

BUILD YOUR PRACTICE With Next-Generation Contact Lens Care

Upgrade your contact lens patients to the latest technology for superior disinfection and excellent comfort



Highlights from a Roundtable Discussion held during the American Academy of Optometry 2011 meeting

MODERATOR



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Build Your Practice With Next-Generation Contact Lens Care

Upgrade your contact lens patients to the latest technology for superior disinfection and excellent comfort

Dr. Shovlin: Despite newer care solutions, some of our colleagues still think all care solutions are the same. But not all care solutions are equal. New solutions created using advanced science take contact lens care to a higher level. RevitaLens OcuTec MPDS (AMO) is a next-generation care solution with new technology that addresses the triple challenge of new lens materials, complications, and patient compliance — all without compromising comfort. In comparison, some products are line extensions and not really new technology from a disinfection perspective. The properties of RevitaLens MPDS make it an excellent switch for re-fit patients who wear SiHy and other soft contact lenses. Upgrading your patients to the next-generation solution will help build your practice because as we all know, fewer patient complications lead to reduced chair time, and increased lens-wearing satisfaction reduces patient drop-out. Knowing this, how have your recommendations about care solutions changed in the last few years?

Dr. Quinn: For a wearer to be successful with contact lenses, the patient, the lens and the care solution all have to be compatible, and RevitaLens MPDS is the new-generation solution developed for new contact lens materials and is compatible with silicone hydrogel lenses.

Dr. Shovlin: Many patients are still using older care solutions or have moved to using generic solutions. At the same time, I believe we've seen more abuse of lenses and care solutions than we did in the past, particularly with patients topping off the care solution in their cases. It's more important than ever that care solutions are able to disinfect lenses, even if patients aren't 100% compliant.

EXTRA PROTECTION FOR NON-COMPLIANT PATIENTS = FEWER PATIENT COMPLICATIONS

Dr. Shovlin: What do you think are the most important qualities in the next generation of multipurpose disinfecting solutions?

Dr. Willcox: Contact lens solutions have to be better at controlling clinical isolates of the bacteria that are causing problems. These clinical isolates tend to be somewhat more resistant to normal disinfecting systems than the standard strains that are mandated to be tested with all disinfecting solutions, so I think it's important to ensure that new care solutions are more effective against those isolates (Figure 1).

They have to be active against both the trophozoites (Figure 2) and the cysts of *Acanthamoeba*. I know the FDA and the manufacturers are determining the right level of activity, and these levels are likely to be standardized (Figure 3). Finally, I think new care solutions have to maintain activity under noncompliant conditions such as topping off or evaporation. Today, economic hardships are making people reuse lenses and top off care solutions even more often than they did in the past. In a study by Kilvington and colleagues,¹ where solutions were evaporated under a stream of air to 2x and 4x concentration and then challenged with *Fusarium solani*, *Candida albicans*, and *Acanthamoeba castellanii*, the level of organism kill at 6 hours was compared to the non-evaporated product. Opti-Free Replenish MPDS effective kill was reduced by 72% at the 2X concentration and 93% at the 4X concentration against the fungi *C. albicans* and *F. solani* ($P < 0.05$ and $P < 0.001$, respectively). For the *Acanthamoeba* strain, a 61% loss occurred at the 2X concentration ($P < 0.05$). For Biotrue MPS, effective kill was reduced by 48% ($P < 0.05$) against *C. albicans*. Only RevitaLens MPDS sustained antimicrobial activity against the three organisms at 2X concentration,

Figure 1. RevitaLens MPDS delivers superior antimicrobial efficacy against emerging pathogens^{1,2,3}

