

# LACRYSTIM<sup>®</sup>

TREATMENT OF  
DRY EYE



I.P.L. System

# LACRYSTIM®

**Dry eye** is a particularly common disease that affects the **health and well-being** of millions of people worldwide. **Meibomian gland dysfunction** (MGD) is the leading cause of dry eye syndrome, known as evaporative dry eye, because it causes excessive tear evaporation. Dry eye disease can also be caused by a poor tear production of the lacrimal glands.

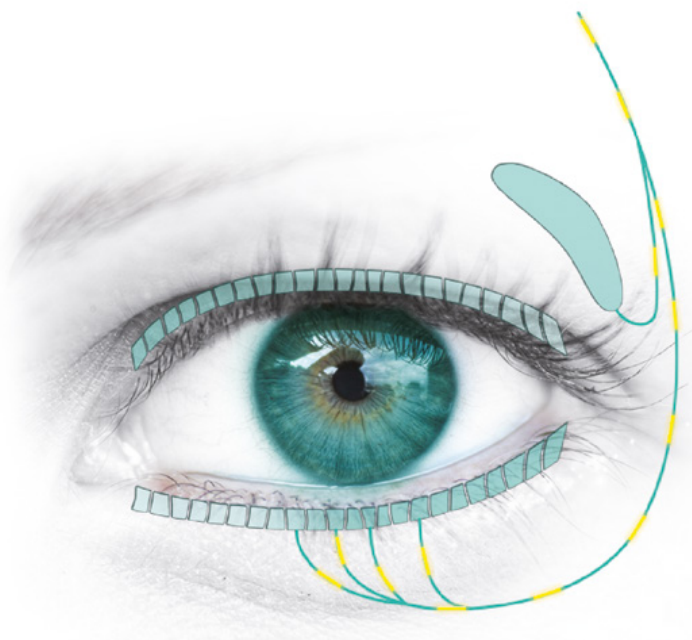
The **I.P.L. LacryStim® system** (Intense Pulsed Light) helps stimulate and reactivate the Meibomian glands and lacrimal glands in order to treat dry eye. Intense Pulsed Light technology is one of a series of innovative technologies **acknowledged in the TFOS-DEWS II Report**.

**TREATS THE CAUSES OF DRY EYE OPTIMISES LONG-TERMS RESULTS.**

## ■ MECHANISMS OF ACTION

Several studies detail the mechanisms of action of I.P.L. systems:

- **Neurostimulation of the parasympathetic nerve pathways [1,2].**  
Tear production is stimulated by the nervous system, via the parasympathetic nerve [3], which is linked to both the lacrimal gland [3,4] and the meibomian glands [3,5].
- **Faster Meibomian gland and lacrimal gland metabolism [1,2,3,4,5,12,13].**
- **Increased meibum expression due to heat [6].**
- **Small vessel coagulation: acts against inflammation of the skin** (rosacea) and **eyelids** (blepharitis) [7,8,9].
- **Reduces Demodex mites.**



## ■ CLINICAL RESULTS

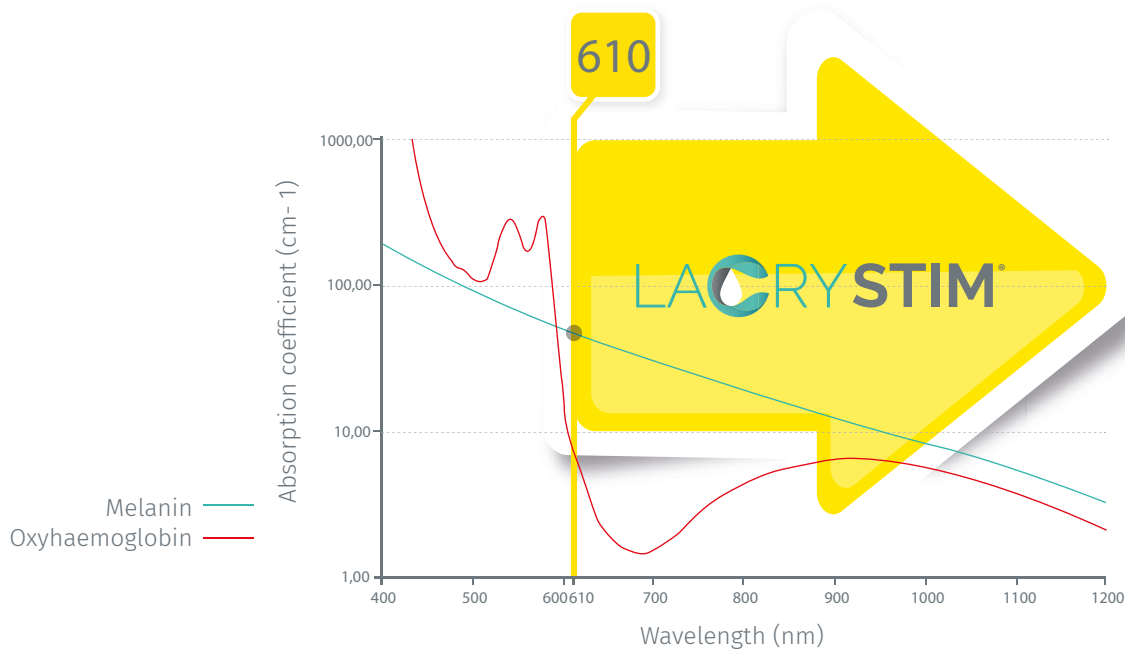
The expected results of I.P.L. treatment may include [6]:

