

DED From Diagnosis to Treatment



Advancing dry eye care with the C.SUITE™ ecosystem.

By Rolando Toyos, MD

I founded the Toyos Clinic nearly 3 decades ago with the goal of integrating ophthalmology, aesthetics, and overall patient wellness. My early use of intense pulsed light (IPL) therapy for rosacea led me to explore it as a treatment for dry eye disease (DED). Yet, adapting IPL for ophthalmology required rethinking both the technology and the treatment protocols. Over years of clinical work, research, and collaboration with industry, my colleagues and I have refined how IPL energy is delivered, how close to the lid margin we can safely treat, and how to standardize protocols for reproducible outcomes. Today, IPL is widely adopted in DED management, and I consider it one of the most effective tools we have for ocular surface disease (OSD).

In recent years, I have served as a consultant for Lumibird Medical during its development of an IPL device for the clinical treatment of OSD. The C.SUITE ecosystem (Lumibird Medical), which combines the C.DIAG® diagnostic platform with the C.STIM® IPL treatment system, plus workflow support and patient education resources, helps clinicians and their staff address dry eye more systematically. Here, I will discuss how IPL fits into the modern treatment paradigm for OSD, and I'll review several recent innovations within the C.SUITE portfolio that are designed to improve diagnostic precision, IPL's safety, consistency, and clinical efficacy in ophthalmology.

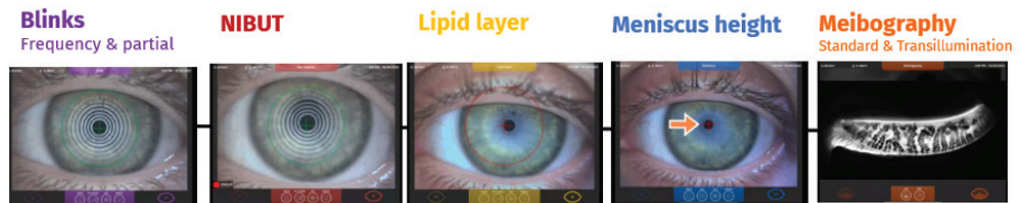


Figure 1. The C.DIAG diagnostic device performs five automated examinations.

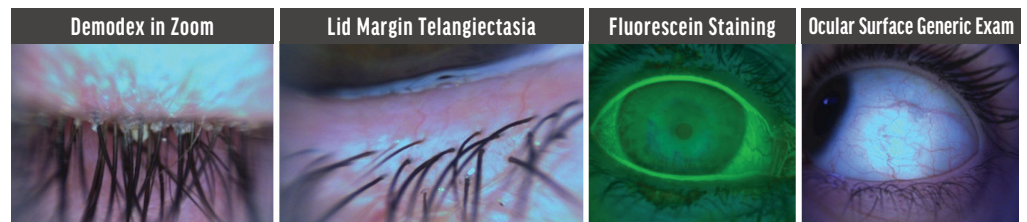


Figure 2. The C.DIAG's integrated HD camera provides high-magnification imaging of lid-margin diseases and corneal pathologies.

INTEGRATED DIAGNOSTICS: THE ROLE OF C.DIAG

Ocular surface irregularities can distort keratometry and topography, leading to compromised outcomes. The C.DIAG diagnostic system provides a comprehensive and efficient assessment of the ocular surface. Within 5 minutes it captures key measurements, including blink analysis, noninvasive tear break-up time (NIBUT), lipid layer analysis, tear meniscus height, and meibography of both the upper and lower lids (Figure 1).

C.DIAG also functions as a true digital slit-lamp, enabling clinicians to capture high quality photos and videos under white or

blue illumination, with an optional yellow filter (Figure 2).

I rely particularly on NIBUT and meibography when I evaluate presurgical patients. A NIBUT of less than 10 seconds typically warrants treatment. C.DIAG's meibography, with both standard infrared and infrared transillumination, allows me to quantify gland dropout and assess disease severity (Figure 3).

C.DIAG's high-resolution imaging and blink video analysis reveal reduced and incomplete blinking, gland dropout, or *Demodex* involvement. The ability to show patients these images improves their understanding, adherence, and long-term management.

