can begin earlier than many practitioners expect. “Even in their 20s, patients start shortening the hours of wear per day or skipping contact lenses when they don't ‘have’ to wear them,” she says. “That's the beginning of a slide toward intolerance and dropout.” So, when a patient comes in for an annual exam and claims to be doing “fine,” Dr. Whittam probes a little deeper. “I usually find out that their lenses don't feel as good at the end of the day as they do in the morning and

they don't feel as good on week two or three as they did when the package was first opened," she says. "Moving that patient into a daily disposable lens is a great opportunity to enhance their comfort and really wow them."

She also sees a lot of people who only wear contact lenses for social events or weekend sports. A daily disposable lens is a better option for patients who might otherwise be storing their contact lenses for a week or more between uses, she says. "When lenses are left in the same solution too long, salt precipitate forms in the case and the solution efficacy changes, often leading to corneal issues and eye infections," Dr. Whittam says.

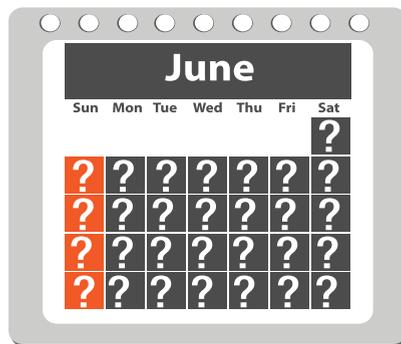
Because it avoids problems associated with changes in the pH, osmolarity and antimicrobial properties of solutions when left dormant in cases, Dr. Whittam switches such patients to a daily disposable—and often the experience starts to override their objections to full-time wear, she adds.

Communicating value is the answer to cost concerns, says Dr. Whittam. "Just like there are solid reasons to pay for air conditioning and anti-lock brakes in your car or a better camera on your phone, there have been real advancements in contact lens technology that are worth the additional cost."

She finds that a trial of daily disposable lenses improves acceptance. "By giving patients the opportunity to see the value for themselves, they end up loving the lenses and, even better, the doctor who prescribes them."

### ...Weekly

Not many contact lenses are manufacturer-recommended for one-week replacement, but Bradford Ripps, OD, of northwest New Jersey says this replacement cycle



### Which replacement schedule works best for your patients?

is one he commonly recommends. "If I can't fit a patient in daily disposable lenses, my next choice is weekly replacement," he says. That could mean choosing a lens specified for one-week replacement, or simply recommending more frequent replacement of a two-week or even a monthly lens if it will be a better fit or come in the ideal parameters.

"In my experience, even patients prone to problems tend to experience them later in the wear cycle," Dr. Ripps says. "At one week, they rarely have build-up or discomfort." Additionally, he says, patients find it very easy to comply with a one-week replacement schedule because they just pick a day of the week and always open a new pack of lenses that morning.

On costs, "we need to stay out of the patient's pocketbook," he says. "Most people place a high value on great vision and a successful lens-wearing experience, and that's what I try to provide. If patients truly can't afford to change their lenses every week or every day, we can fit them with an inexpensive pair of glasses, or perhaps glasses and daily disposable lenses for occasional use," he says.

Dr. Ripps tells patients exactly why he recommends weekly replacement so they aren't surprised if a friend or family member

with the very same lenses is wearing them for a longer stretch. He's been doing this for years—and says the feedback from patients has been very positive. "Patients have terrific success with this abbreviated wear schedule," he says. "The bottom line is that more frequent replacement is better for our patients."

### ...Two-Week

Robert Rosenthal, OD, of Newtown, Pa., says that while he won't compromise vision, health or comfort just to pick a particular modality, he most often reaches for a two-week lens. "They are available in most parameters, are at a reasonable price point, and fill the comfort niche perfectly," he says. And for him, comfort trumps almost every other consideration in fitting contact lenses.

"Most contact lenses offer good initial comfort," he says. "But more important than how the lenses feel when the patient is sitting in the chair is how they feel at the end of the day and at the end of the replacement cycle." He takes care to select lenses with advanced wetting technologies that improve comfort. Particularly compared to a monthly lens, Dr. Rosenthal feels that two-week replacement offers advantages in health and the consistency of vision, too.

"I don't see any compliance disadvantage with two-week replacement either, because I believe the doctor has a lot of ways to positively influence compliance," he says. For example, he almost always dispenses an annual supply. And in talking with patients, he doesn't just ask how frequently they change their lenses. "My next question is, 'How do you remember when to change them?' If the answer is 'I just do,' then I know we have a problem," he says.

Automated reminder notifications sent by email or text can help, as can showing them visuals of potential contact lens complications (such as those on the Efron grading scale). “They give patients an immediate, visual understanding of the potential consequences of poor compliance,” he says.

Lens manufacturers also offer an array of patient education and reminder tools to help the cause. A Vistakon study of its Acuminder tool, presented at last year’s BCLA meeting, showed that electronic reminders improved patient diligence in adhering to schedule. Wearers of two-week lenses increased their replacement frequency from an average of 19.9 days to 14.7 days; monthly wearers improved from 35.6 to 30 days.

What Dr. Rosenthal never does is move patients into a longer replacement schedule. “I don’t think stepping back to a monthly lens that may compromise comfort is going to truly address the problem, so I’m more likely to go a shorter wear schedule if compliance is an issue,” he says.

### ... Monthly

Lindsay Sicks, OD, of Glendale, Ariz., says that monthly replacement varieties are available in the widest array of parameters among off-the-shelf lenses. “Different base curve availability within lens brands help in troubleshooting lens fit issues,” she points out. And, a wide array of available powers (sphere, cylinder, and axis) mean that even more prescriptions can be fit on the first visit to your office without having to special order a new trial lens. “Ultimately, this means less administrative work for you and more solutions for more patients in your practice.” Monthly replacement may also allow you to easily transition a patient to the

convenience of extended or continuous wear without re-fitting into a completely different lens.