- Improved **tear film quality**.
- Patient-reported **improvement in the following symptoms:** dryness, sensation of foreign body in the eye, itching, burning, eye fatigue, blurred vision, sensitivity to light, watery eyes, impaired secretion, pain.
- **Additional effects of I.P.L. treatment may be observed:**
  - Pain relief
  - Anti-inflammatory action (blepharitis, rosacea)
  - Reduction in inflammatory markers (cytokines) in the tears [10]
  - On infections (Demodex).

# I.P.L. System

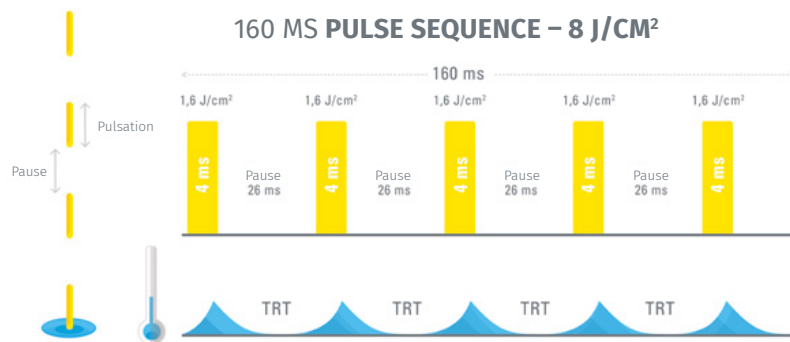
## ■ LIGHT SPECTRUM

- An **I.P.L.** device is a generator of **polychromatic intense pulsed light**.
- The LacryStim light spectrum extends **from 610 nm to 1200 nm**.
- LacryStim uses a **610 nm filter** that blocks UVA, UVB and UVC rays.
- Thanks to **this 610 nm filter**:
  - The **melanin** in the skin **absorbs less light** [11]
  - **Phototypes 1 to 5** (from the Fitzpatrick scale) can be treated.



## ■ SETTINGS AND PULSE SEQUENCE

- **The total energy** is between 8 and 12 J/cm<sup>2</sup> and is delivered in a **sequence of pulses**.
- The **time between each pulse respects the thermal relaxation time (TRT) of the skin**, thus limiting:
  - The increase in tissue temperature
  - Thermal damage to the skin
  - Inflammatory reactions.



