

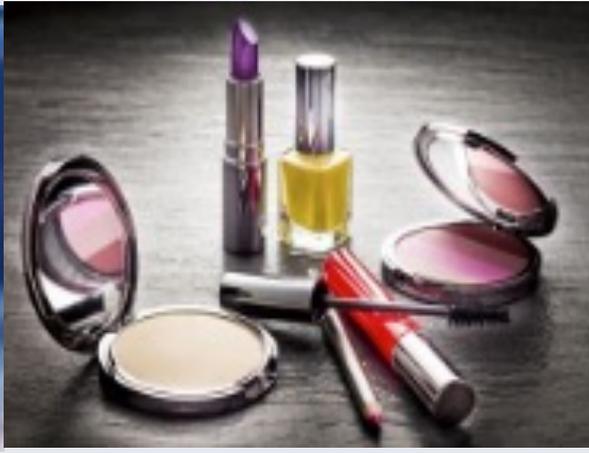
*Il drop out in contattologia: come contrastare
l'abbandono all'uso di lenti a contatto*



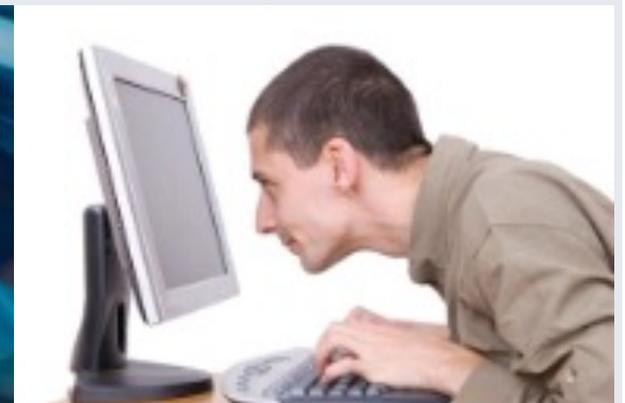
Pietro Gheller FIACLE SOPTI

a c. Università di Padova

IBZ Bologna



TFOS Lifestyle Workshop. Focuses on the direct and indirect impact of our evryday lifestyle choise on the health of ocular surface



Perché ci dobbiamo occupare di dry eye ?



Google search results for "dry eye". The search bar contains "dry eye". Below the search bar, there are navigation options: Tutti, Immagini, Notizie, Shopping, Maps, Altro, and Strumenti. The results count is "Circa 1.320.000.000 risultati (0,41 secondi)".

1 miliardo 320 milioni

Google search results for "myopia control". The search bar contains "myopia control". Below the search bar, there are navigation options: Tutti, Immagini, Notizie, Maps, Video, Altro, and Strumenti. The results count is "Circa 20.400.000 risultati (0,34 secondi)".

20 milioni



Google search results for "occhio secco e lenti a contatto". The search bar contains "occhio secco e lenti a contatto". Below the search bar, there are navigation options: Tutti, Notizie, Shopping, Immagini, Video, Altro, and Strumenti. The results count is "Circa 220.000 risultati (0,44 secondi)".

220 mila

Google search results for "prevenzione miopia". The search bar contains "prevenzione miopia". Below the search bar, there are navigation options: Tutti, Immagini, Notizie, Shopping, Video, Altro, and Strumenti. The results count is "Circa 208.000 risultati (0,35 secondi)".

208 mila

Da oggi al 2050

Oggi 2016 : 7,8 miliardi di persone

1,5 miliardi di Dry Eye Disease

Nel 2050 : 10,2 miliardi di persone

2,5 miliardi di Dry Eye Disease



Oggi la percentuale media di DED

È del 9,5% indipendentemente dall'età

Fino al 50% nel Tibet e Mongolia

Report of the Inaugural Meeting of the TFOS i² = initiating innovation Series: Targeting the Unmet Need for Dry Eye Treatment [The Ocular Surface Volume 14, Issue 2, April 2016, Pages 264–316](#)

Classificazione del NATIONAL EYE INSTITUTE (NEI)

DRY EYE DESEASE - DED

Deficit nella produzione di lacrime

Perdita per evaporazione

Sindrome
di Sjogren

Non Sjogren

Patologie delle
Gh. di Meibomio

Altro
1. LAC
2. Disord. Ammicc.

Primaria

Patologie
della Gh. Lacrimale

Perdita della
Lacrimazione riflessa

Alterazioni
palpebrali

Ostruzione dei
dotti lacrimali

Adattata da Lemp; CLAO J 1995

Webinar UNIFI - Pietro Gheller

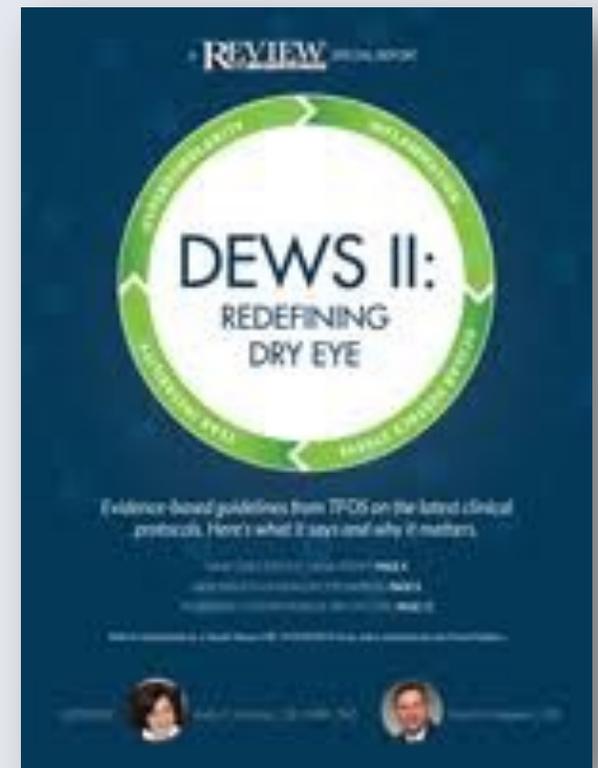
definizioni

- **DRY EYE: (EDE- Evaporative Dry Eye)**
 - CLD = contact lens discomfort
 - Maggior responsabile
 - Evaporazione lacrimale
 - CLIDE = Contact lens Induced dry eye