Organism	Strain	Log ₁₀ reduction (6 hr)			
		RevitaLens OcuTec MPDS	Biotrue MPS	Opti-Free Replenish MPDS	Opti-Free PureMoist MPDS
<i>Stenotrophomonas maltophilia</i>	ATCC 15099	4.6	4.9	0.6	0.2
<i>Delftia acidovorans</i>	ATCC 17438	4.3	4.3	0.7	2.5
<i>Achromobacter species</i>	S50C	4.7	4.7	0.0	0.1
<i>Achromobacter xylooxidans</i>	S20C	4.1	2.8	0.0	0.0
<i>Serratia marcescens</i>	S1	4.8	4.8	0.2	0.2
<i>Ralstonia insidiosa</i>	DT	4.8	1.4	0.0	0.4

References: 1. Nikolic M, Kilvington S, Brady N, Lam A, Cheung S. Comparative Efficacy of New Contact Lens Care Solutions Against Bacteria, Fungi, and Acanthamoeba. Poster, Association for Research in Vision and Ophthalmology, May 2011, Fort Lauderdale, FL and at the British Contact Lens Association Meeting, May 2011, Birmingham, UK. 2. Journal of Optometry, 93(3):134-42, July 2010. 3. Brady N, Kilvington S, Nikolic M, Lam A. A comparative antimicrobial assessment of a new dual-disinfection contact lens. Poster, AAO, Oct 2011, Boston, MA.



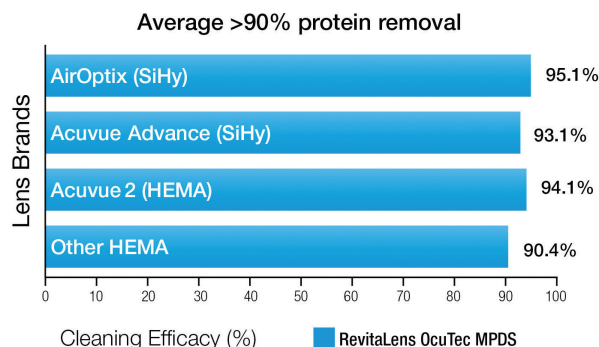
Figure 2. *Acanthamoeba* trophozoite with ingested *Stenotrophomonas* (formerly classified in the genus *Pseudomonas*). *Stenotrophomonas* is an opportunistic bacterial pathogen commonly found on contact lenses and cases.

Figure 3. RevitaLens MPDS delivers superior disinfection against *Acanthamoeba*¹⁻³

Solution	<i>Acanthamoeba castellanii</i> log ₁₀ reduction			
	Trophozoites		Cysts	
	4 hr	6 hr	4 hr	6 hr
RevitaLens OcuTec MPDS	3.6	3.6	3.2	3.7
Clear Care System	3.4	3.9	1.7	2.2
Biotrue MPS	2.0	2.3	1.0	1.5
Opti-Free Replenish MPDS	2.2	2.4	0.1	0.2
Opti-Free PureMoist MPDS	3.7	3.7	0.1	0.3

References: 1. Nikolic M, Kilvington S, Brady N, Lam A, Cheung S. Comparative Efficacy of New Contact Lens Care Solutions Against Bacteria, Fungi, and Acanthamoeba. Poster, Association for Research in Vision and Ophthalmology, May 2011, Fort Lauderdale, FL, and at the British Contact Lens Association Meeting, May 2011, Birmingham, UK. 2. Journal of Optometry, (33):134-42, July 2010. 3. Brady N, Kilvington S, Nikolic M, Lam A. A comparative antimicrobial assessment of a new dual-disinfection contact lens. Poster, AAO, Oct 2011, Boston, MA.

Figure 4. Excellent protein removal and lens cleaning for SiHy and soft contact lenses



Reference: Kilvington S, Huang L, Kao E, Powell C. Development of a new contact lens multipurpose solution: Comparative analysis of microbiological, biological and clinical performance. Journal of Optometry, (33):134-42, July 2010.

and at the 4X concentration it maintained 100% effectiveness against *F. solani* and *A. castellanii* and 80% against *C. albicans*.

Dr. Quinn: We still need to address patient compliance while working to develop a product that can manage sustained activity when patients are noncompliant. I think that's the key.