## ➤➤ A SAFE AND EFFECTIVE TREATMENT FOR SKIN TYPES 1 TO 5



LACRYSTIM<sup>®</sup>

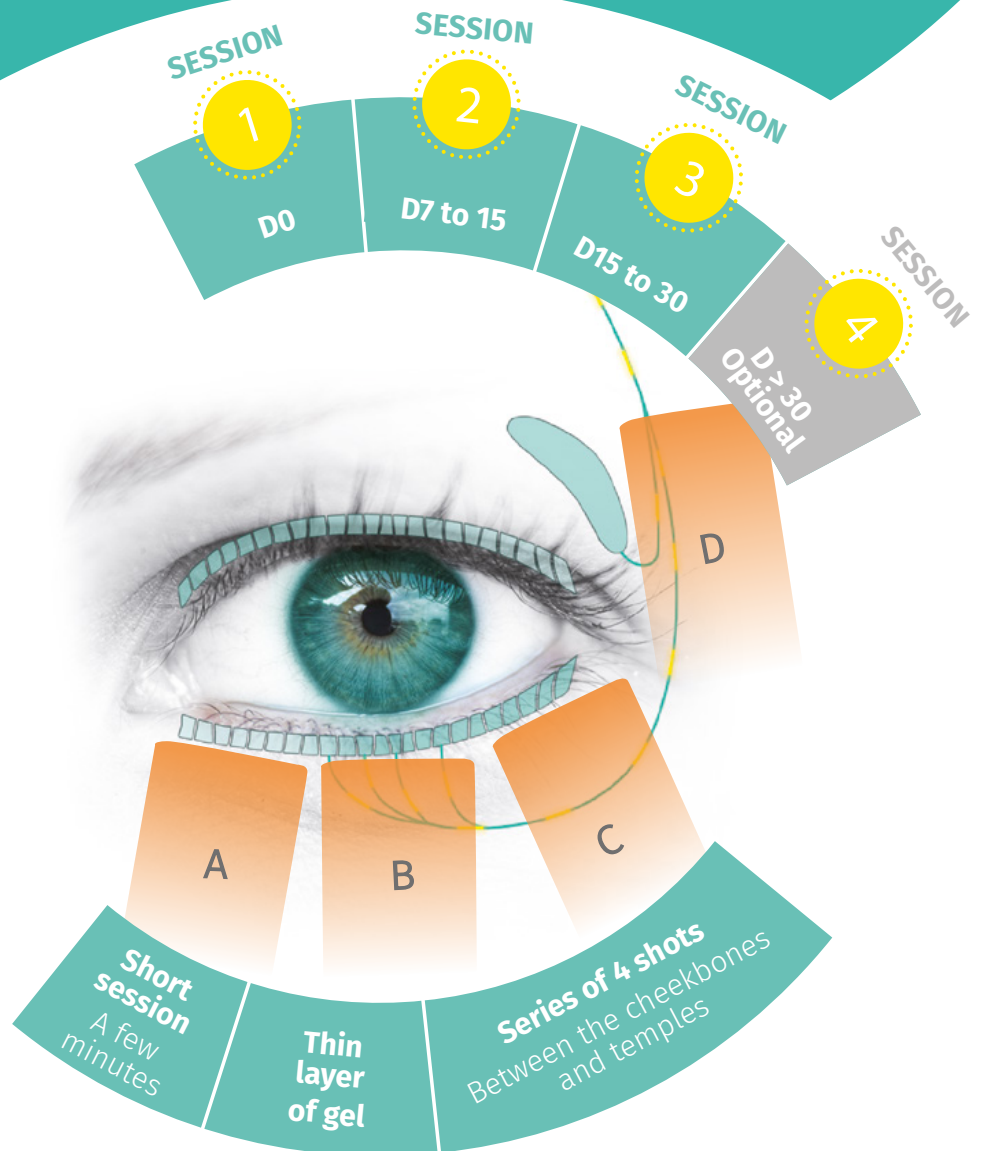
610 - 1200 nm

## ■ COMFORT AND EASE OF USE

- **Integrated water cooling:**
  - **Does not burn** the skin.
  - Applies a **thin layer of gel** during treatment.
  - **Long-lasting** flash lamp.
  - Delivers the **same energy level** from first to last shot.
- A single handpiece, no additional kit required.