Monthly replacement lenses are the most cost-effective modality for patients today, she says, when lenses are worn full time, citing the lowest “cost-per-wear” number for monthly lenses (accounting for professional fees and the cost of solutions) when compared to two-week replacement and daily disposable lenses.<sup>1</sup> This affordability keeps monthly replacement lenses remain popular among patients. “To capitalize on this cost-conscious segment of the population, we can easily stock the most commonly prescribed lenses in-office for same-day purchase to increase retail sales,” Dr. Sicks says.

She also points to studies showing that compliance with recommended replacement frequency for patients in one month replacement lenses is higher than that of two week lenses.<sup>2,3</sup> A 2010 study by Kathy Dumbleton, MSc, MCOptom, showed that one-month replacement lenses had not only better end-of-day comfort, but also better comfort when the lenses were near replacement when compared to the same circumstances with two-week replacement lenses. “It may just simply be easier for patients to remember to change their lenses once a month,” Dr. Sicks says. “With the pervasive

nature of smartphones, it may even be a good idea to educate patients, while they are in the chair, to set a phone alarm reminder on the day they are to change their lenses.” You can start this process by dispensing a new pair of trial lenses that day and reinforcing the date to change before the patient leaves the office, she suggests.

### Conclusions

These are all valid perspectives to factor into the decisions you make about what to recommend for your own patients.

If there is one key takeaway from this article, it should be that the best replacement schedule is the one that suits the patient in your chair. Each patient’s needs, prescription and lifestyle should guide your decision, rather than some arbitrary replacement preference to the exclusion of all others.

And with the wide variety of advanced contact lens materials and modalities available today, the good news is that there should be a contact lens to suit almost every patient’s needs. [RCLL](#)

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### About the Contributors

- Dr. Whittam is an independent practitioner at Cohen’s Fashion Optical of 47th Street in New York City. She is a paid consultant for Vistakon.
- Dr. Ripps is the owner of Total Eyecare in Lake Hopatcong, NJ. He is a paid consultant for Alcon, CooperVision and Vistakon.
- Dr. Rosenthal is in private practice in Newtown, Pa., and is a paid consultant for Vistakon.
- Dr. Sicks is a clinical assistant professor at Midwestern University Arizona College of Optometry and an attending optometrist at the Midwestern University Eye Institute in the Specialty Contact Lens Clinic. She has received travel funds and educational support from Bausch + Lomb, CIBA Vision and Vistakon.

# Daily disposable lenses designed to work like the eye for comfortable vision throughout the day



BY BRAD  
OATNEY, OD

One of the most rewarding aspects in clinical practice is to be able to improve a patient's contact lens wearing experience. After nearly three decades of clinical practice, I am still looking for innovative ways to reengage patients who have given up wearing their contact lenses due to end of day dryness or blurred vision and provide a better wearing experience for all my patients. I welcome new materials that can help me keep patients wearing contact lenses as long as they want to wear them. For daily disposable lenses, I look for a material that does not dry out at the end of the day, and a design that provides consistent visual quality and is easy to handle for first time wearers.

A new addition to my daily disposable lens portfolio, Biotrue® ONEday, is made from a new bio-inspired material called HyperGel™. The lens is designed to work like the eyes with three bio-inspired features. The surface of the lens is designed to mimic the lipid layer of the tear film to help prevent dehydration and maintain consistent optics; it has a water content of 78% (the same water content as the cornea<sup>1</sup>) to support incredible comfort, and it meets the level of oxygen the open eye needs to maintain healthy, white eyes. Of all the bio-inspired properties of Biotrue® ONEday lenses, mimicking the lipid layer of the tear film is most intriguing to me. It makes sense to want to mimic the lipid layer function of the tear film in order to prevent dehydration.

Biotrue® ONEday patient feedback has been so positive that I have even tried it on some of my patients who have dropped out of contact lenses. One patient was a reading specialist who dropped out of contact lens wear due to vision and comfort problems. She had failed with previously marketed hydrogel and silicone hydrogel materials. I explained the bio-inspired properties of this new lens and asked her to give it a try. She came back a week later with excellent vision and said “these are *way better* than any of the contact lenses I've worn in the past. I don't feel them in

my eyes and I don't have to use rewetting drops.” I recently refit another patient who was struggling to wear contact lenses part-time into Biotrue® ONEday and she was able to double her wearing time! Patient feedback has been consistently positive about end of day comfort. In fact, many of my patients say that Biotrue® ONEday lenses feel “wet” in their eyes or like there is nothing on their eyes.

Patients appreciate the fact that I keep them informed about new contact lens materials and technology that may improve their overall wearing experience and for some even their ability to wear contact lenses. The practice also benefits because satisfied patients return wearing their lenses. Biotrue® ONEday is a novel and unique material that is different than other daily disposable lenses. When you can minimize moisture loss from the contact lens, you can potentially help avoid some of the unwanted results of dehydration blur and end of day discomfort. Biotrue® ONEday provides comfortable vision throughout the day for my patients. One of my patients summed it up by saying “it's like I don't have a lens on my eye.” Biotrue® ONEday has quickly become one of my go-to lenses.

*J. Bradley Oatney, OD, graduated from The Ohio State University College of Optometry in 1987 and practices primary eye care at Riverview Eye Associates in Columbus, Ohio.*

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# Continuous Wear Revisited: What's the Case for It?