IOVS Papers in Press. Published on September 20, 2013 as Manuscript iovs.13-13212

The TFOS International Workshop on Contact Lens Discomfort: Executive Summary

Webinar UNIFI - Pietro Gheller



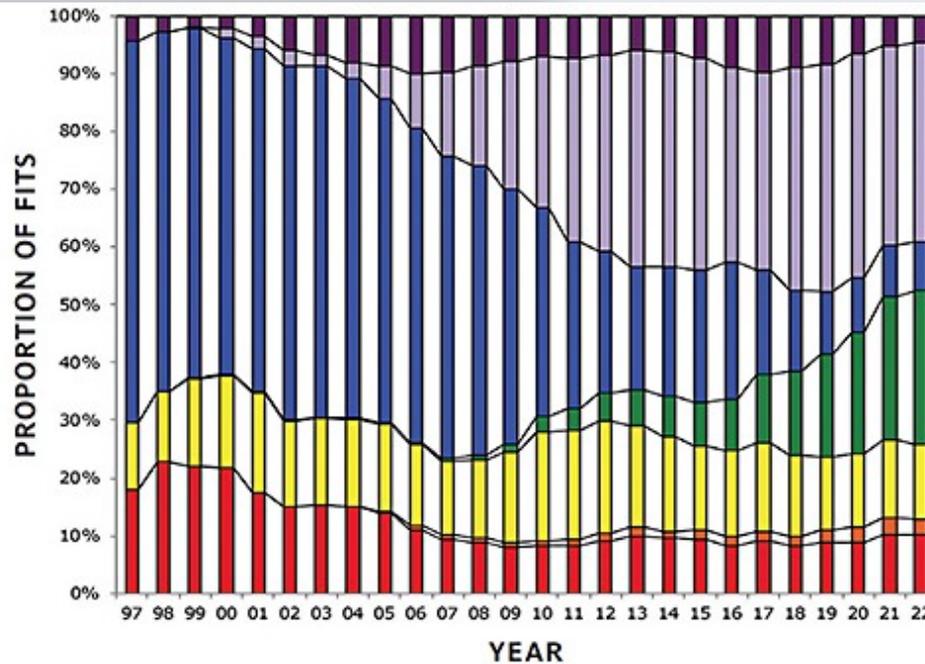
Lenti a contatto nel mondo

Article

INTERNATIONAL CONTACT LENS PRESCRIBING IN 2022

Key trends in prescribing highlighted by our 22nd global survey.

By PHILIP B. MORGAN, PHD, MCOPTOM; CRAIG A. WOODS, PHD, MCOPTOM; IOANNIS G. TRANOUDIS, DO, MSC, PHD; NATHAN EFRON, AC, DSC, PHD; LYNDON JONES, PHD, DSC, FCOPTOM; PAULA FACCIA, PHD; DORIS RIVADENEIRA, OD, IACLE; MARIO TEUFL, BSC, MSC; CHRISTINA N. GRUPCHEVA, MD, PHD; DEBORAH JONES, BSC, FCOPTOM; LINA MARÍA RODRÍGUEZ CELY, OD, MS; AMOND ADSESEN, MSC, OPTOM; JACINTO SANTODOMINGO-RUBIDO, OD(EC), MSC, PHD, MCOPTOM; LOUISETTE BLOISE, MD; NIR ERDINEST, BOPTOM, PHD; GIANCARLO MONTANI, DIPOPTOM; MOTOZUMI ITOI, MD, PHD; JOLANTA BENDORIENE, MD, PHD; JEROEN MULDER, MSC, BOPTOM; EEF VAN DER WORP, BSC, PHD; TIJL VAN MIERLO; JEANETTE ROMUALDEZ-OO, OD; CARMEN ABESAMIS-DICHOSO, OD; JOSÉ MANUEL GONZÁLEZ-MÉJOME, OD, PHD; RUTE J. MACEDO-DE-ARAÚJO, PHD; OSKAR JOHANSSON, BSC; JOHN HSIAO, BA, OD; & JASON J. NICHOLS, OD, MPH, PHD
January 1, 2023



85% delle applicazioni sono lenti morbide

- Soft EW
- Reusable DW hydrogel
- Reusable DW Si-Hy
- DD Si-Hy
- OK

Webinar UNIFI - Pietro Gheller

CLIDE (contact lens induced dry eye) e Occhio secco e LAC

(CLIDE)	Occhio secco e LAC
Secchezza oculare con LAC	
Visione offuscata con LAC	
Senza lac NO secchezza	Con LAC e senza, secchezza
Sensazione di secchezza con LAC dopo 4-5 h d'uso	Sensazione di sabbia negli occhi con LAC dopo <2 h d'uso
Sintomi più frequenti e intensi alla fine della giornata	Non ci sono differenze nei vari giorni e interruzione d'uso dopo 4-5 h
¼ dei pazienti non presenta segni tipici di occhio secco	I pazienti presentano spesso segni clinici di superficie
Cambiare lenti a contatto	Inviare dall'oculista

Perché la lente a contatto crea DCL



DRY EYE EXPLAINED

What we thought we knew about dry eye and what we know now.

By MILE BRUJIC, OD, & DAVID L. KADING, OD July 1, 2017



una superficie oculare sana aiuta a supportare la tecnologia delle lenti a contatto che sono negli occhi. Come tale, è diventato incombente per i professionisti dell'ottica prestare particolare attenzione alla superficie oculare e trattare adeguatamente l'occhio per ottimizzare e promuovere la sua salute.

