iTech
BUILDING THE OPHTHALMIC TECH'S COMMUNITY OF PRACTICE

THE TECH'S ROLE IN DRY EYE DIAGNOSTIC TESTING

IMPLEMENTING DRY EYE DIAGNOSTIC TESTING IMPROVES EFFICIENCY AND CARE

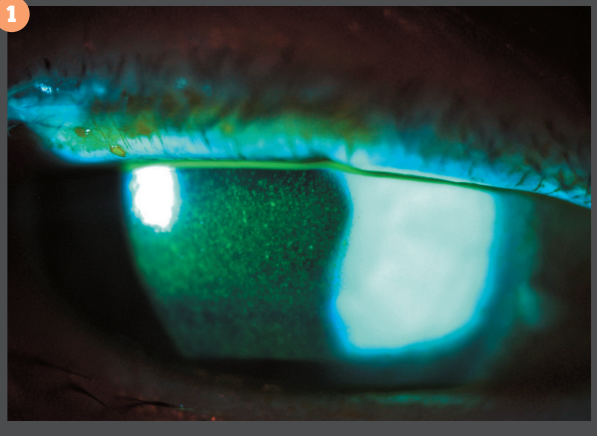

Figure 1. Grade 4 diffuse punctate staining in dry eye patient. Photo courtesy of Scott G. Hauswirth, OD, FAAO

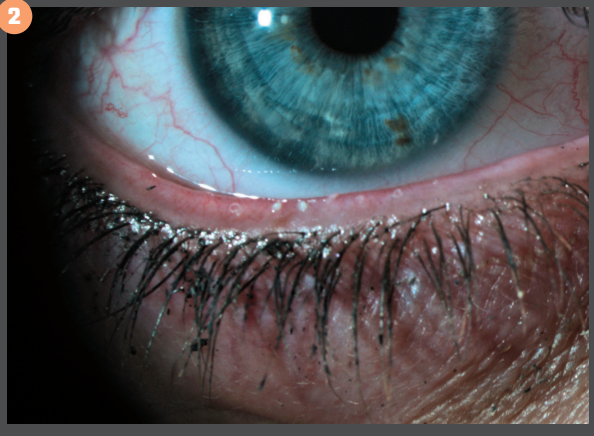

Figure 2. Advanced meibomian gland dysfunction, noting marked thickening of meibum, telangiectasia, and mild lid margin changes. Photo courtesy of Scott G. Hauswirth, OD, FAAO

By Marguerite McDonald, MD; Kelly Alexis Fumuso; Shakira Senior; and Wendy Fernandez

Many of us who have been in practice for more than a decade can remember a time when there were few dry eye diagnostic tests on the market, and none that were very reliable. Doctors would diagnose patients based on symptoms and their slit-lamp examinations. Fortunately, several new diagnostic technologies have emerged in this space, making the diagnosis and classification of dry eye more accurate and efficient.

We now know that about half of the American population has clinicatlly significant dry eye, but only half of these dry eye patients have ocular surface complaints.[1] In the other half of the population—the half without dry eye—half of those patients complain of symptoms that sound like dry eye but that are actually caused by other conditions. It is clear that symptoms on their own are a poor indicator of whether a person has dry eye. Now that we have a number of easy-to-use, point-of-care

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References: 1. A market research study conducted amongst 107 US contact lens wearers representative of CLEAR CARE® purchasers in the United States, 2007. 2. Based on third party industry report 52 weeks ending 12/29/12; Alcon data on file. 3. Alcon data on file, 2009. 4. SOFTWEAR™ Saline package insert. 5. Paugh, Jerry R, et al. Ocular response to hydrogen peroxide. *American Journal of Optometry & Physiological Optics*: 1988; 65:2,91–98.

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Dry eye

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diagnostic tests validated by the peer-reviewed literature, we can obtain objective diagnoses and grade its severity. Practitioners and technicians together play an integral role in the utilization of these technologies.

At the Ophthalmic Consultants of Long Island, NY, we have implemented a number of diagnostic tests that have made treating the root cause of dry eye more efficient and effective than ever. Below we explain the purpose of these tests and describe how we integrate them into our practice.

> **"Administering diagnostic tests allows technicians to be more involved in patient care.**

TearLab Osmolarity Test

Hyperosmolarity is the core pathophysiological mechanism that causes tissue damage in dry eye. Normal tear osmolarity is between 290 to 295 mOsm per liter, and as that measurement increases, so does the likelihood of mild to moderate and then severe dry eye. The TearLab Osmolarity Test (TearLab) captures just 50 nanoliters of tears from the tear meniscus to test patients for dry eye disease. It is a portable test that automatically converts the tear fluid sample data into an osmolarity measurement and displays the reading on an LCD screen within 10 seconds of docking the handpiece containing the sample. TearLab won an international award in 2009 for the predictability of its test. As the disease gets worse, the tear osmolarity measurement increases along with the inter-eye variability. If there is a difference of greater than 8 mOsm per liter between the readings of the two eyes, that is a hallmark for dry eye disease.