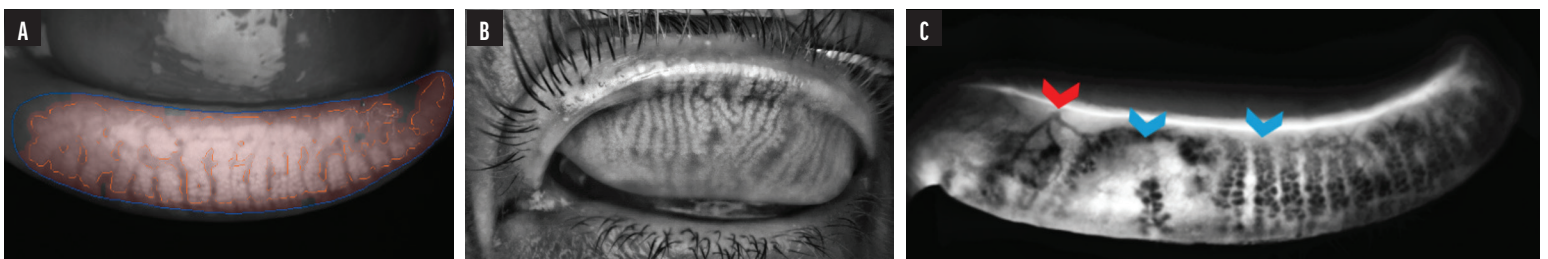


Figure 3. C.DIAG offers both standard infrared and infrared transillumination. Standard infrared (A and B) is best for quantifying the meibomian glands and their percentage of loss. Infrared transillumination (C) helps in qualifying the glands' meibum production, blockage, and telangiectasia. The red arrow points to telangiectasia, and the blue arrows indicate the quality of the meibum (black = normal, gray = reduced, and white = absent).

Sponsored by Lumibird Medical

ADVANCING IPL TREATMENT WITH C.STIM®

Developed specifically for ophthalmology, C.STIM overcomes the safety and efficacy limitations of early IPL systems designed for dermatology. It integrates advanced technologies that enable safe, effective treatment of the periocular region across Fitzpatrick phototypes I to V.

Stim ULI™ patented technology ensures uniform light intensity across the optical window of the handpiece, eliminating energy peaks and improving safety and patient comfort—essential for delicate periocular treatments.

Train of 5 pulses delivers energy through five regulated pulses, allowing controlled thermal build up while respecting thermal relaxation time. This proprietary pulse sequence effectively targets vascular and inflammatory components with a low risk of adverse events, even in sensitive skin types.¹⁻³

Integrated water-based cooling stabilizes flash lamp temperature, protects the epidermis, and ensures consistent energy delivery from shot to shot and session to session, maintaining full efficacy with optimal comfort.

SOFTWARE INNOVATIONS: STANDARDIZATION AND CUSTOMIZATION

One of the most important advances in the C.STIM platform is the integration of software designed specifically for dry eye treatments.

Toyos-Defined Dry Eye Presets by Phototype

The system includes presets for DED treatments developed directly from my clinical protocols, based on more than 28 years of my experience using IPL in both ophthalmology and aesthetics. These presets are tailored to Fitzpatrick skin phototypes I through V, and they reduce variability and simplify the clinical workflow, allowing practitioners to implement IPL effectively without extensive customization (Figure 4).

Manual Settings Mode for Advanced Users

Physicians who prefer complete control over their treatment parameters can choose manual mode, where they can adjust the fluence, pulse duration, delay intervals, and number of pulses to tailor treatment for specific indications. This flexibility allows for the application of validated protocols beyond dry eye when appropriate, including photorejuvenation and rosacea (Tables 1 and 2).

EXPANDING PRECISION WITH C.TIPS™

As our understanding of OSD has evolved, so too has our approach to its treatment, particularly with respect to the upper eyelid. I am seeing a trend of younger patients presenting with significant upper lid involvement, and I now believe that treating both lids has become essential for optimal outcomes.^{2,4} C.tips represent an important innovation in this regard.

Lumibird Medical has introduced two specialized tips for the C.STIM handpiece that allow clinicians to treat large, small,



Figure 4. The C.STIM's software contains dry eye treatment presets per skin phototype, developed from Dr. Toyos' protocols.

TABLE 1. PROTOCOL PARAMETERS FOR PHOTOREJUVENATION:

INDICATION	PHOTOTYPE	FLUENCE J/cm ²	Time ON ms	Time OFF ms	Number of pulses
PHOTOFACIAL	1	14	6	100	5
PHOTOFACIAL	2	12	6	100	5
PHOTOFACIAL	3	11	6	100	5
PHOTOFACIAL	4	13	6	180	5

TABLE 2. PROTOCOL PARAMETERS FOR SKIN ROSACEA:

INDICATION	PHOTOTYPE	FLUENCE J/cm ²	Time ON ms	Time OFF ms	Number of pulses
ROSACEA	1	14	6	100	5
ROSACEA	2	13	6	100	5
ROSACEA	3	12	6	100	5
ROSACEA	4	13	6	180	5

and highly sensitive areas with precision, without changing the handpiece (Figure 5). When using these tips, the fluence is divided by two, and should never exceed 8 J/cm².

Round Tip (6 mm): The round tip is designed for precisely treating small or localized areas, such as chalazia or focal inflammation. Its small footprint delivers controlled, localized energy while respecting TRT in delicate tissue.

Banana-Shaped Tip (30 × 5 mm): The curved, “banana-shaped” tip is uniquely designed for periocular treatments. It conforms to



Figure 5. Two new C.tips for use with the C.STIM IPL. The round tip is for precise applications like chalazia, and the banana-shaped tip is designed to fit the periocular area and treat MGD, blepharitis, and *Demodex*.

the eyelid contour, enabling the safe and effective treatment of conditions such as MGD, blepharitis, and *Demodex*. Its geometry improves both precision and ergonomics, making it easier to treat areas close to the lid margin.