Dr. Papas: In addition to the steps Dr. Willcox indicated, care solution manufacturers also have to avoid damaging the eye and make the care solution acceptable to patients. It also has to enhance the comfort of the contact lens. The balance is exquisitely difficult to achieve, and I'm in awe of the manufacturers who achieve it all.

Dr. Quinn: RevitaLens takes an additional step by supplying a new contact lens case in every starter kit sample with retail bottles, which encourages patients to replace the case.

INCREASE PATIENT SATISFACTION WITH EXCELLENT CONTACT LENS-CLEANING

Dr. Shovlin: Are care solution compatibility issues more important with increased use of silicone hydrogels?

Dr. Stiegemeier: Cleaning is really important with these new care solutions.

Dr. Quinn: When a lens is clean, I believe patients see better, the lens feels better and it's safer to wear. Cleaning goes a long way toward meeting all of our patient's needs (Figure 4).

Dr. Kislán: We all know some silicone hydrogels just don't wet as easily, so although disinfection is extremely important from a doctor's standpoint, patients also care about comfort. It's tougher for companies to balance comfort and disinfection strength, but I think new care solutions are doing better in this regard.

Dr. Papas: Why the noncompliance? Do you think that because silicone hydrogels do a good job of increasing physiological benefits to the eye, patients think they don't need to be quite so careful about disinfecting their lenses?

Dr. Kislán: Well, some contact lens companies have emphasized oxygen permeability and the ability to sleep in the lenses. Patients are very aware of the benefits of the lenses, but some patients are also spending more time in contact lenses than ever before because they're sleeping in them. That means we need to be more diligent when managing these patients.

Dr. Smick: Rub and rinse opinions have gone back and forth. Abbott Medical Optics Inc. has advocated rubbing and rinsing, and now other manufacturers are following. That's a big step towards increasing the health of our patients' eyes.

Dr. Shovlin: Do we agree that rubbing and rinsing are effective?

Dr. Willcox: In the laboratory, if you contaminate a contact lens with a *Pseudomonas* or a *Staphylococcus* strain, for example, you can remove everything with rub-and-rinse. From a clinical perspective, if you have a contaminated lens, you're more likely to have patients experience adverse events, including infiltrates, so it can only help to rub and rinse to rid as much bacteria as possible.^{2,3} In my opinion, you need to rub and rinse the contact lens case as well, and clean fingers or anything else that comes in contact with the lens.

REDUCE CHAIR TIME WITH FEWER PATIENT COMPLICATIONS

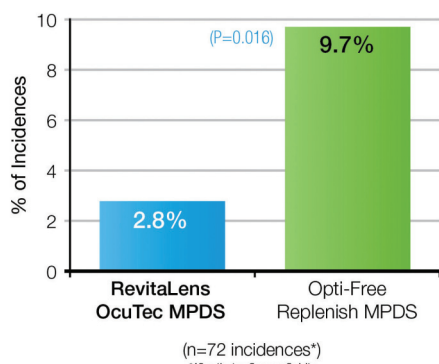
Dr. Shovlin: One of the challenges in SiHy lens wear is solution-induced corneal staining. What is the significance of staining for a contact lens wearer?

Dr. Papas: Staining can occur for many reasons, but "solution-induced corneal staining," a kind of punctate, stipple type of stain, is related to our choice of care solution. There has been a great deal of talk about what this means. At the Brien Holden Vision Institute, we've been trying to understand what's happening at the cellular level, and it seems that some cells on the corneal surface are going through a process of apoptosis. They're not dead, but some stimulus is causing them to go through a process of programmed cell death and it may be that this looks like a stipple stain in fluorescein tests (Figures 5a and 5b).

Dr. Shovlin: Are we seeing more infiltrates with the advent of new lenses and new care solutions?