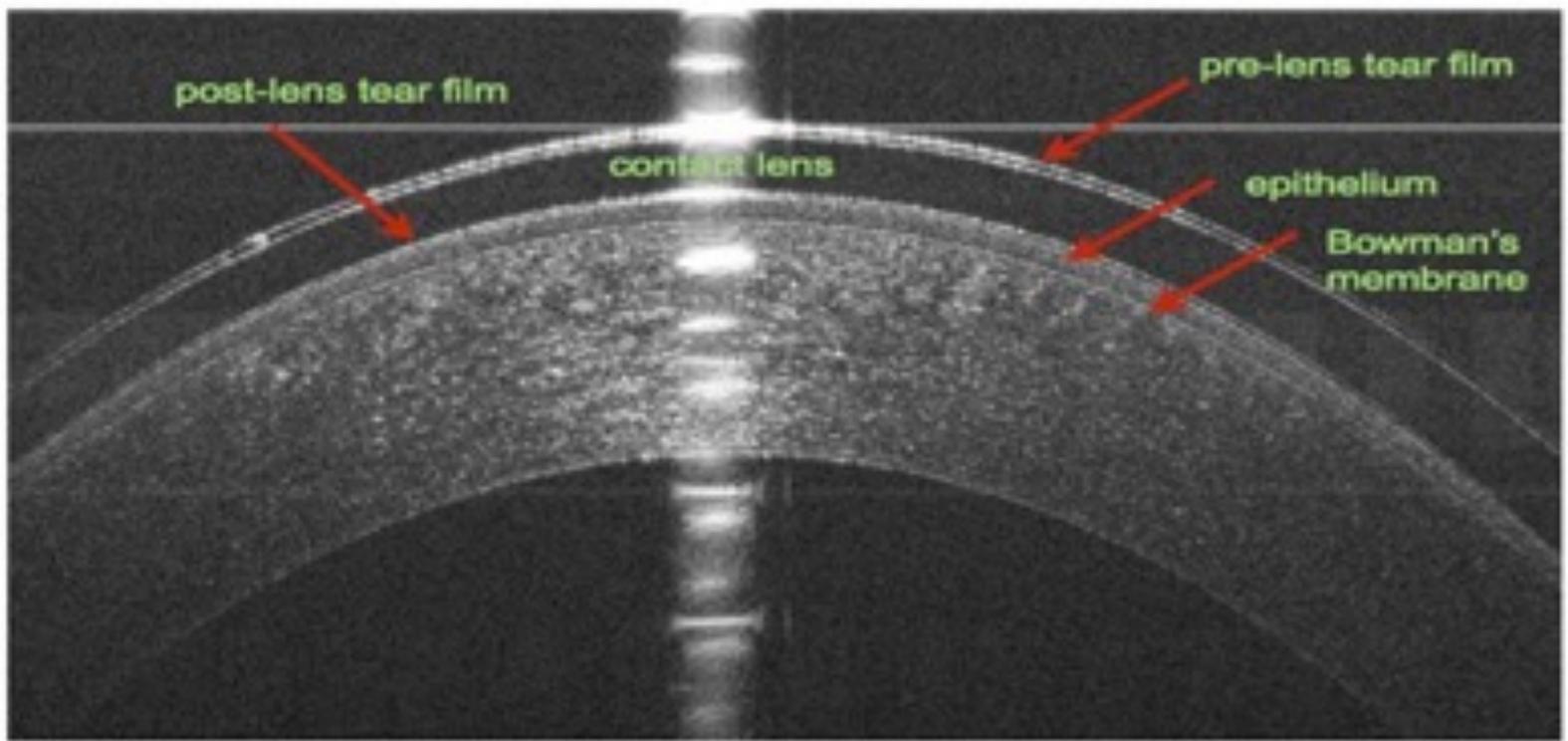
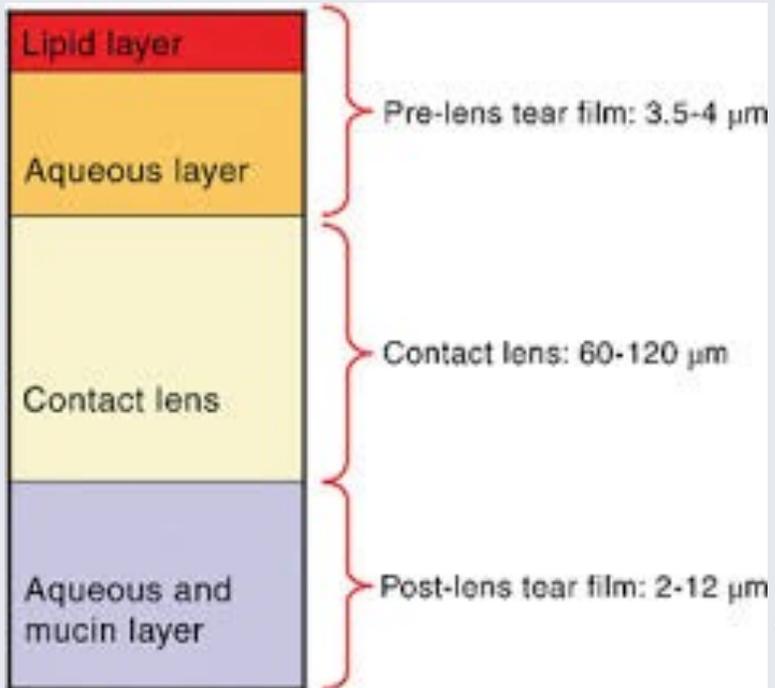