InflammaDry

InflammaDry (RPS) is a rapid, point-of-care test to detect elevated levels of matrix metalloproteinase 9 (MMP-9), an inflammatory marker elevated in the tears of patients with suspected dry eye disease. The clinical signs of dry eye often do not correlate with patient complaints, and MMP-9 has been demonstrated to be a sensitive marker for dry eye—its elevation may precede the appearance of clinical signs. The technician takes 30 seconds to collect the tear fluid sample from the inferior palpebral conjunctiva during the initial patient work up, then assembles and activates the test. The test may be interpreted after 10 minutes.

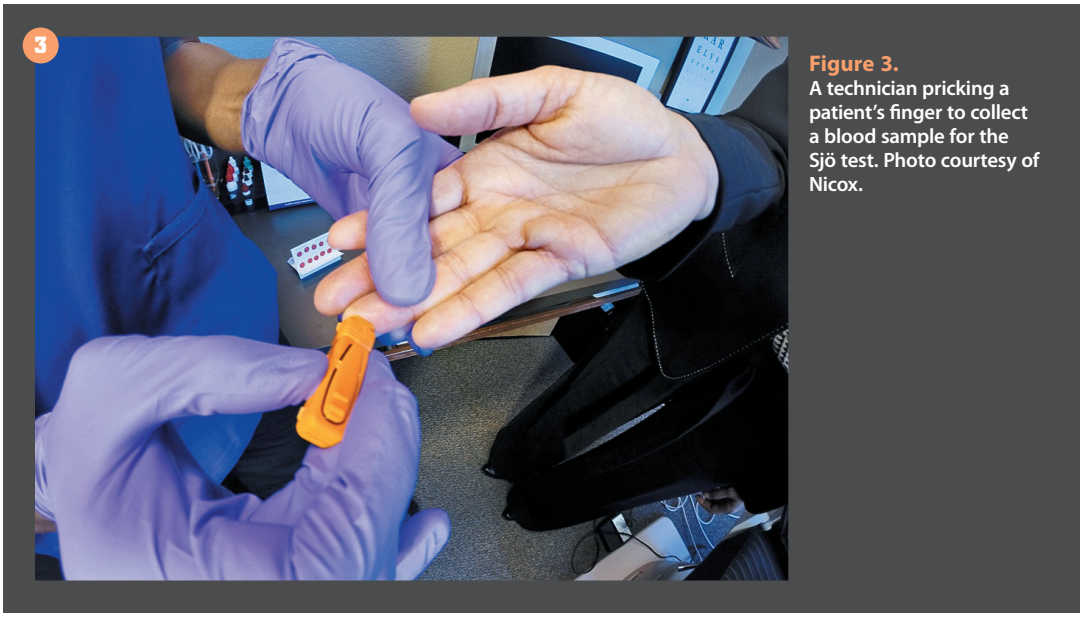

Figure 3.
A technician pricking a patient's finger to collect a blood sample for the Sjö test. Photo courtesy of Nicox.

Sjö

Dry eye is usually one of the earliest symptoms of Sjögren's syndrome, the second most common—and often undiagnosed—autoimmune disease. The Sjö test (Nicox) is an advanced diagnostic panel that detects traditional biomarkers for Sjögren's syndrome (SS-A, SS-B, ANA, RF), in addition to

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three novel proprietary biomarkers (SP-1, CA-6, PSP). Traditional biomarkers detect only advanced cases of Sjögren's syndrome and have low specificity and predictability.[2] The new biomarkers are important because they detect Sjögren's syndrome in its early stages. They can do this because they are gland specific and have much improved predictability, specificity, and sensitivity.[3]

> **"We want our patients to be symptom-free and happy, but we can no longer diagnose dry eye entirely based on the presence or absence of symptoms.**

The technician performs the test by pricking the patient's finger with a single-use retractable lancet and placing large drops of blood on a collection card. Many doctors with phlebotomists on staff choose to simply have a tube of blood drawn or send the patients to participating third-party labs to have the blood drawn. The collection card or tube is then sent to a central laboratory (Immco) for analysis via a prepaid FedEx envelope. The laboratory returns a serology report that confirms or rules out Sjögren's syndrome. That information can be passed on to the patient and used to refer the patient to a rheumatologist, if necessary.

Unfortunately, patients with Sjögren's syndrome can also suffer from dry mouth, fatigue, muscle weakness, and vaginal dryness, among a myriad of other possible symptoms and conditions. Even worse, they are at risk of developing lymphoma and Raynaud's syndrome. Sjögren's patients frequently have thyroid disease and gastrointestinal problems as well. If we can help these patients—who often present first to eyecare professionals due to their dry eye symptoms—we can impact their lives in a meaningful way.

LipiView

The LipiView Interferometer (TearScience) utilizes white light interferometry to measure the absolute thickness of the tear film lipid layer by analyzing approximately one billion data points per eye. LipiView also analyzes the characteristics of the completeness of the patient's blink, as the frequency and completeness of blinking is now thought to play a role in meibomian gland disease. The technician administers the test by positioning the patient on the chin rest on the tabletop unit. The LipiView then records 32 frames per second in real time as the patient fixates on a target. The test results help us determine which patients can benefit from treating obstructed meibomian glands with pulsating thermal lid massage (LipiFlow, TearScience).