Careful patient selection and education can make this a viable option for more people than you might believe. **By Nicole Carnt, PhD, BOptom (Hons)**



Dr. Carnt is an Australian Government Early Career CJ

Martin Research Fellow at Moorfields Eye Hospital in London. Previously, she worked in private practice in Australia and the UK before taking a position with the Brien Holden Vision Institute in Sydney in 1999, where she held a variety of roles, including Principal Investigator on contact lens clinical trials. She completed a PhD in Epidemiology of Contact Lens Related Infection and Inflammation in 2012.

In the mid 1990s, I was approached by a contact lens industry representative to complete a survey on continuous wear. He said, “Just imagine that it was safe for patients to wear lenses for 30 days continuously.” I replied: “That would be amazing—if it ever happened.”

Five years or so later, while working as lead researcher on a study of silicone hydrogel continuous wear at the CCLRU in Sydney, I became convinced. Eyes were white; in contrast to the expected vascularisation, there was vessel ghosting and virtually no microcysts. Wearers were happy, inflammatory events low and microbial keratitis (MK) extremely rare.<sup>1</sup> There were some mechanical issues, notably SEALs and CLPC, but we had strategies to reduce those. Looked at from its clinical aspects, safe extended wear was indeed a reality.

The laboratory findings, on the whole, agreed. Higher levels of oxygen supply were linked to protection against infection in contact lens wear in several lab studies. *Pseudomonas aeruginosa* (PA) is the most prevalent organism in contact lens microbial keratitis in cool climates.<sup>2</sup> PA binding to corneal epithelial cells is less common with higher oxygen permeable lenses.<sup>3</sup>

In addition, extended wear results in migration of Langerhan's cells (dendritic cells that act as antigen presenting cells) into the cornea in animal models.<sup>4</sup> More recently, a rodent model of contact lens infection found increased levels of dendritic cells in the corneal periphery as well as a higher incidence of MK with low compared to high oxygen transmissible (Dk) silicone hydrogel lens wear was found.<sup>5</sup>

In short, the modality looked quite promising. Practitioners were enthused about its prospects. Was it—as financiers say about stock market bubbles—irrational exuberance?

## Risky Business

Silicone hydrogel continuous wear lenses hit the market in 1999. A large post-marketing study showed that MK rates were similar to low-Dk extended wear, and a meta-analysis of studies indicated silicone hydrogels had twofold increase in corneal inflammatory events.<sup>6,7</sup>

From 2003-2005, two concurrent, large-scale, epidemiological MK studies funded by the contact lens industry were conducted.<sup>8,9</sup> The researchers confirmed that overnight wear, regardless of the lens type, increased the risk of MK by a factor of four.

Questions remained: Did the contact lens wearers who were new adopters of this technology—a trait linked to high risk taking—have poor hygiene practices? Maybe the practitioners, who were early-adopter prescribers, were less vigilant with patient safety and selection or were prescribing silicone hydrogel lenses as a problem solver? Did we have a different group of wearers, more at risk of adverse events in this early period? Certainly there was a precedent for this.

When disposable lenses were first introduced to the market in the early 1980s, the risk of MK was significantly higher than with conventional soft lens wear.<sup>10,11</sup> As the market penetration of disposable lenses increased over the following decade, the relative risk decreased.<sup>12</sup>

It is probable that the population of wearers in the early period was dominated by early adopters of the modality who had been shown to take more risks and wearers prone to adverse events, as the lenses are likely to have been fitted as a problem solver by practitioners.<sup>6,12,13</sup>

It has also been postulated that overly enthusiastic practitioners who prescribed lenses during this period may have predisposed wearers to increased risks in terms of who they prescribed to and the advice they gave them.<sup>6</sup>

In 2009, my research team found high risk-taking contact lens wearers tended to be more non-compliant and may be at greater risk of corneal inflammation and infection because of poor lens care procedures.<sup>14</sup> High risk taking was more prevalent, as expected, in younger individuals and males, and may explain some of the increased risk of adverse events in these groups of wearers.



Photo: Joel Silbert, OD

**Keratitis secondary to *Pseudomonas aeruginosa*, a potential adverse event of improper lens wear. Note the central ulcer, hypopyon, gross hyperemia and mucopurulence.**

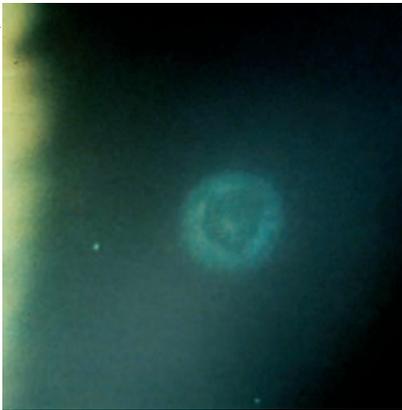
Risk-taking personalities of medical practitioners have been investigated in relation to patient care in a number of studies. Higher risk-taking practitioners have been found to make fewer referrals, prescribe antibiotics less often, order fewer laboratory diagnostic tests, admit fewer cardiac emergency patients to hospital and generate lower costs per patient.<sup>15-19</sup> We found that Australian contact lens practitioners scoring highly on risk-taking propensity prescribe lenses based on the same perceived importance of risk factors for adverse events and give similar advice to wearers as risk averse practitioners.<sup>20</sup> It is unlikely that new adopter contact lens practitioners influence adverse event rates as new products are brought to market.