Image courtesy of Christine Purilow



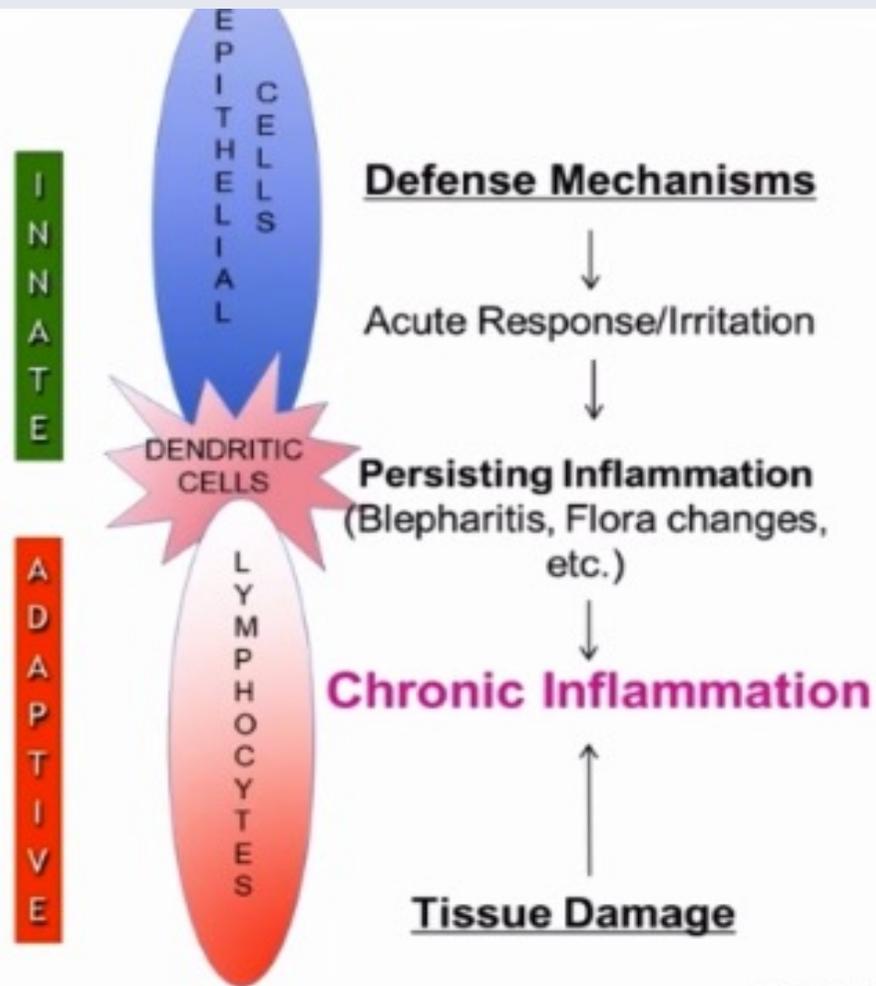
ORMESI FISIOLOGICA

From Hormesis (Para-Inflammation) to Inflammation



- Parainflammation is a tissue adaptive response to noxious stress or malfunction whose physiological purpose is to restore tissue functionality and homeostasis.
- If excessive: shift in homeostatic set points, development of diseases of homeostasis and / or autoinflammatory diseases

Ruslan Medzhitov. Origin and physiological roles of inflammation. Nature 2008, 454, 428-435



Aragona P et al. In Ocular Surface Disease. P Medical Pr

20 anni di dropout

Eye Contact Lens. 2013 Jan;39(1):93-9. doi: 10.1097/ICL.0b013e318271caf4.

The impact of contemporary contact lenses on contact lens discontinuation.

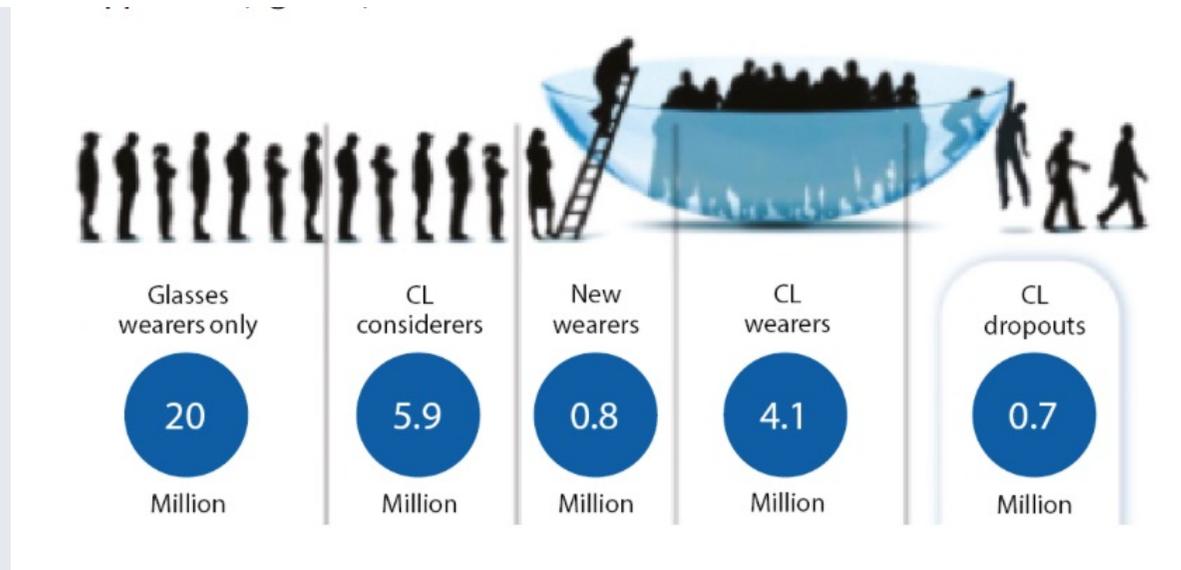
Dumbleton K¹, Woods CA, Jones LW, Fonn D.

Previous publications reporting contact lens discontinuation rates.