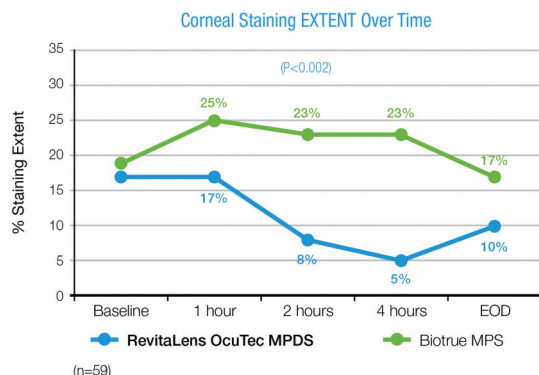
Dr. Papas: If you see this kind of solution-induced staining, you're about three times more likely to see infiltrates as a cohabitant of the cornea.⁴ Infiltrates and corneal staining seem to be co-travelers. I don't think that one causes the other; I think that

Figure 5A. Significantly lower rate of solution-induced corneal staining³



Reference: Brian Holden Vision Institute, Tilia D et al. Clinical Evaluation of a New Contact Lens Solution When Used in Conjunction with Two Silicone Hydrogel Lenses During Short Term Wear. Poster, BCLA May 2010, Birmingham, UK.

Figure 5B. Lower corneal staining vs. Biotrue MPS at every follow-up time point¹



4x Less Corneal Staining Extent vs. Biotrue MPS (At 4 hours)¹
3x Less Corneal Staining Extent vs. Biotrue MPS (At 2 hours)¹
Nearly 2x Less Corneal Staining Extent vs. Biotrue MPS (At End of Day)¹

Reference: Kao E, Huang L, Tsai L, Tarantino N, Odlich M. Differences in Time-Matched Profiles of Corneal Staining and Extent with Three Lens Disinfecting Solution Chemistries. Poster, British Contact Lens Association Meeting, May 2011, Birmingham, UK.

whatever causes the staining also causes the infiltrates. Something is causing an increase in both problems (Figure 6).

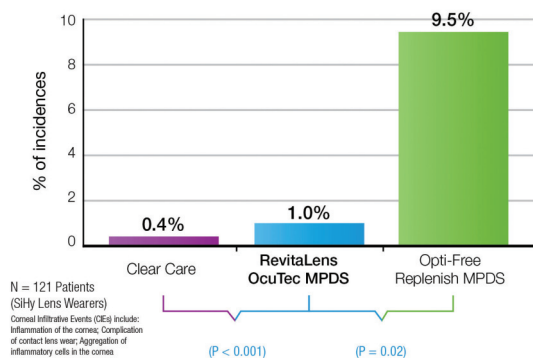
Dr. Kislán: We've published two sets of data,^{5,6} on corneal infiltrates, which really began to increase 4 years ago. We've seen almost 140 of these cases clinically, and they have more central granular infiltrates, unilateral or bilateral, symptomatic or asymptomatic. I believe it's dependent on the lens and care solution combination.

At presentation, it's a confusing problem because the patient is a referral. He's undergone treatment for infiltrates, been out of his contact lenses, then started wearing the lenses again, after which his problem returns and he's sent to us. More than 60 percent of these patients,^{5,6} were using a certain lens and a certain care solution together. We tracked these cases and charted review. We published our findings for about 70 cases.^{6,7}

Dr. Papas: What's the range of clinical presentation that we're talking about for infiltrates?

Dr. Kislán: These are central granular infiltrative events, not pe-

Figure 6. RevitaLens MPDS has significantly lower incidence of corneal infiltrates vs Opti-Free Replenish



Reference: Brian Holden Vision Institute, Tilia D, de la Jara P, Thomas V, Holden B, Wilcox M. Incidence of corneal infiltrative events with a new contact lens disinfecting solution. Presentation at AAO Oct 2011, Boston MA.

ripheral limbal ulcers or fluffy white sterile marginal ulcers. Many of the referring doctors were calling these cases epidemic keratoconjunctivitis (EKC).