Keratograph 5M

The Keratograph 5M (Oculus) is a Placido-based corneal topographer, but there are also six ways in which it can be used to measure the tear film. First, we can use meibography to get a reproducible image 3D analysis of the meibomian glands. Second, we can perform an automated, reproducible, non-invasive tear film break-up time. Third, we can obtain an analysis of the viscosity of the tear film by tracking the speed, direction, and viscosity of the particulate matter in the tear film between blinks. Fourth, the R-scan (redness scan) can be used to objectively grade conjunctival redness by using image analysis to obtain a sclera-to-blood vessel ratio that results in automatic classification of the red eye as grade 0-4. The perilimbal area can be analyzed separately so that ciliary flush can be graded and followed in cases of uveitis. Fifth, we can automatically measure the height of, and perform image analysis on, the tear meniscus. Sixth, we can assess the thickness of the lipid layer of the tear film by analyzing the spectrum of colors that are visible as a thick, normal lipid layer will have more colors present.

Benefits of objective data

A key benefit of these new tests is that they allow us not only to make the correct diagnosis but also to track patients' responses to treatment and compliance. For example, if a patient has an elevated tear osmolarity score of 386 and has been adhering to a treatment regimen for four to eight weeks, we are able to test the patient again and show that the tear osmolarity score of 317—while not yet normal—has gone down closer to the normal range in response to just the first few weeks of successful treatment. Americans understand and operate based on numbers; they always want their health-related numbers to go down, from their weight to their blood pressure to their cholesterol. Being able to communicate dry eye numbers to patients encourages compliance. Many of our dry

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How to be the tech your doctor can't live without

The top 11 traits your doctors want in a tech

By Sharon Alamalhodaei, COMT

Over the years of interviewing, hiring, and training staff, I realized that there are some technicians who are just adequate. They were for the most part reliable, usually made good decisions, and did their job adequately. Nothing more. I also noticed there were other technicians who were superstars. These technicians stood above the rest in initiative and skills. They had a natural thirst for knowledge and were highly dependable. They were my go-to techs who I truly knew I could count on. I began to wonder, "What makes the difference?"

Why do you need to be essential?

Why can't you just come in, do the minimum requirements of your job, and leave? Why should you want to be more effective in the workplace or valuable to your employer? The question is: What's in it for you?

The reality is that it's more important than ever to remain loyal to your company and work as hard as you can to become indispensable at work. When your manager and co-workers view you as a valuable asset, it's more likely that you'll get a raise and a promotion and have a very successful career.

This, of course, is possible only if you enjoy your job in the first place. If you hate your job, then you will never be able to become an asset because there will always be someone else in the world who will do the same work—but do it with a smile. That makes all the difference. You can't become complacent. You must stay on your toes.

At the same time, don't underestimate your value. Ophthalmic techs play a vital role. You are essential, and doctors cannot see patients efficiently without you. You're valuable, but how do you get to the next level?

I conducted a nationwide research survey of thousands of ophthalmologists, optometrists, and ophthalmic practice administrators. I asked them just two questions: "What do you value in a tech?" and "What would make a tech indispensable to you?" I culled responses into the top 11 responses.

1 GOOD ATTITUDE

Be open and mature. We can't control most of what happens in life, but we can control how we react to it. Stop wishing for other

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Courtesy of Sharon Alamalhodaei

Uncover a potential systemic cause of dry eye **before it takes hold**

What appear to be symptoms of routine dry eye may be rooted in something deeper.

As many as 1 in 10 dry eye patients also have Sjögren's syndrome, a common but serious autoimmune disease.[1,2] Sjö™ is an advanced diagnostic test that allows you to detect Sjögren's syndrome early and improve patient management.[2-4]

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Sjö™

Early detection of Sjögren's syndrome for patients with dry eye

Novel biomarkers for early detection

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Ophthalmic Diagnostics

References: 1. Liew M, Zhang M, Kim E, et al. Prevalence and predictors of Sjögren's syndrome in a prospective cohort of patients with aqueous-deficient dry eye. *Br J Ophthalmol.* 2012;96:1498-1503. **2.** Kassan SS, Moutsopoulos HM. Clinical manifestations and early diagnosis of Sjögren syndrome. *Arch Intern Med.* 2004;164(12):1275-1284. **3.** Sjögren's Syndrome Foundation. Sjögren's Syndrome Foundation. 2013. Available at http://www.sjogrens.org. Accessed September 5, 2013. **4.** Shen L, Suresh L, Lindemann M, et al. Novel autoantibodies in Sjögren's syndrome. *Clin Immunol.* 2012;145:251-255.

Great tech

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people's behavior to change. Instead, look at yourself and find a way to change your attitude to help improve a situation.

Odds are your boss doesn't like correcting others. He is doing it to help you succeed. Have a mature attitude when feedback is given to you. Use it as a learning opportunity. Have a sense of humor, and don't take yourself too seriously. Don't be dismayed when you make mistakes. At worst, mistakes are a learning opportunity. Learn from them and move on. There is no failure—just feedback.