Reference	n	Age range (years)	Country	Methodology	Results	Reasons for Discontinuation
Dumbleton et al. (2013) [8]	4207	17-77	Canada	Web-based survey	Discontinuations: 40% Permanent discontinuations: 23%	Discomfort: 44.3% Vision: 6.3% Handling: 6.3%
Rumpakis (2010) [7,9]	372 eye care practitioners	-	US (138), Taiwan, Korea + others	Web-based survey	'Dropout rates': US-16%, Asia-PR-31%, EMA-30%	Discomfort: 45.6% Vision: 17.5% Handling: 7.0%
Richdale et al. (2007) [6]	453	18-88	US (University)	Self-administered questionnaire	Discontinuations: 24% Dissatisfied CL wearers: 26%	Discomfort: 64% Vision: 14% Handling: 0%
Jutai et al. (2003) [5]	418	15-82	Canada	Self-administered questionnaire	Discontinuations: 43%	-
Young et al. (2002) [10]	236	18-74	UK	Self-administered questionnaire	-	Discomfort: 51% Vision: 13%
Harknett et al. (2001) [4]	115	14-72	UK (University clinic)	5-year chart review	Discontinuations: 29%	-
Pritchard et al. (1999) [3]	1444	-	Canada (Quebec)	Mailshot questionnaire	Discontinuations: 34% Permanent discontinuations: 12%	Discomfort: 50% Vision: 3% Handling: 3%
Weed et al. (1993) [1]	568	-	Canada (University)	Self-administered questionnaire	Discontinuations: 51% Permanent discontinuations: 40%	Discomfort: 41% Vision: 0% Handling: 0%

Retention Rates in New Contact Lens Wearers

Anna Sulley, B.Sc., M.C.Optom., Graeme Young, M.Phil., Ph.D., D.C.L.P., Chris Hunt, M.Sc., Sarah McCready, Marie-Therese Targett, Ph.D., and Ruth Craven, Ph.D.



Il 25% dei portatori abbandona entro il 1 mese
Il 47% dei portatori abbandona entro i primi 3 mesi ¹

1- Sulley A, Young G, Hunt C. Factors in the success of new contact lens wearers. *Cont Lens Anterior Eye*. 2017 Feb;40(1):15-24. doi: 10.1016/j.clae.2016.10.002.

Cosa si fa oggi per arginare il problema?

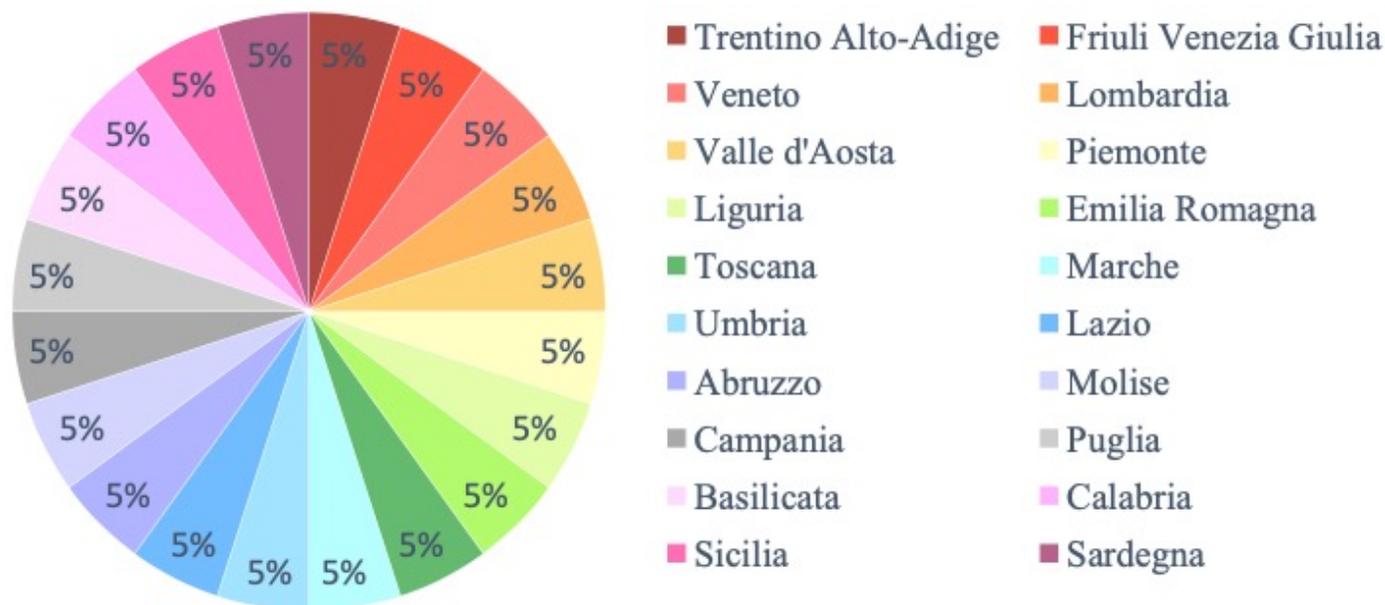
..... Mi raccomando non usare troppo le lenti, massimo 8 h



Quante ore le posso usare?