### Selecting for Success

Which types of patients should avoid continuous wear? Continuous wear is not advised for heavy depositors, with or without con-

tact lens papillary conjunctivitis (CLPC). Daily replacement of contact lenses reduces the incidence of CLPC recurrence with both silicone hydrogel and softer moduli hydrogel lenses.<sup>21</sup> While the predominant deposit on silicone hydrogel materials is lipid that can usually be rubbed off with surfactant, you don't want wearers taking lenses out, introducing possible contaminants and then being tempted to reapply lenses without overnight disinfection.<sup>22</sup> It is advisable not to fit wearers with active and recurrent anterior lid margin disease as the staphylococcal bacterial load is associated with contact lens peripheral ulcers.<sup>23</sup>

What behaviors should be cautioned when using continuous wear? Water contact should be avoided with all soft lens modalities because of the association with *Acanthamoeba* keratitis.<sup>24,25</sup> Even though the risk of *Acanthamoeba* keratitis is low and varies depending on region, it is a devastating disease that can last months and



**A healed contact lens peripheral ulcer several months after initial onset. Notice the faded bull's-eye scar.**

sometimes years.<sup>26</sup> It is not clear whether showering in lenses is an independent risk factor for infection, or whether it is linked to continuous wear.

In any case, it would be good practice to recommend avoiding splashing the eyes with water, and to wear tight-fitting goggles when swimming. Often, practitioners will advise patients to bring a supply of daily disposable lenses for holidays. This can be useful also as people tend to be out of their normal routine on holidays, and one study has shown a relationship with more severe infections.<sup>27</sup>

Wearers with less lens experience generally or, in the case of continuous wear in a new lens type, are more at risk of both corneal infection and inflammation.<sup>8</sup> Handling difficulties may contribute to mechanically induced events in new wearers, but this would not likely be the case for those new to continuous wear. These findings point towards adaption of the anterior eye, which has been indicated in human studies, as evidenced by binding of *Pseudomonas* to corneal epithelial cells, surface cell shedding and epithelial thickness return to baseline levels over a 12-month period.<sup>3</sup>

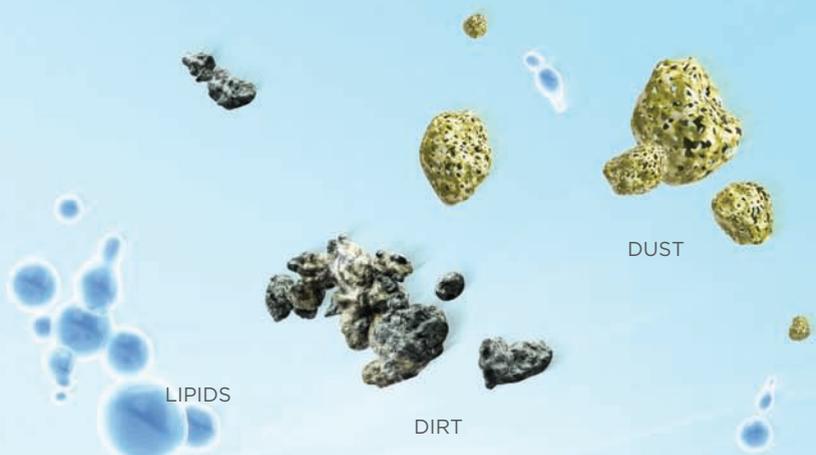
## Still a Sensible Option?

What types of wearers might really benefit from continuous wear? To name a few groups—people with a love for the outdoors who camp a lot; those with lens-handling issues; and individuals whose occupations or lifestyles benefit from long hours of wear, such as shift workers. When hand hygiene is an issue (e.g., on a camping trip), not having to touch the lenses is a distinct bonus. Difficulty in handling lenses can take up a lot of time for some individuals, such as men with large digits. The ensuing frustration can result in ocular surface damage and/or discontinuation of lens wear. During “on” weeks, shift workers can have little relaxation time. Not having to worry about lens care can be a lifestyle advantage.

There are many practitioners who have thriving continuous wear spheres of practice and report very few issues. However, it should not be a niche market. You don't need the latest topographer or have to worry about precise lens fitting. You *do* need good communication skills and relationships with patients. Overnight lens wear still confers a higher risk of microbial keratitis, and patients must clearly understand the consequences of their choice. Still, compared to other life risks, it is low—about equal to the risk of dying of cancer in the US.<sup>28</sup> Continuous wear can make a big difference to the quality of life of some wearers and, managed appropriately, can be a rewarding sphere of practice. **RCCL**

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Important information for AIR OPTIX® AQUA (lotrafilcon B), AIR OPTIX® AQUA Multifocal (lotrafilcon B) and AIR OPTIX® for Astigmatism (lotrafilcon B) contact lenses: For daily wear or extended wear up to 6 nights for near/far-sightedness, presbyopia and/or astigmatism. Risk of serious eye problems (i.e., corneal ulcer) is greater for extended wear. In rare cases, loss of vision may result. Side effects like discomfort, mild burning or stinging may occur.

Important information for AIR OPTIX® NIGHT & DAY® AQUA (lotrafilcon A) contact lenses: Indicated for vision correction for daily wear (worn only while awake) or extended wear (worn while awake and asleep) for up to 30 nights. **Relevant Warnings:** A corneal ulcer may develop rapidly and cause eye pain, redness or blurry vision as it progresses. If left untreated, a scar, and in rare cases loss of vision, may result. The risk of serious problems is greater for extended wear vs. daily wear and smoking increases this risk. A one-year post-market study found 0.18% (18 out of 10,000) of wearers developed a severe corneal infection, with 0.04% (4 out of 10,000) of wearers experiencing a permanent reduction in vision by two or more rows of letters on an eye chart. **Relevant Precautions:** Not everyone can wear for 30 nights. Approximately 80% of wearers can wear the lenses for extended wear. About two-thirds of wearers achieve the full 30 nights continuous wear. **Side Effects:** In clinical trials, approximately 3-5% of wearers experience at least one episode of infiltrative keratitis, a localized inflammation of the cornea which may be accompanied by mild to severe pain and may require the use of antibiotic eye drops for up to one week. Other less serious side effects were conjunctivitis, lid irritation or lens discomfort including dryness, mild burning or stinging. **Contraindications:** Contact lenses should not be worn if you have: eye infection or inflammation (redness and/or swelling); eye disease, injury or dryness that interferes with contact lens wear; systemic disease that may be affected by or impact lens wear; certain allergic conditions or using certain medications (ex. some eye medications). **Additional Information:** Lenses should be replaced every month. If removed before then, lenses should be cleaned and disinfected before wearing again. Always follow the eye care professional's recommended lens wear, care and replacement schedule. Consult package insert for complete information, available without charge by calling (800) 241-5999 or go to [myalcon.com](http://myalcon.com).