## ■ SIMPLE AND FAST TREATMENT



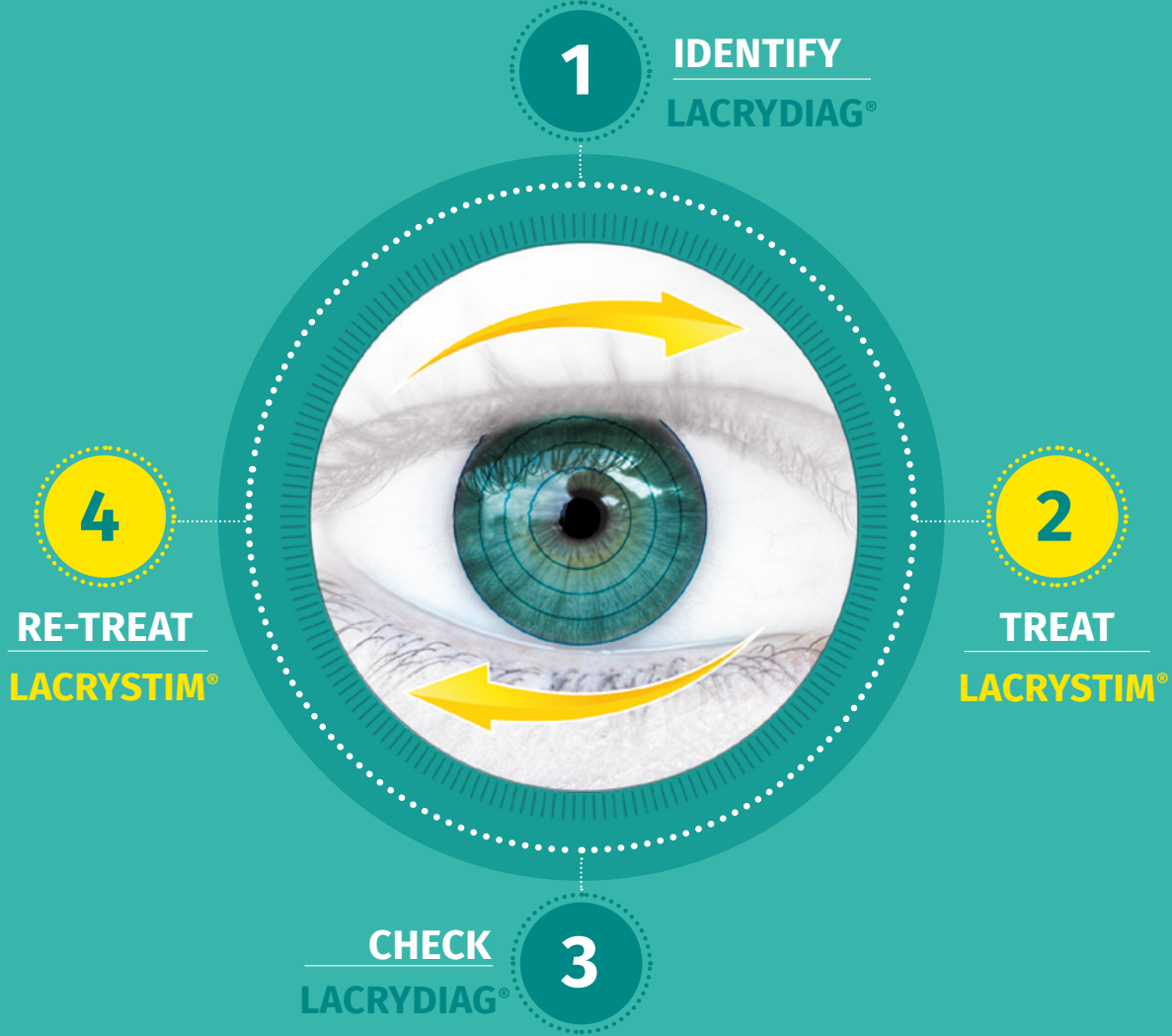


THE BENEFITS OF

**DIAGNOSIS**  
**LACRYDIAG®**  
Eye surface analyser



**TREATMENT**  
**LACRYSTIM®**  
I.P.L. System



**ADDED VALUE FOR YOUR CLINICAL PRACTICE**

- Extend your clinical offering from diagnosis to treatment.
- Diagnose and treat the cause of dry eye earlier.
- Offer effective and lasting I.P.L. treatment.
- Optimise post-surgical results by diagnosing and treating before surgery (refractive, cataract).
- Improve the compliance of patients under topical treatment for glaucoma.



**IMPROVED COMFORT FOR YOUR PATIENTS**

- Perform a complete, fast contactless examination.
- Offer your patients painless and effective I.P.L. treatment (< 5 min).
- Provide evidence of diagnosis and I.P.L. treatment results.
- Improve patient care.
- Ensure patient satisfaction from the 1<sup>st</sup> I.P.L. treatment.

# LACRYSTIM®

## TECHNICAL SPECIFICATIONS

### LACRYSTIM®

|                     |   |
|---------------------|---|
| Technology          | I.P.L. (Intense Pulsed Light)               |
| Wavelength          | 610 – 1200 nm                               |
| Energy              | 1 to 14 J/cm <sup>2</sup>                   |
| Dimensions          | 580 (H) x 275 (W) x 280 (D) mm              |
| Weight              | 25 kg                                       |
| Filter              | 610 nm, anti UVA, UVB and UVC filter        |
| Cooling system      | Water                                       |
|                     | Replace water every 7000 shots              |
| Flash lamp          | Xenon lamp                                  |
| Power supply        | 230 VAC or 110 VAC                          |
| Temperature for use | +5°C to +35°C                               |
| Treatment duration  | 3 to 4 sessions                             |
| Accessories         | Operator safety glasses, patient eyeshields |
| CE marking          | Class IIb medical device                    |

The company reserves the right to modify the technical specifications without prior warning.  
© 2020. Quantel Medical, LacryStim® is a registered trademark of Quantel Medical. All rights reserved.