Comunicazione consueta dei professionisti

OTTICHE CONTATTATE



60 negozi di ottica

Da nord a sud
3 negozi per regione
no grande distribuzione

di Tomasi Giulia UNIPD

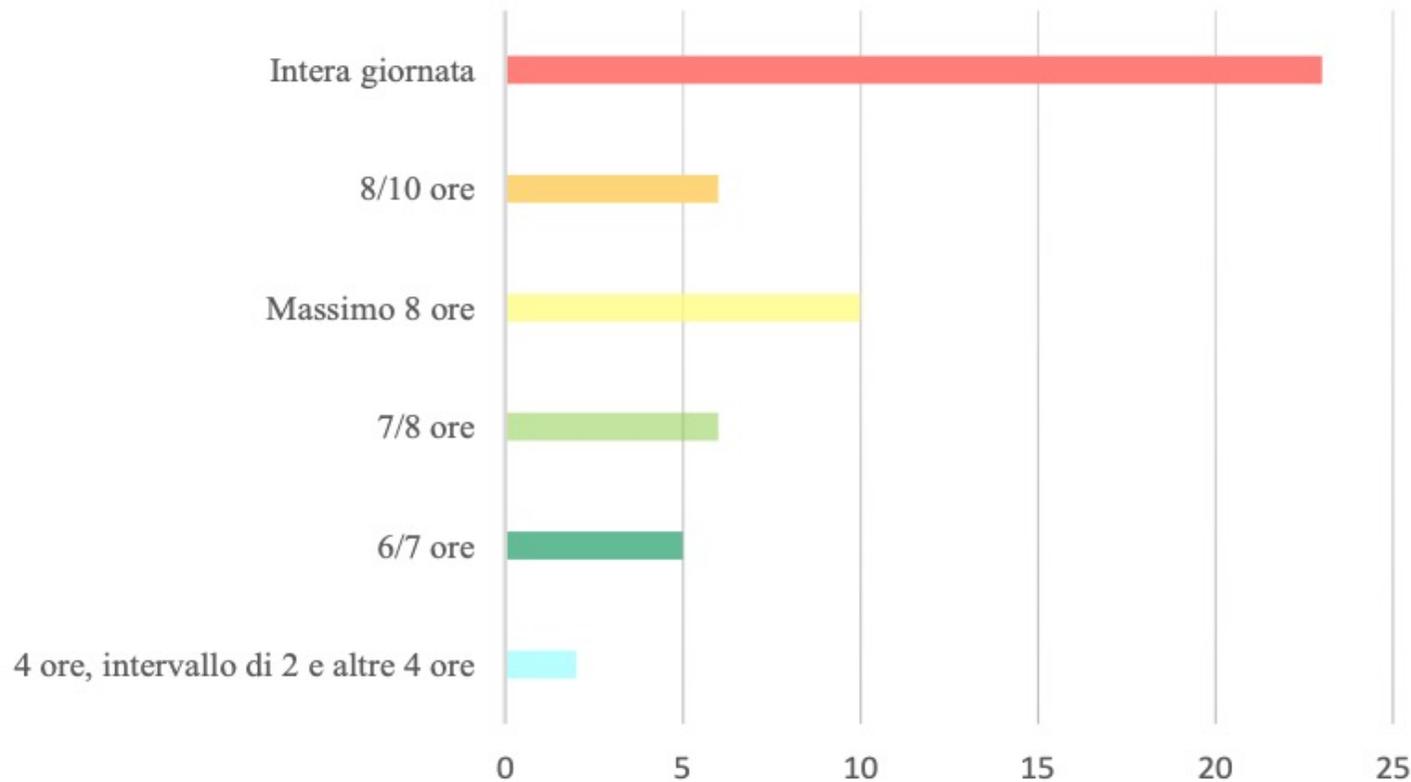
”Salve, volevo chiedere un’informazione riguardo alle lenti a contatto. Sono una ragazza di 21 anni e non ho mai portato lenti. Vorrei iniziare a portarle, anche se non so bene se giornaliere, mensili o altro. Volevo capire indicativamente in base alle mie necessità quante ore al giorno si possono portare”

Chi ha risposto per tel?



Quanto le posso usare?

RISPOSTE OTTENUTE



23 profes.
Tutto il giorno

29 profess
Massimo....8 h

TOT 52 profes

... in linea di massima NESSUNA differenza di risposte tra NORD e SUD italia

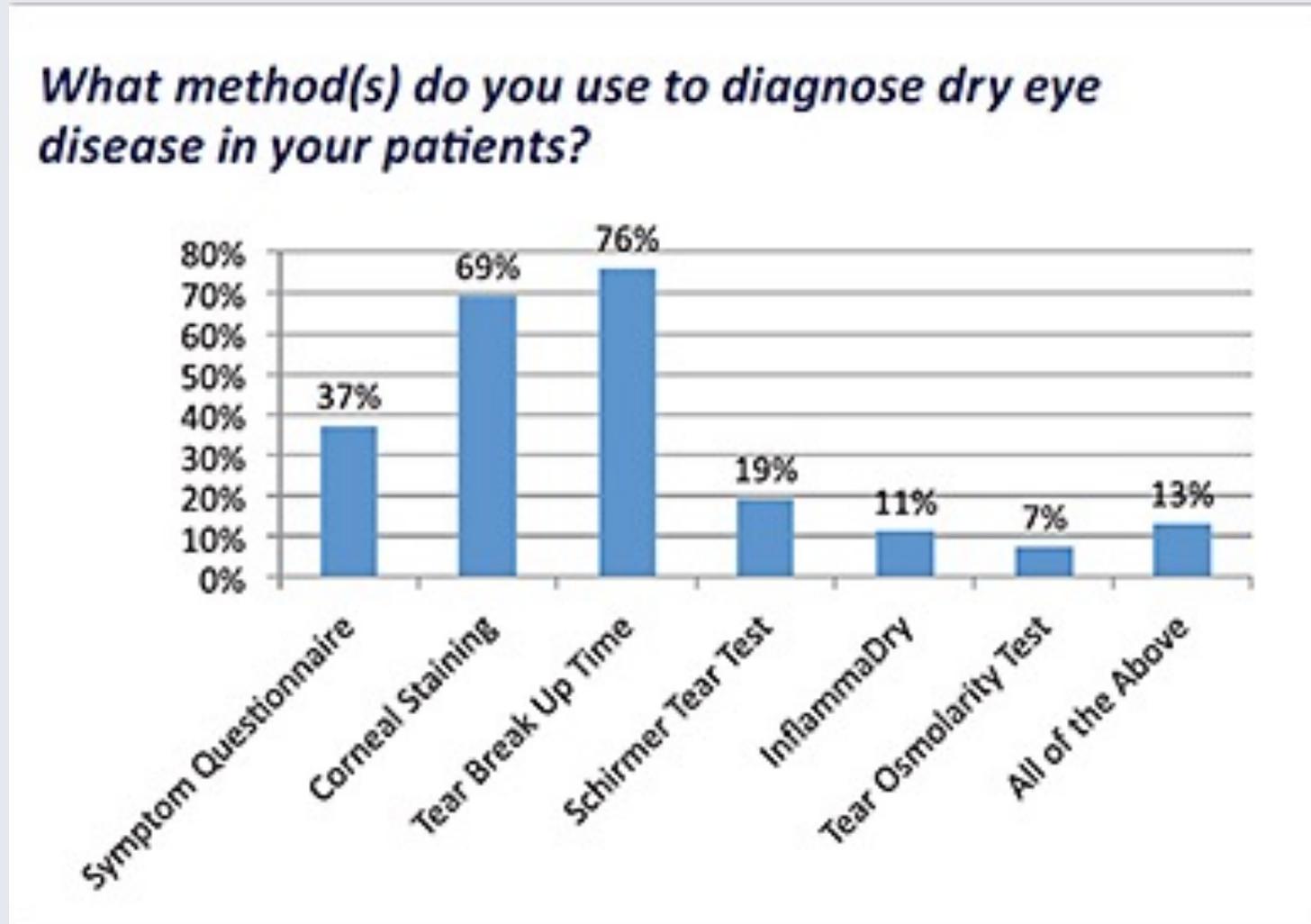
Quindi togliamo la lente perché da fastidio