Dr. Shovlin: Was epithelial staining involved?

Dr. Kislán: No, there was no staining with these patients, and again, some were symptomatic and some were not. A patient might even have infiltrates in both eyes, one that's symptomatic and one that's asymptomatic. It was a very strange presentation, and it wasn't until we started talking to the patients that we really began to correlate what was going on with the lens-solution combination.

Dr. Shovlin: We've also seen patients with this problem, who changed their care solution and cleared up the issue, but they return 6 months or a year later with the same problem. They say, "I've gone back to my old care solution." These are adapted wearers, not new wearers.

Dr. Kislán: In our practice, it seems to be patients who have been wearing lenses a long time — extended wear or not extended wear. Again, it often comes back to compliance. The lens case looks disgusting. They haven't changed it, and they may very well be topping off. I believe that staining and infiltrates are the result of that noncompliance. And this is not good for business overall. More chair time is needed for patients with complications, and if you cannot solve their complications, this may result in patient drop-out.

PROTECT AGAINST LENS CASE CONTAMINATION TO DECREASE PATIENT COMPLICATIONS

Dr. Shovlin: So, we know patient compliance is often lax. What's living in those dirty cases? And how can we improve the situation, knowing that patients are never fully compliant?

Dr. Willcox: The care solutions that seem to be associated with more infiltrative events are associated with large numbers of Gram-negative bacteria in lens cases. The eyes are desensitized to Gram-positive bacteria because they're already on our eyes and fingers, but we react to Gram-negative bacteria. They're very toxic because they have this component called "endotoxin," or "lipopolysaccharide." This toxin can build up in the case, potentially getting trans-

Figure 7. RevitaLens MPDS has significantly less lens case contamination vs. Opti-Free Replenish MPDS.¹

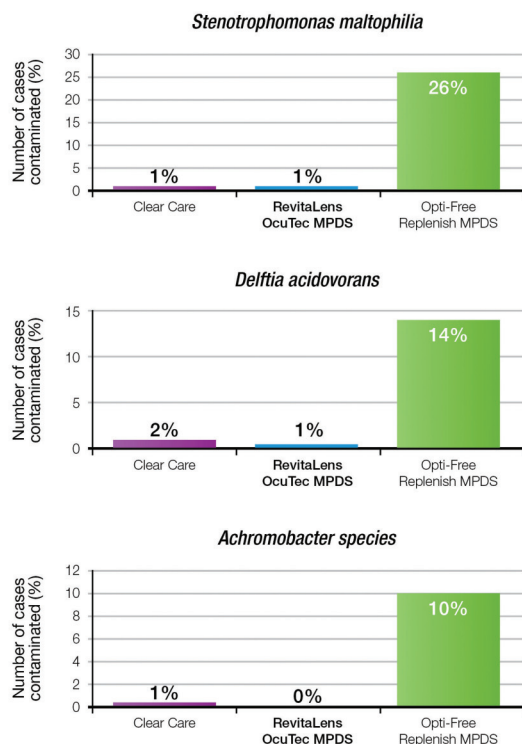
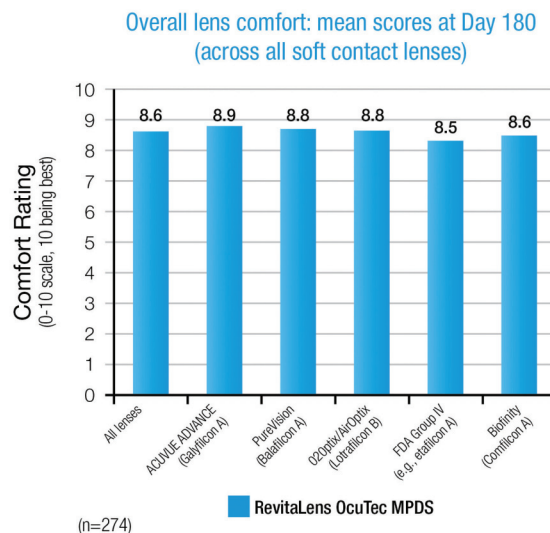


Figure 8. RevitaLens MPDS delivers excellent comfort for SiHy lenses and all other contact lenses



Reference: Tarantino N et al. A Six-Month Clinical Evaluation of the Safety and Acceptability of a Novel Multi-Purpose Disinfecting Solution. Poster, AAO Nov 2010, San Francisco, CA.

ferred to the lens and to the eye, which causes problems.