### BIBLIOGRAPHY

1. Parasympathetic Innervation of the Meibomian Glands in Rats - Mark, S. LeDoux, Qihong Zhou, R. Bryan Murphy, Melissa, L. Greene y Patrick Ryan - *Investigative Ophthalmology & Visual Science*, octubre de 2001, Vol. 42, No. 11
2. Neurotransmitter Influence on Human Meibomian Gland Epithelial Cells. - Wendy R. Kam y David A. Sullivan - *Investigative Ophthalmology & Visual Science*, noviembre de 2011, vol. 52, No. 12
3. TFOS DEWS II - Rapport Physiopathologie, Anthony J. Bron, FRCOph, FMedSci, Cintia S. de Paiva, MD, PhD1, Sunil K. Chauhan, DVM, PhD1, Stefano Bonini, MD, Eric E. Gabison, MD, Sandeep Jain, MD, Erich Knop, MD, PhD, Maria Markoulli, PhD, MOptom, Yoko Ogawa, MD, Víctor Pérez, MD, Yuichi Uchino, MD, PhD, Norihiko Yokoi, MD, PhD, Driss Zoukhri, PhD, David A. Sullivan, PhD, *The Ocular Surface*, 2017, pp. 441-515
4. Vasoactive Intestinal Polypeptide and the Innervation of the Human Lacrimal Gland, Patrick A. Sibony, MD; Benjamin Walcott, PhD; Cissy McKeon, Frederick A. Jakobiec, MD, *Arch Ophthalmol.* 1988;106(8), pp. 1085-1088
5. The neurobiology of the meibomian glands, Cox SM, Nichols JJ, *Ocular Surface*, julio de 2014
6. Arita R. et al. Multicenter Study of Intense Pulsed Light Therapy for Patients With Refractory Meibomian Gland Dysfunction - Reiko Arita, MD, PhD, Takanori Mizoguchi, MD, Shima Fukuoka, MD, and Naoyuki Morishige, MD, PhD - *Cornea*, volumen 37, número 12, diciembre de 2018
7. Rosacea: Molecular Mechanisms and Management of a Chronic Cutaneous Inflammatory Condition, Yu Ri Woo, Ji Hong Lim, Dae Ho Cho and Hyun Jeong Park, *International Journal of Molecular Sciences*, septiembre de 2016
8. Rosacea: Epidemiology, pathogenesis, and treatment, Barbara M. Rainer, Sewon Kang, and Anna L. Chien, *DERMATO-ENDOCRINOLOGY* 2018, VOL. 9, NO. 1, e1361574 (10 páginas)
9. Update on the management of rosacea, Allison P Weinkle, Vladyslava Doktor, Jason Emer, *Clinical, Cosmetic and Investigational Dermatology*, abril de 2015
10. Analysis of Cytokine Levels in Tears and Clinical Correlations After Intense Pulsed Light Treating Meibomian Gland Dysfunction - RUIXING LIU, BEI RONG, PING TU, YUN TANG, WENJING SONG, ROLANDO TOYOS, MELISSA TOYOS Y XIAOMING YAN - *Am J Ophthalmol.* 2017 en AJO.com.
11. Theory of lasers and lamps - S. Mordon, T. Michaud - *Annales de dermatologie* (2009) 136, suplemento 6, S3066s310 - [www.sciencedirect.com](http://www.sciencedirect.com)
12. Effect of inflammation on lacrimal gland function - Driss Zoukhri - *Experimental Eye Research*, 2006 May ; 82(5): 885-898.
13. Aqueous deficiency is a contributor to evaporation-related dry eye disease - Charles W. McMonnies - *Eye and Vision* (2020) 7:6

LacryStim® I.P.L. is a class IIb medical device designed by CSB for QUANTEL MEDICAL and compliance assessed by IMQ CE 0051.

[www.quantel-medical.com](http://www.quantel-medical.com)

#### Headquarters

Quantel Medical  
11, rue du Bois Joli - CS40015  
63808 Cournon d'Auvergne - FRANCE  
Tel: +33 (0)4 73 745 745  
Email: [contact@quantel-medical.fr](mailto:contact@quantel-medical.fr)

#### North America

Quantel Medical USA  
2313 Ridge Road Suite 105A  
Rockwall, TX 75087 - USA  
Tel: +1 888 660 6726  
Email: [info@quantelmedical.com](mailto:info@quantelmedical.com)

#### Poland

Quantel Medical  
ul. Raławicka 93  
02-634 Warszawa - POLAND  
Tel: +48 22 5210111  
Email : [info@quantel-medical.pl](mailto:info@quantel-medical.pl)

#### Representative Offices

Thailand, Chiang Mai  
Brazil, Rio De Janeiro

 Quantel  
medical  
BY LUMIBIRD  
ISO 9001 : 2015 - ISO 13485 : 2016