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# Making the Case for Daily Disposables

Daily disposable contact lenses can reduce discomfort and increase compliance—one day at a time. **By Mile Brujic, OD, and Jason R. Miller, OD, MBA**

Other countries have readily embraced daily disposable contact lenses as a viable option—and often as a first choice. But in the United States, daily disposable prescribing is less than 20% of total fits.<sup>1</sup>

This article doesn't attempt to explain the possible reasons for this low fitting rate, but instead takes a positive view to describe the many benefits and new options available in daily disposables.

## Primary Benefits

Daily disposable contact lenses continue to be an increasingly important technology for our patients. The benefits of fitting daily disposable lenses are significant:

- **Good for occasional use.** For patients who may be part-time or occasional contact lens wearers, this modality is a logical choice to optimize the wearing experience with a

new lens every time they use it.

- **Minimize lens care.** For those patients who may be sensitive to contact lens solutions, daily disposables offer a viable option for lens wear. Additionally, with daily disposable lenses there is no lens care required for patients. However, continue to instruct all contact lens patients to wash their hands before handling their lenses.

- **Reduces non-compliance.** Ideally, if we reduce the number of lens care steps, compliance should improve. And, in fact, a number of studies have demonstrated that daily disposable lens wearers are more compliant with lens replacement than their two-week or monthly replacement wearing counterparts.<sup>2-4</sup>

Replacement non-compliance was only 12% for US patients who wore daily disposables, according to a study by researchers at the

University of Waterloo's Centre for Contact Lens Research (CCLR). This non-compliance rate was significantly better than patients wearing either two-week (52% non-compliance rate) or monthly (28% non-compliance rate) disposable lenses.<sup>5</sup>

Another study by CCLR researchers demonstrated that patients who are more compliant with their lens wear replacement schedules report better subjective comfort and vision in the evening and when their lenses need replacing.<sup>6</sup>

- **Decreases deposits.** If wearers are compliant, daily disposable lenses will have the unique advantage of only one day's wear of protein and lipid deposition. Several stud-

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**Goal Statement:** Compared to other parts of the world, fewer Americans are fit with daily disposable contact lenses. This course describes the many benefits of daily disposables as well as the newest products available.

**Faculty/Editorial Board:** Mile Brujic, OD, and Jason R. Miller, OD, MBA

**Credit Statement:** This course is COPE

approved for 1 hour of CE credit. COPE ID 38038-CL. Check with your local state licensing board to see if this counts toward your CE requirements for relicensure.

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ies have demonstrated the surface deposition profiles that result in lenses that are not replaced on a daily basis.<sup>7-9</sup>

Of course, compliance trumps all. So, despite significant advances in lens surface technologies and contact lens solutions used to care for non-daily disposable lenses, non-compliance can still negate the benefits of these lens technologies.

• **May lessen symptoms of ocular allergy.** Speaking of surface deposits, our allergy sufferers are a group of patients who can be particularly aware of these concerns. Seasonal allergic conjunctivitis manifests through the exposure of sensitized conjunctival tissue to a specific allergen. Upon exposure, mast cells in the conjunctival tissue release large quantities of the pre-formed mediator histamine into the conjunctival tissue bed and the tear film.<sup>10,11</sup> Additionally, the mast cells also migrate to the surface of the conjunctiva. As a result of mast cell degranulation, histamine causes the itching, redness and tissue swelling in the conjunctiva and eyelids.

The most common symptom for patients with allergic conjunctivitis is itching.<sup>12</sup> And, while patients may experience temporary relief from rubbing their eyes, the unfortunate reality is their symptoms may escalate because of the mechanical irritation from the rubbing. Plus, contact lenses often worsen the severity of allergic symptoms due to increased lens awareness in the presence of the allergic cascade.

The additional proteins and inflammatory molecules that are secreted, along with the additional mucous produced by the eyes, also challenge contact lens wearers during the allergy season. This often increases lens deposits, making it even more difficult to keep lenses clean during the allergy season.<sup>13</sup>

Fortunately, much of this is miti-

### Available DDCL Options

All of the major manufacturers produce daily disposable contact lenses. Additionally, a number of smaller manufacturers have also entered in the daily disposable market. Although it is not the intention of this article to review all of the lens options that are available, it is important to know the manufacturers that do produce daily disposable lenses.