Be a problem solver. Complaining is negative behavior. Focus on solutions, not problems.

> **"You can't become complacent. You must stay on your toes.**

2 EXPERIENCE AND SKILL

The second thing practitioners said they value is experience and skill. We are extensions of the doctor in the clinic, and the more experienced and skilled you are, the more she will trust you to make good decisions. Below are a few components of skills you should know.

Be a great history taker. History taking is one of the most important skills you can develop, and many practitioners mentioned that they value a great history taker. This is a skill you will get better at the longer you do it. I heard a doctor give a presentation, and he said something I never forgot: "Sixty percent of a doctor's ability to diagnose is based on the history, 20 percent on the exam, and 20 percent on ancillary testing. Think about that: 60 percent is based on history taking. It's truly a critical skill you must develop.

The book *The Complete Guide to Ocular History Taking* by Janice Ledford is a wonderful resource to improve your history taking skills.

Be efficient. Your doctor wants to see patients, so keep the flow going. Manage the patient interaction so your conversations are kept to the point of the work-up. If you find yourself caught up in too much social talk, try this to get the interaction back on point: "Mrs. Smith, the doctor is expecting you and probably wondering where you are. Let's finish up so we can get you in to see her."

Doctors value fast work-ups. Use tools such as flow charts for ocular motility assessment and pupil gauges with reference charts on them. These will enable you to be more efficient.

Use good judgment. When patients ask you questions such as, "What do you think is wrong with me?" remember, it's not our job to interpret tests or to guess at a prognosis or diagnosis; that's the doctor's domain. Ours is a supportive role. We can (and should) make clear our doctor's recommendations when patients have questions, answer questions about what a particular test is for, and pass along test results with our doctor's approval.

Be careful not to compromise the physician-patient relationship. This can happen inadvertently. Think before you talk, and if you have questions of the doctor when a patient is present, be discreet in asking them. You never want to make it seem to the patient as if you are challenging the doctor when you ask for added clarity.

Be accurate. Accuracy and knowledge produce effectiveness. Make sure your work is accurate. Take a moment at the end of your work-up to make sure everything is complete and is spelled correctly.

11 Top traits for techs

- Good attitude
- Experience and skill
- Friendliness
- Inquisitiveness
- Loyalty
- Professionalism
- Work ethic
- Communication
- Flexibility
- Initiative
- Teamwork

Components of experience and skill

- Be a great history taker
- Be efficient
- Use good judgment
- Be accurate

3 FRIENDLINESS

Have you ever known someone who was just a disagreeable person? Who wants to work with someone like that? Be personable, cooperative, and friendly. Build and maintain great relationships. This will gain cooperation from others, including your patient.

4 INQUISITIVENESS

Ask your doctor or senior tech if you don't understand something or hear or see a word you don't know. Or better, look it up yourself. Be intellectually curious, research, and ask questions.

5 LOYALTY

It's easy to confuse longevity with loyalty. Just because someone has worked for your organization for 20 years does not necessarily mean she is loyal. Maybe she is unhappy but doesn't feel like looking for another job, or maybe she doesn't have marketable skills and can't find another employer to hire her. The point is that just because you've worked somewhere a long time doesn't mean you're demonstrating loyalty.

How hard would you work to make the practice successful if you were the owner? Take pride in your practice and job. Safeguard its reputation. Promote it within the community. Take an ownership in your job and be emotionally invested.

6 PROFESSIONALISM

Behaving professionally at work is an important part of any corporate environment. It is also important for your professional and career growth. Most managers say professional behavior and attitudes play an important role in who gets hired and promoted as well as in who gets fired or demoted. Would your boss think you can be serious enough to handle an important task when it comes to that promotion you've been hoping for? Would she take you seriously?

Sometimes we may behave unprofessionally at work without realizing it. This can have consequences. Try observing your own behavior as you interact with your co-workers, boss, and subordinates. Make sure that you are not guilty of any unprofessional habits, and if you are, try adjusting your behavior. Let's talk about some mistakes many employees make.

Arguing. Disagreeing is OK—arguing is not. If a situation is escalating, ask yourself: Could I be overreacting? Is it just my perception of the situation? Is their behavior provoked by some extreme circumstances? When all else fails, get some distance. This allows you to use your head, not your gut. Disagree respectfully and politely and don't cross the line. Don't raise your voice or act on emotions. If you're an emotional person, take a break and calm down before an important conversation. People often do and say things on the spur of the moment that they later regret. Make it a point to walk away from situations feeling good about how you handled yourself.

Dressing unprofessionally. If you come to work sloppily dressed, your looks will portray an image of a disorganized, messy worker. Dress professionally, especially if your boss is on the conservative side.

Offending. Never make comments or jokes that could be offensive to others. Avoid references to personal characteristics such as nationality, race, gender, appearance, or religious beliefs.

Bringing your baggage to work. We all have personal problems, but leave yours at the door. Make patients your priority. The ability to rise above one's personal life challenges is one thing that separates professionals from amateurs.

Dishonesty. Don't lie. Being deceitful or dishonest will tarnish your reputation for life if you get caught. It's just not worth it.

