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*Clinical & Refractive Optometry* is pleased to present this continuing education (CE) article by Dr. Langis Michaud entitled **Andrasko's Lessons.** In order to obtain 1-hour of COPE-approved CE credit, please refer to page 394 for complete instructions.

# Andrasko's Lessons

*Langis Michaud, OD, MSc, FAAO*

## Introduction

Not so long ago, for most practitioners and patients, all soft contact lens solutions were created equal before God. A multi-purpose solution was considered a necessity, with very few differences between available products. The available data, studies, and sales representatives' presentations were considered the most useful marketing incentives.

Then the *Fusarium* keratitis crisis arose. Like the Tsunami, it became a nightmare for a particular ophthalmic company; it raised a red flag for the ophthalmic community about the real impact a care regimen can have on ocular health, with real patients and very real losses. Notwithstanding the real causes of this contamination, everybody witnessed the fact that some patients ended up with a negative impact on their visual acuity due to the misuse of their contact lenses and solutions.

Such events remind us that there is never a time when we can put our respective clinical minds on automatic pilot, even if we consider the issue at hand to be unimportant, habitual, or routine. Each patient deserves the same concentrated attention as if they were afflicted by the rarest disease on earth.

## Contact Lens/Solution Interactions

The *Fusarium* crisis led us to reconsider the theoretical aspects of contact lens wear, the solutions involved, and their behaviour on the eye surface. In a perfect world, in order to maintain the highest levels of vigilance, contact lenses would always be considered foreign materials with undeniable potential negative impact on ocular health. Furthermore, contact lens solutions should always be considered as chemical threats for the ocular surface. Considered together, they should be relabelled nitro and glycerine — not to be shaken by inexperienced hands.

L. Michaud — Assistant Professor, School of Optometry, University of Montreal, Montreal, QC

*Correspondence to: Dr. Langis Michaud, School of Optometry, University of Montreal, 3744 Jean-Brillant, Suite 190-70, Montreal, QC H3T 1P1; E-mail: langis.michaud@umontreal.ca*

## Andrasko Corneal Staining Grid

As per Dr. Gary Andrasko, author of the Web site www.staininggrid.com, adopting the use of the staining grid (Table I) in your practice is the main lesson. I just recently discovered this Web site which discusses the interaction between solutions and contact lens material. This site is easy to consult and should be considered a unique, unbiased, essential source of information for every practitioner who wants to prescribe contact lenses.

## The Role of Control Visits

### What Do We Learn From This?

The first lesson to take away from this grid is that no material is bad by nature, nor should any solution be considered a danger in itself. However, the mix of a given material and a given solution can create a monstrous problem. It's just as if John were considered a very good man and Mary the sweetest woman in town. That does not automatically imply that a John-and-Mary couple would work in everyday situations. Compatibility is the key word here and the characteristic that needs to be addressed. Anyone who doesn't pay attention to this in the contact lens field must be ready to pay a high price — much too high for the average practitioner's means.

Take the PureVision™ lens for example. Let's prescribe Mr. Jones a PureVision Multifocal™ pair of contact lenses and instruct him to clean and disinfect them using the ReNu MultiPlus™ care regimen. It sounds logical, doesn't it? Andrasko found that with such a mix, Mr. Jones would show a clinically significant unacceptable level of staining on 73% of his corneal surface. For his next pair of lenses, if you switch the patient to Opti-Free Express™, you will automatically reduce the risk to 6%. Significant, isn't it? Isn't this a familiar occurrence in your practice?

If your answer to the last question is "No," it's probably because you perform your exam and stain the cornea after several hours of wear. The second lesson Andrasko teaches us is that the most significant staining occurs 2 hours after the lenses have been placed in the eyes. This is because the release of by-products relating to the solution reaches its peak at this time. A few hours later, the tear film has completed its exchange process in the matrix of the lens and by-products are found at a trace level.