CLIDE = Contact lens Induced dry eye



COSA FACCIAMO PER AFFRONTARE IL PROBLEMA ?

Capire il problema prima che scoppi



:Survey: Domanda rivolta a 450 optometristi presenti al congresso annuale dell'AOA 2013

QUESTIONARI 25

Table 3. Symptoms and quality of life instruments

Instrument Title/Description/Reference	Authors/Report	Questionnaire Summary	Description/Use
McMonnies Key questions in a dry eye history (McMonnies) ¹⁰³	McMonnies. <i>J Am Optometric Assoc</i> 1986; 57(7):512-7	15 questions	Screening questionnaire—used in a clinic population
McMonnies Reliability and validity of McMonnies Dry Eye Index. (Nichols et al) ¹⁰⁴	Nichols, Nichols, Mitchell, Cornes 2004;23(4):365-71	Previously described	Screening questionnaire Dry eye clinic population
*CANDEES A patient questionnaire approach to estimating the prevalence of dry eye symptoms in patients presenting to optometric practices across Canada (CANDEES) ⁹⁴	Doughty, Fonn, Richter, et al. <i>Optom Vis Sci</i> 1997;74(8):624-31	13 questions	Epidemiology of dry eye symptoms in a large random sample
OSDI The Ocular Surface Disease Index ¹⁰⁵	Schiffman, Christianson, Jacobsen, et al. <i>Arch Ophthalmol</i> 2000;118:615-21	12-item questionnaire	Measures the severity of dry eye disease; end points in clinical trials, symptoms, functional problems and environmental triggers queried for the past week
OSDI and NEI-VFQ comparison ²⁴	Vitale, Goodman, Reed, Smith. <i>Health Quality Life Outcomes</i> 2004;2:44	Comparison of existing questionnaires	Tested in Sjogren Syndrome population
IDEEL Comparing the discriminative validity of two generic and one disease-specific health-related quality of life measures in a sample of patients with dry eye ²³	Rajagopalan, Abetz, Mertzanis, et al. <i>Value Health</i> 2005 Mar-Apr;8(2):168-74	3 modules (57 questions): 1. Daily Activities 2. Treatment Satisfaction 3. Symptom Bother	Epidemiologic and clinical studies
Salisbury Eye Evaluation Relation between signs and symptoms of dry eye in the elderly ¹⁰⁶	Schein, Tielsch, Munoz B, et al. <i>Ophthalmology</i> 1997;104:1395-1401	Standardized 6-question questionnaire*	Population-based prevalence survey for clinical and subjective evidence of dry eye
Salisbury Eye Evaluation Self-reported assessment of dry eye in a population-based setting ¹⁰⁷	Bandein-Roche, Munoz, Tielsch, et al. <i>Ophthalmol Vis Sci</i> 1997;38(12):2469-75	Standardized 6-question questionnaire*	Population-based prevalence survey for clinical and subjective evidence of dry eye
Dry Eye Epidemiology Projects (DEEP) Sensitivity and specificity of a screening questionnaire for dry eye ¹⁰⁸	Oden, Lilienfeld, Lemp, et al. <i>Adv Exp Med Biol</i> 1998;438: 807-20	19 questions	Screening
Women's Health Study questionnaire Prevalence of dry eye syndrome among US women ⁷	Schaumburg, Sullivan, Buring, Sullivan. <i>Am J Ophthalmol</i> 2003 Aug;136(2):318-26	3 items from 14-item original questionnaire	Women's Health Study/ Epidemiologic studies
National Eye Institute Visual Function Questionnaire (NEI-VFQ) ¹⁰⁹	Mangione, Lee, Pitts, et al. <i>Arch Ophthalmol</i> 1998;116:1496-1504	25-item questionnaire: 2 ocular pain subscale questions	Useful tool for group-level comparisons of vision-targeted, health-related QOL in clinical research; not influenced by severity of underlying eye disease, suggesting use for multiple eye conditions.
Dry Eye Questionnaire (DEQ) Habitual patient-reported symptoms and clinical signs among patients with dry eye of varying severity ²⁶	Begley, Chalmers, Abetz, et al. <i>Invest Ophthalmol Vis Sci</i> 2003 Nov;44(11):4753-61	21 items on prevalence, frequency, diurnal severity and intrusiveness of sx	Epidemiologic and clinical studies
Dry Eye Questionnaire (DEQ) Use of the dry eye questionnaire to measure symptoms of ocular irritation in patients with aqueous tear deficient dry eye ¹¹⁰	Begley, Caffery, Chalmers, et al. <i>Cornea</i> 2002;21(7):664-70	As above	As above

Table 3. Symptoms and quality of life instruments (continued)