Showing arrogance. Mentor your coworkers, especially newbies. Recognize others when they do a good job. Don't feel threatened by others' success. Don't act superior toward your coworkers, show your own self-importance, or judge them. Professionals don't need to prove they're superior to anyone else.

Not treating your job like it's a life-long career even if it's only a stepping stone. Invest in yourself and in your job. If you take it seriously, others will treat you like a professional.

> **"It's easy to confuse longevity with loyalty. Just because someone has worked for your organization for 20 years does not necessarily mean she is loyal.**

7 WORK ETHIC

Have your grandparents' work ethic. People respect those with a good work ethic. As you leave

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Great tech

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work each day always ask yourself, "Did I earn my paycheck today?" or even better, "Did I give my employer more than he expected today?"

Be reliable and punctual. Everyone knows the coworkers who are continually tardy. It's an easy thing to fix and can tarnish the reputation of an otherwise consummate professional.

Think beyond a paycheck. Yes, we all have bills. If you have a great work ethic, are dependable, and want to make a difference, the money will come. Don't make money your main objective; make it the cherry on top. Focus on contributing to patient care.

8 COMMUNICATION

Listening is the most important part of communication. If you don't really hear someone, how can you properly respond? Repeat what someone says to you to ensure you understood and give the other person an opportunity to correct any misunderstandings. Take age and cultural considerations into account when you're talking with others. Don't talk down to people, especially children or those who are mentally challenged.

9 FLEXIBILITY

Sometimes, you really have to hustle and be able to think on your feet. Technology changes, government rules and regulations change, and reimbursements fall. All of this requires change to maintain or increase efficiency. Being flexible makes you more valuable. Sometimes you've got to really hustle and be able to think on your feet.

10 INITIATIVE

Initiative is a strong indicator of a leader, and motivation is a key. No manager or physician wants to have to stand over someone to tell her what to do. Once you understand your boss' directives and philosophies, be ready to take action when it's indicated. Talk to your doctor. Have a technicians' meeting, and ask your doctor what he wants from you. He'll be eager to tell you—and you might just be surprised to hear what he says.

11 TEAMWORK

When you place the priorities of the team above your own, you will help your practice's long-term survival. It's a change from egocentric thinking to focusing on patient, doctor, coworkers, and practice. When you are in the moment with the doctor and patient, you can anticipate what is necessary to be done and your actions will become seamless. Some call it being psychic but it's really called "paying attention" and taking the initiative to act.

There are high-maintenance employees and low-maintenance employees. High-maintenance ones always have some problem. Low-maintenance ones come in, contribute in a positive manner and do their job—period.

Nothing good comes from gossip or drama. Anything you wouldn't say in front of the other person, you shouldn't be saying. Drama has no place in a professional setting. Be busy enough not to have time to be involved with others' drama. If you want a harmonious workplace, you must play your part and help make it so.

How will you be the tech your doctor can't live without?

"When you place the priorities of the team above your own, you will help your practice's long-term survival. It's a change from egocentric thinking to focusing on patient, doctor, coworkers, and practice.

Mistakes to avoid

- Arguing
- Dressing unprofessionally
- Offending
- Bringing your baggage to work
- Dishonesty
- Showing arrogance
- Not treating your job like it's a life-long career even if it's only a stepping stone

Sharon Alamalhodaei, COMT, is an instructor, speaker, and author of How To Be The Tech Your Doctor Can't Live Without *and* 10 Steps To a Phenomenal Patient Experience: Customer Service Secrets for the Eye Care Team. *Sharon conducts COA, CCOA, and COT exam prep and training courses throughout the United States. She is the owner of Eye Tech Training, Inc. E-mail her at Sharon@eyetech-training.com.*

The technician's role with anesthesia: Part II

Understanding the ASC experience

Richard J. Ruckman, MD, FACS

In Part I, I discussed the importance of preoperative preparation, including a detailed medical history to insure a safe surgical experience (See Fall 2014 issue). In this piece, I will cover the specific medications used with anesthesia, how they are used together to achieve the goals for a particular operation, and finally a discussion of aspects of post-operative management. The focus will be on cataract surgery since it is the number-one ocular surgical procedure with over 3.54 million surgeries performed in 2013.[1]

As reimbursements have declined, surgeons and ambulatory surgery centers (ASCs) have looked to become more efficient while maintaining a high level of care and safety. Benchmarking or comparing yourself to other ASCs is a useful tool. Table 1 is from the Institute for Quality Improvement, part of the Accreditation Association for Ambulatory Health Care (AAAHC), a certifying organization for outpatient surgical centers.[2] Participating ASCs submit specific case data and detailed information concerning their surgical center to give a large database of accredited surgical centers. As Table 1 shows, the average cataract surgery patient is in the ASC for only about two hours from start to finish. To be able to achieve this goal, all members of the ASC team have had to refine their techniques to become more efficient. Anesthesia must have the patient comfortable enough for the procedure but alert enough to be discharged within a relatively short time.