- Alcon – [www.alcon.com](http://www.alcon.com)
- Bausch + Lomb – [www.bausch.com](http://www.bausch.com)
- ClearLabs - [www.clearlabusa.com](http://www.clearlabusa.com)
- CooperVision – [www.coopervision.com](http://www.coopervision.com)
- Optical Connection – [www.opticonnection.com](http://www.opticonnection.com)
- Safigel - [www.safigel.com](http://www.safigel.com)
- Unilens – [www.unilens.com](http://www.unilens.com)
- Vistakon – [www.acuvue.com](http://www.acuvue.com)

In addition to visiting the companies' websites for specifics on their products, several resources exist for a full listing of lens options. Although not limited solely to daily disposable lenses, these resources provide current lens information:

- *Tyler's Quarterly Soft Contact Lens Parameter Guide* ([www.tylersq.com](http://www.tylersq.com)) is published four times a year in a traditional printed format, with lenses categorized by either the manufacturer or the type of lens (i.e. disposable toric).
- Vistakon has an online database ([www.acuvueprofessional.com](http://www.acuvueprofessional.com)) that allows you to search different types of lens modalities from all manufacturers.
- Eyedock ([www.eyedock.com](http://www.eyedock.com)) is an online resource that also has an app available for use. Eyedock was created in 2003 and provides practitioners an easy way to search contact lenses by a number of parameters, depending on the needs of the patient.
- The Right Contact ([www.therightcontact.com](http://www.therightcontact.com)) is a recent addition to our contact lens resources. This online resource was released in 2012 and is now also available as an app.

gated when patients replace their lenses more frequently. This positions a daily disposable lens as an optimal option.

• **Better for GPC.** Giant papillary conjunctivitis is a chronic allergic response secondary to mechanical irritation, usually on the upper tarsal plate. In your contact lens wearers, always be sure to evert the upper eyelid and examine the tarsal plate for any response that may be present. Eyelid eversion may be even more important in mild papillary responses, because the patient's presenting symptoms may not otherwise prompt you to do so.

Much of the stimulation for GPC development is thought to be denatured proteins present on the surfaces of worn lenses that cause the recruitment of inflammatory cells. This exacerbates the process because of the increase of inflammatory mediators secreted by these cells.<sup>14,15</sup>

Patients with GPC may require a temporary hiatus from lens wear. Some patients may even require treatment with therapeutics—including topical mast cell stabilizers and anti-inflammatory agents, such as steroids—to reduce the inflammatory response. When it's time to return to lens wear, a daily disposable lens is the clinically preferred modality for these patients. Because the lens is disposed after one day of wear, there is no deposition from the previous day or days to fuel the inflammatory process.

### Notable New Options

Contact lens manufacturers are continually attempting to improve our patients' wearing experience by introducing new lens technologies. Here, we briefly describe the newest developments in daily disposable lenses, followed by a preview of technologies soon to come.

- **Multifocal.** CooperVision

recently released the Proclear 1 Day Multifocal. The lens is similar to its single-vision predecessor in that it is made of omafilcon A, which has a water content of 60%. Its base curve is 8.7mm and diameter is 14.2mm. Its distance prescription is available from +6.00D to -6.00D in 0.25D steps. If the required distance prescription is greater than -6.00D, it is available in 0.50D steps from -6.50 to -10.00D. It is currently available in 30 packs.<sup>16</sup>

The lens is a near-center simultaneous vision design. Unlike most multifocals, the Proclear 1 Day is unique in that it is only available in a single add power. As with all multifocal lenses, it is important to test for eye dominance, as the fitting of this lens modality is highly dependent on ocular dominance.

For patients with add powers up to +1.00D, lenses with the appropriately vertexed distance correction are selected and fit on the patient. For patients with add powers from +1.25 to +1.75D, the distance correction is modified and given an extra +0.75D over their current distance prescription in the non-dominant eye. For those patients requiring a +2.00D add or greater, +0.75 to +1.00D is required over the distance correction of the non-dominant eye.<sup>17</sup>

• **Hydrogel.** Bausch + Lomb recently introduced the Biotrue OneDay lens. The lens, composed of nesofilcon A, has a water content of 78%. It is available from -0.25D to -6.25D in 0.25D steps, and from -6.50D to -9.00D in 0.50D steps. Its base curve is 8.6mm and diameter is 14.2mm. The company refers to the lens material as HyperGel, which it says was designed to mimic the eye's ability to prevent dehydration for better comfort and vision.<sup>18</sup>

• **Silicone hydrogel.** Vistakon recently launched a new version of its TruEye lens. This lens was the

first silicone hydrogel available in a daily disposable modality. But this new version is made of narafilcon A (its predecessor was made of narafilcon B) and has a 46% water content (previously 48%). Also, Dk/t increased significantly (to 118) with narafilcon A, in comparison to its narafilcon B predecessor (65 Dk/t).<sup>19</sup> TruEye is available in two base curves: 8.5mm and 9.0mm with a 14.2mm diameter. The lens comes in 0.25D steps from -0.50D to -6.00D and +0.50D to +6.00D, and in 0.50D steps from -6.50D to -12.00D.

### On the Horizon

Later this year, Alcon plans to launch Dailies Total1 lenses in the US market, which are made with a novel material called delefilcon A. This is the first and only water-gradient contact lens—this means its water content increases from 33% at its silicone hydrogel core to an average of 80% at the surface of the lens.<sup>20,21</sup> The outer 6µm of the lens is composed of an ultra-soft, hydrophilic surface gel that has demonstrated exceptional lubricity.

For appropriate candidates, daily disposable lenses have the potential to truly revolutionize your patients' lens-wearing experience. With the growing number of parameters available, daily disposables will become an increasingly important part of our practices. [RCL](#)

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# Avoid These Medicolegal Pitfalls

Here are 10 do's and don'ts to help you steer clear of the courtroom—and take good care of your patients and your practice. **By Pamela J. Miller, OD, JD, DPNAP**



*Dr. Miller is in private practice in Highland, Calif., and works as a practice management consultant and expert witness. She lectures and publishes extensively and has written seven books.*

**A**fter 40 years in practice, I have yet to meet the doctor who intentionally sets out to commit malpractice. In fact, it's quite the reverse—we try to do our best to take care of our patients and practice to the best of our ability.

Unfortunately, the reality is that we all make mistakes. But, we can absolutely minimize our risk exposure and better serve our patients, ourselves and our practices by following some basic precautionary steps.