Dr. Shovlin: These bugs are waterborne contaminants. Are we seeing an environmental shift?

Dr. Willcox: The Gram-negative bacteria we're seeing, the *Stenotrophomonas maltophilia* and the *Delftia acidovorans*, are waterborne contaminants that are everywhere in the environment. *Stenotrophomonas*, a reclassification previously called a pseudomonas, is a food source of *Acanthamoeba*. They exist in your bathroom, where you clean your contact lenses, and if your care solution isn't that effective against them, as it appears some care solutions are not, then they will contaminate the case and multiply, forming biofilms. The eye can only do so much to protect itself against bacteria or toxins.

Dr. Shovlin: The Wiley group presented a poster at ARVO this year showing the same thing: a predominant growth in cases of *Stenotrophomonas* and *Achromobacter* among patients who presented with acute infiltrative events.⁷ Other data⁸ show that the list of Gram-negative bacteria surviving in the case is different with the two dual disinfectants, Opti-Free Replenish MPDS and Opti-Free Express MPDS (Alcon). Can we conclude that the next-generation care solutions can solve the case contamination problem?

Dr. Smick: I think so. With some of the data comparing peroxide to RevitaLens, for example, I feel more comfortable using

RevitaLens over peroxide, which had been the gold standard for many years. But again, patient education and compliance are key.

Dr. Willcox: We've done clinical trials with RevitaLens MPDS and other disinfecting solutions. It's clear that RevitaLens MPDS doesn't have this problem of Gram-negative colonization of the contact lens case. There are very few, if any, Gram-negative isolates in a case with RevitaLens MPDS — and certainly not the amounts seen with some of the other systems (Figure 7).

Dr. Papas: Once the bugs are dead, is that the end of it? Or are lingering endotoxins a problem?

Dr. Willcox: A dead bug is still a toxin. It won't cause infection, but it can cause inflammation. We've been looking at ways to clean the lens case, such as rinsing it with a care solution, wiping it with a tissue, then making sure it's air-dried, face down, to clean the case as much as possible.

INCREASE PATIENT SATISFACTION WITH EXCELLENT COMFORT

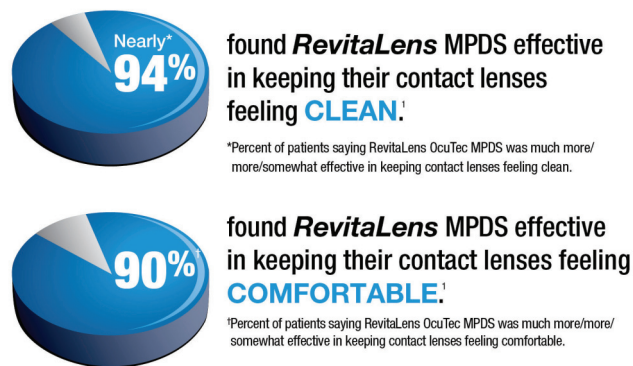
Dr. Shovlin: What we hear most in the exam room are complaints about comfort. For those of you who have significant experience with RevitaLens MPDS, what has your experience been with comfort? Are patients comfortable all day, even late day? Is there less need for comfort drops?

Dr. Smick: My patients find it very comfortable. In fact, they've even noticed that it feels different on their finger. The response has been very positive.