Table 1. Average times for cataract surgery on 1,914 cases performed July through December, 2013

Pre-procedure time	31-126 min.	Median	82 min.
Operating time	6-26 min.	Median	12 min.
Operating time	6-26 min.	Median	12 min.
Discharge time	4-76 min.	Median	20 min.
Facility time	60-192 min.	Median	119 min.

Represents 81 centers with 176,064 cases performed annually.

Institute for Quality Improvement, Accreditation Association for Ambulatory Health Care , Inc. 2013.

> **"Anesthesia must have the patient comfortable enough for the procedure but alert enough to be discharged within a relatively short time.**

Cataract surgery

In years past, cataract surgery was performed either with general anesthesia or retrobulbar injection, frequently combined with facial blocks. Table 1 shows that topical is now preferred the vast majority of the time with oral medication, peribulbar, and retrobulbar anesthesias lagging far behind.[2] This same study reports that 82 percent of patients receive IV sedation. There are a number of options for IV sedation. I have surveyed the attendees of my 2014 American Society of Cataract and Refractive Surgery (ASCRS) course about what technicians and nurses need to know about anesthesia. The vast majority of the attendees were operating room technicians or nurses, and they have insight into the anesthesia techniques of their particular ASC. The top three medications that the respondees listed

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Anesthesia

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> Midazolam, alone or in combination, was the medication of choice 85 percent of the time.

were midazolam (Versed, Roche), fentanyl (Sublimaze, Janssen-Cilag), and propofol (Diprivan, AstraZeneca). These three medications in various combinations represented 97 percent of the medications used in ASCs for IV sedation. The common factor was that midazolam, alone or in combination, was the medication of choice 85 percent of the time.

Even though these studies show what is preferred the vast majority of the time, the surgeon and anesthesia staff need to adapt to the needs of the patient. In my own surgical center, I will use IV sedation in combination with topical and intracameral anesthesia most of the time.

However, there are times, particularly with younger, more anxious individuals, who will need to have propofol sedation in combination with retrobulbar injection. This goes back to the pre-operative assessment in which the technician may have recognized concerns that would limit the use of topical anesthesia, for example, a patient with mild Alzheimer's, hearing impairment, or language barrier.

What do IV medications do?

Midazolam is a benzodiazepine, related to Valium (diazepam, Roche). It is an anti-anxiety, amnestic medication of relatively short half-life that makes it a wonderful medication for outpatient procedures when the patient often arrives anxious. It relieves anxiety but generally allows the patient to remain awake and somewhat alert through the procedure. Midazolam does not offer pain relief, and, for situations requiring pain control, fentanyl is commonly used.

Fentanyl is a narcotic of relatively short duration. Fentanyl, like all narcotics, is intended for pain relief but does not relieve anxiety, which is why midazolam and fentanyl are frequently given together. Like all narcotics, it can also be associated with respiratory depression as well as post-op nausea and vomiting.

The last of the three most commonly prescribed medications is propofol. It is considered a general anesthetic and as such must be administered by someone skilled in anesthesia. It has a rapid onset, has a very short duration, offers excellent pain relief, and is antiemetic. The patient may actually feel somewhat euphoric following his propofol sedation.

> A successful anesthesia experience does not end with the operation.

After IV sedation, then what?

Once the patient is sedated, most will need some form of local anesthesia. With retrobulbar, the anesthetic is injected behind the globe within the muscle cone using a special needle. It may be preferred where no motion of the globe is needed, such as for macular surgery cases. Retrobulbar anesthesia provides pain relief and limits the motion of the globe but may have a higher risk of complications, such as damage to the globe itself or hemorrhage behind the globe. Peribulbar is a local anesthetic given outside the muscle cone and is generally thought to be safer than retrobulbar. It generally offers excellent pain relief, but there may still be some motion of the globe.

Topical may be any of the commercially available drops such as tetracaine (TetraVisc, OCuSOFT), proparacaine (Alcaine, Alcon), lidocaine (Xylocaine, Hospira) for injection, or even lidocaine preparation specially made for the eye in a gel form (Xylocaine 2% Jelly, AstraZeneca). This is usually given into the conjunctiva either in the pre-op area or in the operating room immediately prior to surgery.

Although there are a number of options available for topical anesthesia, several studies have shown that they are all equally effective.[3,4] Topical can give good conjunctival anesthesia, but eye movement is still present, which is usually acceptable with cataract surgery but limits its use in retinal surgery. Intraocular lidocaine may be used at the start of cataract

Top three medications for IV sedation

- Midazolam (Versed, Roche)
- Fentanyl (Sublimaze, Janssen-Cilag)
- Propofol (Diprivan, AstraZeneca)

These three medications in various combinations represent 97 percent of the medications used in ASCs for IV sedation.

Table 2. Anesthesia for cataract surgery

I.V. Meds

Midazolam	43/170	25%
Midazolam-fentanyl	29/170	17%
Midazolam-fentanyl-propofol	50/170	29%
Midazolam-propofol	24/170	14%
Fentanyl	2/170	1%
Fentanyl-propofol	2/170	1%
Propofol	11/170	7%
Pentothol	3/170	2%

Midazolam was used 85% of the time.