Here are some of the most common do's and don'ts that we may encounter in daily practice. (One thing we should be sure to do: "Always write it down!")

1

**Don't simply record "no changes."** Your patient is always a new patient, even if you have been seeing him or her for years. It's so easy to simply state "no changes" in the record, whether it's history, pharmacological agents, patient health or even visual exam findings.

But don't assume that the information obtained in the electronic record is complete or sufficient.

Don't clone your records (either paper or EHR). You need to identify and show that you have reviewed each element in the record.

- **Do:** Ask every question every time and perform every pertinent or relevant test every time. You have a duty to use your knowledge and assimilate additional information through testing and questioning when appropriate.

2

**Don't ask, 'Everything OK?'** If you only record changes that the patient reports, or you ask if everything is still the same, you may not get an informative answer. When you're not specific in your questioning, patients forget or automatically answer in the affirmative.

Never assume that you know your patient so well that you don't have to question them. Not only does technology change, so do your patients needs, lifestyle, hobbies and environment. This year they may benefit from a bifocal contact lens, refractive surgery, sports protection, cataract removal, updated sun protection, a computer prescription or a supplemental pair of reading glasses. If you don't ask, patients

are less likely to mention these things or even know they could benefit. Furthermore, you may be the one person who diagnoses their diabetes, their life- or sight-threatening tumor, macular degeneration or other concern.

- **Do:** Ask, investigate and document. Never forget that you are charged to care for the entire patient. You have a duty to investigate and to prescribe or refer appropriately.

Also, if you fail to document what you've done, it's as if you didn't even do that component.



**Don't give a patient short shrift.** Sometimes we're so

rushed that we occasionally forget to perform a test, ask for follow-up, record our findings and a million other details. When you are busy, it's easy to overlook a needle in a haystack, unless you look very carefully. Similarly, if you omit essential testing, then a serious error can occur when following up with the patient.

An omission is more likely to occur with patients seen on a regular basis, like contact lens fits, glaucoma or diabetic patient visits. Because these patients may require more visits, it's easy to overlook the need to perform the patient's annual wellness or medical visual examination. Just because he or she is your regular contact lens patient doesn't allow you the luxury of skipping or forgetting the routine or regular examination procedures. Although it can be tempting to curtail or even omit pertinent charting information, it is critical to note some findings and questions every time you see your patient.

- **Do:** Give every patient 100% of your time and knowledge.

Neglecting to pay attention to detail or to compare examination findings on repeated visits can easily result in missed information or misdiagnosis, or even patient injury. Pre-appoint patients to maintain more effective control over their visual health and minimize the potential for overlooking their other visual needs and requirements. If this isn't part of your protocol, start to make it your standard of care.



**Don't rest on your laurels.** As a practitioner, you have a legal 'Duty of

Due Care' that you must meet. That duty entails maintaining your education, improving your professional knowledge, updating obsolete equipment and even expanding your treatment as your scope of practice changes.

As professional opportunities increase and technology improves, make certain you keep pace. Weigh the benefits of new purchases and patient care. If you haven't changed the way you practice in 10 years, you're probably playing Russian roulette with your license. If your equipment is out of date or obsolete, it's time to consider upgrading.

- **Do:** Take stock of the way you practice, the licensure level in your state and your equipment purchases to make certain you're practicing at an appropriate level of care. Remember that different instruments purporting to test the same thing are not necessarily comparable, so do your homework prior to purchasing.



**Take care in extolling your expertise.**

You may consider yourself a specialist, but along with that designation

comes increased responsibility and risk. Depending on your state law, you may be limited to how you advertise your expertise. For instance, you may be a corneal and contact lens specialist, or limit your practice to contact lenses, or have an emphasis on contact lenses. How you phrase it depends on your state laws. If in doubt, check with your state board. If you elect to restrict your practice to a specific area, you may be held to the higher standard of an expert.

- **Do:** Make certain you comply with your state board rules and regulations regarding how you advertise your practice and your level of competency.



**Don't be inconsistent with care.** Even if you are current in your

profession, you may not be practicing at the level you should. Industry standards are constantly in a state of flux, but may not be in sync with instrumentation capabilities. For example, if dilation is the standard, the fact is that not every patient requires dilation nor may they require dilation at every visit. Professional judgment is critical when assessing tests that need to be performed and how frequently. You may have a non-mydriatic camera that works very well for most patients, allowing you to selectively dilate patients. You may elect to schedule dilations on follow-up medical examinations rather than at initial wellness visits.

- **Do:** Make certain that you have a standard of care for your patients in place, including when further testing is needed.



**Don't get mired in referral follow-up.**

We all know that we have an obligation

to follow up with our patients for consultations, for referrals to fellow health care practitioners or colleagues, for comanagement of patients and to make certain that other practitioners (including primary care physicians and school nurses) are kept informed about our findings. (Not to be overlooked is the necessity of maintaining an effective patient recall system.)

While the patient may be under no obligation to return to you for care, or to actually see a fellow health care practitioner that you have referred him or her to, you have an obligation to care for your patient in a professional manner. Yet, this can be particularly frustrating when the practitioner you've referred your patient to refuses to keep you in the loop, return your patient to your care, disparages you or, even worse, refers your patient to another practitioner for care that you could easily and legally provide because you are not "in their network."

When possible, make the appointment for your patient. If that's not possible, and the patient must see their primary doctor for the referral, then empower the patient with this responsibility and to relay information to you after they've seen the specialist. Rather than faxing, e-mailing or snail-mailing a report or referral information to another practitioner, why not entrust that report to the patient to hand carry it to their primary care physician and the specialist you may actually want the patient to see (making certain to document what you are doing)?