**Table I** Lens and solution combinations: percentage of average corneal staining area at 2 hours

| | Unisol[1] 4 Saline | Clear Care[4] | Opti-Free Express[1] | Opti-Free Replenish[1] | ReNu Moistureloc[3] | ReNu MultiPlus[3] | Wal-Mart MPS | Target MPS | Complete Moisture Plus[2] | Aquify[4] |
|---|---|---|---|---|---|---|---|---|---|---|
| **Acuvue[5] 2** | 1% | 1% | 2% | 5% | 25% | 1% | 1% | 1% | 2% | 1% |
| **Acuvue Advance[5]** | 1% | 1% | 1% | 1% | No Further Testing | 13% | 16% | 13% | 20% | 2% |
| **Acuvue Oasys[5]** | 2% | 1% | 3% | 5% | 10% | 9% | 12% | 8% | 5% | 1% |
| **PureVision[3]** | 2% | 1% | 6% | 7% | 6% | 73% | 71% | 76% | 48% | 21% |
| **$O_2$Optix[4]** | 2% | Testing Ongoing | 2% | 5% | 7% | 24% | 41% | Testing Ongoing | 18% | 7% |
| **Focus Night & Day[4]** | 2% | Testing Ongoing | 4% | 3% | 6% | 24% | 36% | Testing Ongoing | 16% | 3% |
| **Updated: October 17, 2006** | | **$H_2O_2$** | **POLYQUAD** | | **Biguanides** | | | | | |

Staining Zone Color Codes: under 10% (green); 10% to 20% (yellow); over 20% (red)

Trademarks: 1 = Alcon; 2 = AMO; 3 = Bausch & Lomb; 4 = Novartis; 5 = Johnson & Johnson

*Adapted from www.staininggrid.com*

The problem is that many of our patients are back at work at the 2-hour point, rather than in your exam room. After 8 to 10 hours, most of the significant staining will be gone. If you are not able to see them at the appropriate time, does the issue remain? Surely, it does. Jalbert et al[1] recently showed that "Subjects that experience solution toxicity are more at risk of developing a corneal infiltrate event. Although these events were generally mild and asymptomatic, the potential for more serious sequelae means that if toxic corneal staining is detected, alternative solution/lens type combinations ought to be investigated to reduce the general level of staining, lower the risk of inflammation and at the same time increase the general level of comfort."According to these authors, the inflammation occurs as a result of the direct alteration of the epithelial cells. Moreover, the natural defence of the organism against bacteria and other pathogens may be reduced by the toxic tissue damage. These findings from unbiased, professional sources should be taken in account and very seriously considered. Any attempt by a manufacturer to reduce the effects of such findings and their clinical implications should be interpreted as an intellectually dishonest exercise.

## Consequences

Clinically speaking, practitioners should revisit their behaviour and change their control exam schedule in order to incorporate a biomicroscopic evaluation after 2 hours of wear. They should also consider the care regimen as integral to their contact lens prescription. They should pay attention to the product given at the time of lens delivery. During control visits, they should check the patient's compliance to the recommended solutions.

One of the best ways to proactively address this issue is to package contact lenses and solutions in a bundle of one year's supply. The more the patient wears the lenses, the more compliant they will be to the recommended schedule of wear. If the solutions are included in the deal, the practitioner will be sure that, at least, these solutions will be brought home with a fair chance of being used in an appropriate manner. Do not let your patients buy the first bottle they see on the shelf.

This is of real concern when we consider that one-third of contact lens solutions are sold by private labels, and that what is inside these bottles can vary from time-to-time or from place-to-place (the Wal-Mart solution sold in Windsor, Ontario does not have the same components as the one sold in Detroit, Michigan). The potential adverse response rates are skyrocketing.

Another way to look at this lens-solution interaction problem is to increasingly adopt the 1-Day disposal lens as the lens of choice. With DKs reaching the minimal level to alleviate hypoxia in a daily-wear regimen, these lenses could be an appropriate choice in cases involving side-effects of chemicals applied on the ocular surface. The parameters of daily lenses would most certainly have

to be extended in order to be adopted as the mainstream paradigm, but for patients that can be fitted with existing lenses, it is definitely an option to look at. It is also a lesson we can glean from Japan, where 40% of wearers are fitted with daily disposable lenses.

## Conclusion

For all of our contact lens patients, part-time or full-time wearers, we must understand that it is the professional's responsibility to properly inform patients about the issues we've discussed here. We should also recommend appropriate lenses and solutions based on the needs and condition of patients. We need to reinforce the idea that not all products are created equal for any given need. They are all good products however they can potentially be misused, especially in the care system arena. This is particularly true if we let patients alone decide which products they will rely on. Our professional responsibility requires us to continue improving in this area. ○

## Reference


1. Jalbert I, Carnt N, Stretton, S, Naduvilath, T, Papas, E. Solution toxicity in soft contact lens daily wear is associated with corneal inflammation. 2006 ARVO Poster.