"What Technicians and Nurses Need To Know About Anesthesia" The Center For Sight. 2012.

surgery for additional anesthesia. Intraocular lidocaine 1% must be non-preserved, methylparaben free (MPF) to avoid corneal toxicity. It has been shown to relieve intraocular pain but again does not restrict eye movement.[5]

Post-operative

The goal of anesthesia is to provide adequate levels of anxiolysis and pain relief with rapid return to alertness and stable vital signs. A successful anesthesia experience does not end with the operation. Individuals may experience post-operative pain or nausea and vomiting which may require extra care, delaying their discharge from the recovery area. Individuals at particular increased risk for post-operative nausea and vomiting (PONV) include females, obese individuals, non-smokers, strabismus surgery patients, and longer surgery such as in some retinal or plastic cases.[6]

Although PONV is fairly uncommon, each ASC should have its own protocol for management of PONV. First is the recognition of the risk factors prior to surgery in considering these individuals for pre-treatment. More commonly, especially with cataract surgery, it may not be possible to recognize who will develop PONV. There are five general classes of medications that are commonly used for PONV. Of these, the serotonin antagonists, such as ondansetron (Zofran, GlaxoSmithKline), are probably the most commonly used. Other choices include steroids such as dexamethasone, antihistamines such as promethazine (Phenergan, Sanofi-Aventis), or dopamine antagonists (metoclopramide, Reglan, Ani). Scopolamine (Transderm Scop, Novartis), which is an anticholinergic, is often used as a patch at the time of surgery in high-risk individuals. Most anesthesia providers will have a continuum of care to achieve the most optimal results for the more rapid discharge of the PONV patient.

The final step in the procedure is the patient's discharge and discharge instructions. The discharge is ultimately the responsibility of the surgeon working with the RN in the recovery area. However, the ASC technician may provide the final one-on-one instructions to the patient and his or her family. The technician working under the supervision of the RN should be able to make the patient aware of what to expect in the immediate post-op period and provide written instructions for post-op medications and follow up.

The success of surgery and often the patient's perception of success depend on a smooth and uneventful anesthesia experience. As discussed in Part I, it starts in the clinic with a detailed history of medical problems, medications used, and allergies. It continues with the recognition of patient personality and concerns, including having the technician convey

> **"Although surgery is ultimately the responsibility of the physician, the technician may be the first and the last member of the ophthalmic/ASC team to work with the surgery patient.**

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Anesthesia

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this information to the surgery and anesthesia personnel.

In the ASC, all personnel—not just anesthesia personnel—should have an understanding of the intended effects and potential side effects of all medications. The technician should understand the importance of post-op monitoring to make sure that the patient is stable enough for discharge and that the patient has a clear understanding of the home instructions. Although surgery is ultimately the responsibility of the physician, the technician may be the first and the last member of the ophthalmic/ASC team to work with the surgery patient. The technician has an important role in insuring a successful surgery and a pleasant experience for the patient.◗

References

1. *Market Scope.* September 30, 2014.
2. *AAAHC Institute for Quality Improvement,* July-December 2013 Report.
3. Amiel H, Koch P. Tetracaine hydrochloride 0.5% versus lidocaine 2% jelly as a topical anesthetic agent in cataract surgery: comparative clinical trial. *J Cataract Refract Surg.* 2007 Jan;33(1):98-100.
4. Davis, MJ, Pollack JS, Shott S. Comparison of topical anesthetics for intravitreal injections: a randomized clinical trial. *Retina.* 2012 Apr;32(4):701-5.
5. *Ophthalmology,* Vol. 115; #3, March 2008.
6. *Hosp. Pharmacy*, Vol. 40, Issue 7, July 2005.

Dry eye

Continued from page 4

eye therapies work, but they work slowly. As they show improvements, these diagnostic tests allow us to remind patients of where they began.

The learning curve

From a technician's perspective, the time and training that it takes to confidently administer point-of-care diagnostic tests for dry eye is minimal.

A technician can administer all of these tests, even meibography, if she feels comfortable everting the lids. Most technicians are able to confidently and comfortably administer each test after only a couple of tries. Conveniently, none of the diagnostic tests need the practitioner to be present, with the possible exception of the meibography test with the Keratograph 5M (if the technician is not comfortable with lid eversion). The technician simply needs orders from the practitioner. Most of the tests are point-of-care, yielding results within a matter of minutes (Sjö is a laboratory developed test, with results being returned one week after the sample collection card is sent to the laboratory). If technicians can test each patient with dry eye symptoms before the doctor enters the exam lane, it not only helps the doctor to make the proper diagnosis but also improves workflow. The doctor enters the exam lane only once per patient encounter and can focus his or her time on treatment.

> **"From the technician's perspective, the time and training it takes to confidently administer point-of-care diagnostic tests for dry eye is minimal.**

Administering diagnostic tests also allows technicians to be more involved in patient care. As they play a larger role in the dry eye workup, they can feel confident explaining tests and procedures to patients, which in turn make the patient feel more comfortable that all staff members involved in their care are knowledgeable and committed.