Be sure to ask the patient to call you after the appointment and give you an update and report, which now should become part of the patient's record. It's easy to do and allows the patient to become

an active part of the team.

- **Do:** Encourage your patients to become active in their care, even when you're confident that you'll receive a report back from other health care practitioners. Consider pre-appointing patients to ensure ongoing and continuation of both medical and wellness vision care in your office, making certain that you explain why you want to see that patient at the designated time.



***Don't neglect proper coding and billing procedures.***

Billing and coding is a dreadful yet necessary and changing part of our practice that needs updating on an annual basis. If you aren't up to snuff on the latest information, it's time to get current. When patients come into your office, be sure that you (or your staff) obtain all information on both their vision care and medical insurance. Doing so will help aid your coding, billing and referral practices.

- **Do:** Review and update your knowledge of billing and coding related to your practice and your area of emphasis.



***Don't be abrupt, rude or uncommunicative.***

Avoiding malpractice starts with the initial patient contact. So, the first time you see a patient, establish the rapport that you want to be part of a lasting relationship. Introduce yourself, find out what the patient wants to be called and how to pronounce their name, explain what you are doing and what you are finding, recap what has happened and what your recommendations are, and don't forget to ask your patient if they have

any questions that you haven't answered.

- **Do:** Treat patients the way you'd want to be treated. In general, people don't sue people they like. When patients feel that you care about them, they tend to be more open with you, more forthcoming with information, and less likely to initiate litigation. If you make a mistake, admit it—and do your best to remedy it.



***Don't hide behind your staff.***

Remember that your staff is an extension of you—so any act that they perform (or refrain from performing) within the scope of their job can and will be imputed to you under the theory of *respondeat superior* (which is Latin for "let the master answer" and legalese for "the buck stops with the boss"). So, continue to educate your staff as well as yourself in the "care and feeding" of your patients.

- **Do:** Educate yourself, your staff and your patients, and don't forget to document what you have done.

Although it's discouraging to have to think about the medicolegal pitfalls of practice, it truly is important to at least re-visit these issues and potential areas of concern on a regular basis. And, when you have a specialty, like cornea and contact lenses, it is particularly important to remember to return to the basics to protect your practice and yourself, while fulfilling your daily commitment to caring for your patients.

Last but not least: Remember that if you don't document it, then the question, education, test or procedure essentially never happened. **RCCL**



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# No More 'Blind Faith' Decisions

Don't make changes haphazardly. If you want to make a process perform better, first find out how your current one performs.

**D**o you want to change your snail-mail recall system over to email and text messages? What if you changed your phone reminder system to pre-appointments and added text messages? Or suppose your practice notifies patients by phone when their glasses are ready to be picked up, but you want to change this to appointments for pick-ups?

There are many examples of, "That's the way we've always done it in our office" used as justification, be it recall or notifying patients about their glasses. Are the ways you do things in your office working optimally? And, more to the point: If you want change how you do things, how do you modify a process that has multiple steps?

Start with a baseline. Before you make any changes, you need to document how the current system performs.

### One Change at a Time

Let's use recall as an example. Suppose your current recall system involves a postcard sent 11 months after the patient's last exam. Now, if you mail 100 cards to patients who were examined in July 2012, how many will come back in July 2013? I'd use at least three months of data to get this baseline number.

Once you have that data, then you can start to try to improve things. Any changes are fair game (content, font, card stock, ink color, formatting, whatever), and the best way to change a multi-faceted program is usually to change only

one thing at a time. So, in this example, if you want to change from a postcard and add a phone follow-up, and then move to texting, try the addition of the phone call first.

As above, stick with the new change for about three months and track your results. Then, add texting and measure again. Carefully "titrating" the changes this way accomplishes two things:

First, it assures that any changes you make will be positive ones. For instance, if adding the phone call caused a decrease in response rate for some reason, you'd know that you can safely stop making the calls.

Second, you can control costs. If the phone calls didn't work, you would stop them after your three-month test. From there, you'd have the extra money to put toward trying texting.

### Making Recall a Priority

Here's a great example of the importance of testing a change to an established system: A practice we worked with was using snail-mail recall with fairly good success, but still wanted to see if there was room for improvement. Because the response rate was already high, the practice owner was hesitant, as was I, to make any changes. However, we agreed that if first-class snail mail worked well, then the more expensive option of Priority Mail (\$5 additional for each piece we mailed) might

*We tested for three months... and we were wrong! But if we didn't have a baseline, and didn't measure results afterward, we could have spent an additional \$5 per patient per month ad infinitum.*

work even better—hopefully better enough to at least cover the extra incremental cost. We figured that the Priority Mail envelope would incite more envelopes to be opened, fewer would be thrown away compared to first-class mail and, as a result, more patients would come back.

So, we tested this for three months... and we were wrong! The bigger, more expensive, more urgent-looking envelope had no effect on the ultimate patient response rate. But, the point is, if we didn't have a baseline before testing, and didn't continue to measure results afterward, then we could have easily spent an additional \$5 per patient per month ad infinitum.

Does this mean that Priority Mail won't help your snail-mail recall system? No. It means the only way you'll know is if you test it. Your patients might be more willing to respond to such a change than the doctor we tested this with. But, test you must, or you run the risk of haphazardly making changes at your own peril, or doing nothing at all and hoping "the way we've always done it" is the right one. **RCCL**



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\*Compliance with Manufacturer-Recommended Replacement Frequency (MRRF).

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across the surface of the lens<sup>1,2,4</sup>

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that reduces lipid deposition  
and removes protein deposits<sup>1-3</sup>

PROVIDING MOISTURE  
from morning till night<sup>1,2,4</sup>

Proprietary **HydraGlyde®**  
Moisture Matrix

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