Dr. Stiegemeier: I'd have to echo that. Patients need their lubricating drops less often, and they have good initial comfort as well as good end-of-day comfort.

Dr. Willcox: Lenses are more comfortable with less buildup.

Figure 9. Nearly 3,000 patients rated RevitaLens MPDS for CLEANLINESS & COMFORT¹



Reference: 1. Data on file – T31, 2011. Abbott Medical Optics Inc. Santa Ana, CA. Global multi-site clinical assessment of RevitaLens OcuTec MPDS.

We've compared RevitaLens MPDS to other care solutions, and it certainly seemed to show a benefit in cleaning lenses. Compared to other care solutions we tried, it had the lowest levels of residual protein left on a lens, in my experience.

Dr. Smick: I've used RevitaLens MPDS with allergy patients, and I haven't had any discomfort complaints. I think that's probably because the lens is cleaner, so fewer allergens are attached to the surface of the lens.

Dr. Shovlin: We've seen excellent results so far. In fact, in a recent global, multi-site, clinical assessment in which patients compared RevitaLens MPDS with their previous solution, nearly 3,000 patients rated RevitaLens MPDS for cleanliness and comfort. Nearly 94% found it effective in keeping their contact lenses feeling clean and 90% found it effective in keeping their contact lenses comfortable (Figures 8, 9).⁹

EDUCATING PATIENTS TO IMPROVE COMPLIANCE

Dr. Shovlin: We know that patients aren't compliant. What advice do you have for your patients? Do you think we should push self-review exercises, continue to bombard them with educational materials, or take some new steps?

Dr. Smick: Well, the contact lens care solution manufacturers are doing a much better job of educating our profession than they did in the past, but I still see a shortage of material supplies at the point of dispensing. Patients need to take home instructions in a really good format, and we can refer to those instructions, too. In certain age groups, social media could also be a mechanism by which we continually keep in contact with our patients, delivering new information or reminders.

Dr. Willcox: We've been opening boxes of contact lenses and lens cases and reading the instructions patients receive. There's a lot of detail and very small writing. It's almost impossible to find what you should do with your lenses and lens case to make them clean and safe. I think manufacturers need to make that much more obvious so that patients understand that cleanliness and safety are of utmost importance. They don't really care what a care solution contains; they want to find out what they

need to do to make it safer.

Dr. Papas: Yes, patients need relatively simple instructions, and the fewer the better. We need to agree on the key steps and really drive them home.

Dr. Stiegemeier: I love the power of a photograph in cases of noncompliance because many times, the patient is not symptomatic, and a photo helps me show the patient and/or his parents that there is a problem. I point out that the usual cause for these problems is a dirty case and general noncompliance. We go through all of the compliance issues step by step, and I explain that we're going to change the care solution.

The best time to get patients to be compliant is when they're having a problem. They are more likely to listen as you walk them through the correct process, but I also think this is an area where we could really use some other tools.

Dr. Willcox: A colleague was showing his patients a photo of a badly contaminated contact lens case. He'd say, "You can see this is bad. You need to change your case regularly." After about a year of doing this, he realized that his patients were saying, "Well, my case doesn't look anything as bad as that," so they kept using their cases. It's more direct to just say, "Change your contact case monthly."

Dr. Quinn: There is a new tool for educating patients called www.ContactLensSafety.org, developed by the AOA Contact Lens and Cornea Section in conjunction with the Academy's Cornea, Contact Lens and Refractive Technology Section. It's a consumer website where we can send patients to learn more. You can view an instructional video at www.revitalens.com.

BUILD YOUR PRACTICE BY SWITCHING PATIENTS TO LATEST TECHNOLOGY

Dr. Shovlin: I think it's our main charge in caring for contact lens patients to give them all the assurance and extra protection of care solutions that have superior disinfection, especially when patients are noncompliant. Do you agree? And if so, are you switching patients' care solutions?