If we fail to correctly diagnose dry eye patients, they will continue to suffer and will get worse with time. We know that half of normal patients have complaints that sound like dry eye (but are due to another condition), and half of patients with dry eye have no or minimal symptoms. Since symptoms are so misleading, it is critical to have objective diagnostic tests at our disposal. Stated differently, we want our patients to be symptom-free and happy, but we can no longer diagnose dry eye entirely based on the presence or absence of symptoms. Thankfully, we no longer have to.◗

References

1. Tomlinson A. Epidemiology of dry eye disease. In:Asbell P, Lemp MA,eds. *Dry Eye Disease: the Clinician's Guide to Diagnosis and Treatment.* New York, NY:Thieme; 2006:1-15.
2. Shen L, Suresh L, Lindemann M, et al. Novel autoantibodies in Sjögren's syndrome. *Clin Immunol.* 2012 Dec;145(3):251-5.
3. Shen L, Suresh L, Lindemann M, et al. Novel autoantibiodies in Sjogren's Syndrome. *Clin Immunol.* 2012;145:251-255.

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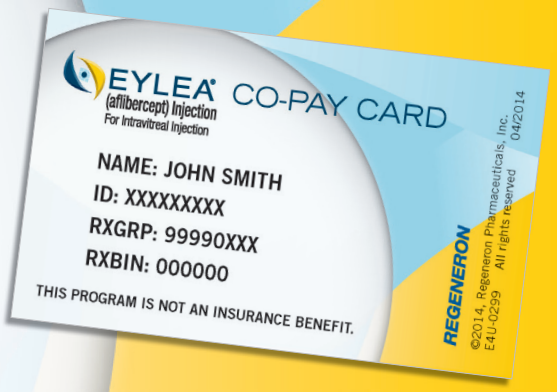

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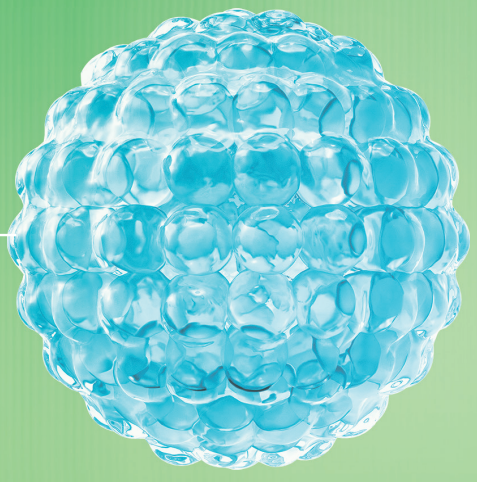

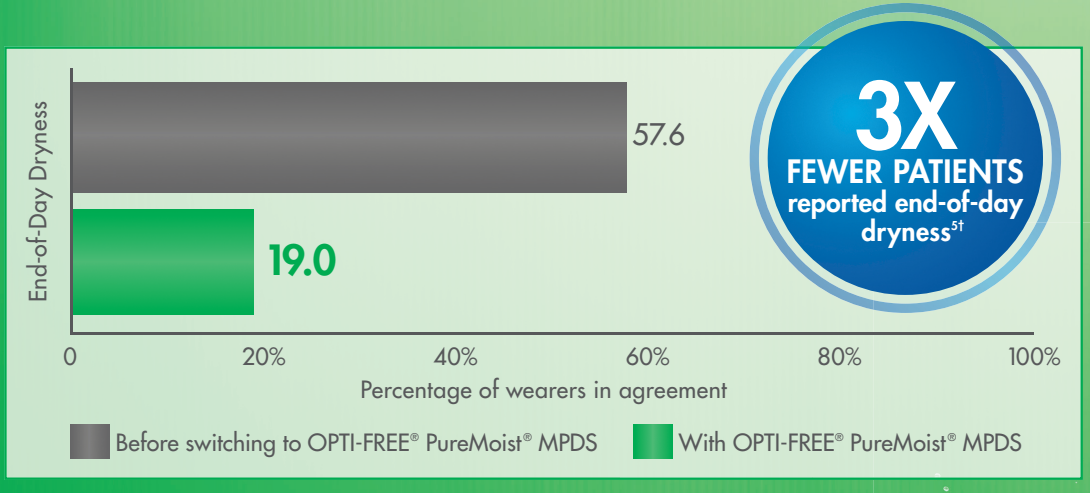

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References: 1. Campbell R, Kame G, Leach N, et al. Clinical benefits of a new multipurpose disinfecting solution in silicone hydrogel and soft contact lens users. *Eye & Contact Lens.* 2012;38(2):93-101. **2.** Alcon data on file, 2011. **3.** Lally J, Ketelson H, Borazjani R, et al. A new lens care solution provide moisture and comfort with today's contact lenses. *Optician.* 2011;241:42-46. **4.** Davis J, Ketelson HA, Shows A, Meadows DL, A lens care solution designed for wetting silicone hydrogel materials. ARVO Meeting Abstracts. 2012;38(2):93-101. **5.** Lemp J, Kern JR. Results from global survey of contact lens-wearer satisfaction with OPTI-FREE® PureMoist® MPDS. *Clinical Optometry.* 2013:5 39-46.