INTEGRATING DIAGNOSIS, TREATMENT, AND CLINICAL WORKFLOW

In my experience, no other technology has matched IPL's consistency or clinical impact on OSD when applied with the appropriate protocols (see the sidebar, *Dr. Toyos' Key Tips for Treating DED With IPL*). We are seeing growing global demand for premium, safe IPL technologies that can be implemented efficiently in clinical practice. With C.SUITE, (1) users diagnose disease earlier and more accurately; (2) apply standardized, reproducible treatment protocols; (3) engage patients through visual education; and (4) optimize the ocular surface prior to cataract and refractive surgery—an essential step to stabilize corneal measurements, ensure reliable biometry and topography, and reduce dry eye–related calculation and correction errors.

One final note is that, although C.STIM is intuitive enough to be operated by clinical staff, in my clinic locations, it is a physician-driven procedure. Precision matters, particularly near the lid margin, where both efficacy and risk are highest. Proper training and adherence to protocols are essential for achieving optimal outcomes. ■

1. Toyos R, Singh IP, Karpecki P, et al. Prospective evaluation of efficacy and safety and C.STIM, an intense pulsed light device to treat signs and symptoms of dry eye disease. ARVO Annual Meeting abstract. *Invest Ophthalmol Vis Sci*. 2025;66:5673.

2. Toyos R, Toyos M, Willcox J, et al. Evaluation of the safety and efficacy of intense pulsed light treatment with meibomian gland expression of the upper eyelids for dry eye disease. *Photobiomodul Photomed Laser Surg*. 2019;37(9):527-531.

DR. TOYOS' KEY TIPS FOR TREATING DED WITH IPL

- ▶ C.STIM IPL indications: DED, MGD, rosacea, neuropathic pain, chalazion, blepharitis, *Demodex*, telangiectasia, and swollen eyelids.
- ▶ **MGD treatment:** Treat the full face, tragus to tragus, including the nose, and treat both the upper and lower lid using the small C.tips.
- ▶ Express the meibomian glands before or after each treatment for faster gland recovery.
- ▶ Counsel patients to adopt an anti-inflammatory diet for at least 2 months and to mindfully increase their daily blink rate.
- ▶ Typical treatments: four IPL sessions spaced 1-2 weeks apart; re-evaluate after 1 month.
- ▶ When in doubt between two skin phototypes, always select the darker one, as it corresponds to safer treatment parameters.
- ▶ **Chalazion treatment:** C.STIM IPL can be used at any stage (inflammatory or chronic cystic) and is typically considered as a first-line approach prior to surgical excision.⁵ Dr. Toyos begins by gently expressing the blockage, then he uses the small round C.tip to apply IPL, with two shots delivered directly on the chalazion and around it if possible, aiming to encircle the lesion. A full IPL protocol is not required if there is no DED, or can be deferred to a subsequent session if needed. He does not treat the conjunctiva due to its high vascularization. After a short course of steroid-antibiotic therapy (QID for a few days), he'll have the patient return within a week for a second round of expression and IPL treatment if the chalazion persists. In pediatric patients, IPL treatment is recommended for ages 10 years and older. Below this age, the skin is very thin and may be highly reactive, and retinal development is still ongoing. In both adult and pediatric patients, treatment should be performed with the small round tip.
- ▶ **Demodex blepharitis treatment:** A 2-pronged approach, starting with C.STIM IPL using the main handpiece (from tragus to tragus) and using the banana-shaped tip on the upper and lower lids, followed by daily eyelid hygiene and an at-home proprietary cream applied for 30 nights to the eyes and face that contains ivermectin and melatonin.

3. Augre R, Trone M-C, Chhuy E, et al. Efficacy and safety of intense pulsed light delivered by the C.STIM® for treatment of Meibomian gland dysfunction. *J Fr Ophthalmol*. 2024;47(5):104016.

4. Benitez-del-Castillo JM, Lopez-Perez MD, Cano-Ortiz A, et al. Efficacy and safety of intense pulsed light of upper and lower eyelids in Meibomian gland dysfunction: A prospective multicentric study. *Eur J Ophthalmol*. 2024;34(3):700-707.

5. Arita R, Fukuoka S. Therapeutic efficacy and safety of intense pulsed light for refractive multiple recurrent chalazia. *J Clin Med*. 2022;11(18):5338.

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c.suite™

1 DIAGNOSE



2 TREAT



3 EDUCATE



DRY EYE

COMPLETE OFFER DEDICATED TO DRY EYE

- **C.DIAG** : **Diagnostic** platform providing fast & full automatic exams with one click complete report: dry eye **qualification, quantification** and **classification**
- **C.STIM** : **IPL system** providing safe, efficient and fast **treatment** of **dry eye disease** and **ocular surface diseases**: Meibomian Gland Dysfunction, inflammation (rosacea and blepharitis), Demodex and neuropathic pain.
- **PATIENT KIT** : Printed and digital **up-to-date educational information** for patients about dry eye disease and some tips about daily eye care.

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