Dr. Smick: As clinicians, we see the data on the new care solutions – their kill rates and efficacy of disinfection. If we buy into the idea that most contact lens problems are related to patient noncompliance, then it's encouraging to think that new care solutions give us an opportunity to make a big improvement by using a new care solution, even if patients aren't 100% compliant.

Dr. Shovlin: But many of our colleagues say, "All care solutions are alike. Why should they recommend one brand over another?" They believe that all care solutions are the same because they've undergone the rigors of the FDA protocols. What are the dangers of that type of thinking?

Dr. Smick: Most companies are only pushing comfort. It's great that their products are comfortable, but some preach that because all care solutions pass the same test, you don't need to consider disinfection at all. I heard this from a contact lens manufacturer about their new care solution — it passes the same

disinfection test that all care solutions do, so let's talk only about comfort and clarity of vision. Amazing.

Dr. Stiegemeier: If all care solutions were the same, we would not have had product recalls. I think the new care solutions, especially RevitaLens MPDS, give me a bit of a safety net.

When I saw presumed contact lens solution infiltrative events, I went to hydrogen peroxide because I didn't have anything else that I thought would improve the situation clinically. RevitaLens MPDS lets me recommend a multipurpose care solution and feel good about it.

Dr. Quinn: Due to the complexity of the regimen, peroxide systems bring a whole gamut of noncompliance issues, so recommending something like RevitaLens MPDS helps me sleep a little better at night.

Dr. Willcox: It reinforces the simplicity argument, doesn't it? The simpler we can make the system, the better patients will comply and, therefore, they'll have better efficacy.

Dr. Stiegemeier: That's probably part of the reason that I've had no problems switching patients to RevitaLens MPDS. The conversion has been very well accepted and easy. Many of my patients want to know about new technologies anyway. They are interested in things that make their lenses feel better and steps that are easier to perform.

Dr. Smick: Right. Patients come to us expecting the latest technology. By introducing the most contemporary product with an explanation of why we're switching, we substantiate that they're coming to a practice that may charge more than a place in the mall, because we provide better health care.

NEW LENS, NEW CARE SOLUTION, NEW CASE

Dr. Shovlin: Are you doing anything special to ensure that once you switch patients to a new care solution, they continue to buy that care solution in the store?

Dr. Smick: We prescribe contact lens care solutions and everything else that we recommend to our patients in the office. We write it on the contact lens exam form, and our staff doesn't let the patient go out the door without the written recommendation.

Dr. Stiegemeier: I think that when you're changing a patient's contact lenses, it's a perfect time to make an all-new

switch — a new contact lens, a new care solution and a new case. You get a clean evaluation of the change, knowing the patient will have the best possible experience with the right products and no residual chemicals or bugs in the case. The patient will really experience the positive change.

Dr. Quinn: A total change makes sense to patients, too. When I'm switching them from a hydrogel to a silicone hydrogel, I explain that they have a new material with new benefits, and it needs new complementary chemistry with a lens care system designed specifically for silicone hydrogel lenses.

Dr. Kislán: We can get staff involved, too. If I tell the patient, "We're going to switch you to this lens and this care solution for these reasons," then the technician restates the point out. They also give patients a sample care kit and a new case, and they ask, "Do you have any questions about your new care solution? If you think of any questions, please give us a call. Just remember that not everything on the shelf is created equal, so don't make a change unless you call us first." Patients keep coming to our practices because we embrace new technology, and we emphasize that role with education. **CLS**

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Important Safety Information

Problems with contact lenses and lens care products could result in corneal infection and/or ulcers and lead to loss of vision. It is essential that patients follow the directions and labeling instructions for proper use and care of their contact lenses, lens case, and lens care products. Please see additional information included in the product carton. RevitaLens OcuTec Multi-Purpose Disinfecting Solution is indicated for the care of soft (hydrophilic) contact lenses, including silicone hydrogel lenses. Use this product, as recommended by your eye care practitioner, to disinfect, clean, rinse, store, remove protein, and condition.

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