Instrument Title/Description/Reference	Authors/Report	Questionnaire Summary	Description/Use
Contact Lens DEQ Responses of contact lens wearers to a dry eye survey ²⁰	Begley, Caffery, Nichols, Chalmers. <i>Optom Vis Sci</i> 2000; 77(1): 40-6	13 questions	Screening questionnaire for dry eye symptoms in contact lens wearers
Melbourne Visual Impairment Project The epidemiology of dry in Melbourne, Australia ¹¹	McCarty, Bansal, Livingston, et al. <i>Ophthalmology</i> 1998;105:1114-9	Self-reported symptoms elicited by interviewer-administered questionnaire	Epidemiologic studies
National Eye Institute 42-Item Refractive Error Questionnaire ¹¹¹	Hays, Mangione, Ellwein, et al. <i>Ophthalmology</i> 2003;110(12):2292-301	42-item questionnaire: 4 related questions: ocular pain or discomfort, dryness, tearing, soreness or tiredness	QoL due to refractive error
Sicca/SS questionnaire Validation of the Sicca symptoms inventory for clinical studies of Sjogren's syndrome ¹¹²	Bowman, Booth, Platts, et al. <i>Sjogren's Interest Group. J Rheumatol</i> 2003;30(6):1259-66	Inventory of both symptoms and signs of Sjogren Syndrome	Epidemiologic studies for Sjogren Syndrome
Bjerrum questionnaire Study Design and Study Populations ¹¹³	Bjerrum. <i>Acta Ophthalmologica (Scand)</i> 2000;10:3	3-part questionnaire which includes an ocular part with 14 questions	QoL due to SS dry eye, diagnosis of dry eye, epidemiology of SS
Bjerrum questionnaire Dry Eye Symptoms in patients and normals ¹¹⁴	Bjerrum. <i>Acta Ophthalmologica (Scand)</i> 2000, 14:5.	As above	Screening questionnaire
Bjerrum questionnaire Test and symptoms in keratoconjunctivitis sicca and their correlation ¹⁵	Bjerrum. <i>Acta Ophthalmol (Scand)</i> 1996;74:436-41	Dry eye tests Ocular symptom questionnaire (14 questions)	Examine correlation between dry eye test and ocular symptom questionnaire responses
Utility assessment questionnaire Utility assessment among pts with dry eye disease ²¹	Schiffman, Wait, Jacobsen, et al. <i>Ophthalmology</i> 2003;110(7):1412-9	Utility assessment	Utility assessment
Japanese dry eye awareness study Results of a population-based questionnaire on the symptoms and lifestyles associated with dry eye ¹¹⁵	Shimmura, Shimazaki, Tsubota. <i>Cornea</i> 1999; 18(4):408-11	30 questions relating to symptoms and knowledge of dry eye	Population-based, self-diagnosis study to assess public awareness and symptoms of dry eye
Sicca/SLE questionnaire Oral and ocular sicca symptoms and findings are prevalent in systemic lupus erythematosus ¹¹⁶	Jensen, Bergem, Gilboe, et al. <i>Oral Pathol Med</i> 1999;28:317-22	6-question symptom questionnaire	Screening for dry eye symptoms in SLE patients
American-European Consensus Group Classification criteria for Sjogren's syndrome: a revised version of the European criteria proposed by the American-European Consensus Group ¹¹⁷	Vitali C, Bombardieri S, Jonsson R, et al. <i>Ann Rheum Dis</i> 2002;11:554-8	6 areas of questions: Ocular symptoms; oral symptoms; ocular signs; histopathology; oral signs; auto-antibodies	Clarification of classification of primary and secondary Sjogren syndrome, and of exclusion criteria.
The Eye Care Technology Forum Impacting Eye Care ¹¹⁸	Ellwein. <i>Ophthalmology</i> 1994;101:199-201	Issues: Standardizing clinical evaluation	Decree for change

Test oggettivi. 54 test

APPENDIX 1. ALPHABETICAL LISTING OF TESTS USED TO DIAGNOSE AND MONITOR DRY EYE		
Allergy conjunctival eosinophils	Meibography	Symptoms IDEEL (questionnaire)
Allergy conjunctival provocation test	Meibomian gland expression	Symptoms McCarty (questionnaire)
Allergy tear IGE	Meibomian lipid analysis	Symptoms McMonnies (questionnaire)
***	Meibomian lipid sampling	Symptoms NEI-VFQ25 (questionnaire)
Basal tear volume	Meibomian microbiology	Symptoms OSDI (questionnaire)
Brush cytology	***	Symptoms Schein (questionnaire)
***	NIBUT	Staining exam form-1 from Nichols
OCLRU—Hyperemia and other grading scales	***	***
Conjunctivochalasis	Ocular Protection Index (OPI)	TBUD
***	Osmolarity OcuSense overview	Tear evaporation
Fluorescein permeability	Osmolarity—Depression of freezing point	Tear flow fluorimetry
Flow cytometry	Osmolarity OcuSense—Sullivan	Tear lipid interferometry
***	Osmolarity—Vapor pressure	Tear meniscus height
Endocrine markers report	***	Tear meniscus radius
EQ-SD (questionnaire)	Rheumatic criteria	Tear protein profiles
***	***	Tear Stability Analysis System (TSAS)
Ferning	SBUT	Tear turnover fluorimetry
Forceful blink test	Schirmer I European criteria 1994	Tear volume fluorimetry
Functional visual acuity	Schirmer I Farris	Tests used in combination
***	Schirmer I Nichols	Combined tests—Afonso 1999
Grading staining—Nichols CLEK B	Schirmer I van Bijsterveld	Combined tests—Bjerrum 1997
Grading staining—Oxford scheme	Schirmer Pflugfelder A	Combined tests—European criteria 1994
Grading staining—van Bijsterveld	Schirmer Pflugfelder B	Combined tests—Nichols 2004
***	Scintigraphy	Combined tests—Pflugfelder 1998
Hamano thread test	SF-36	Combined tests—Shimazaki 1998
***	Sicca index	Combined tests—van Bijsterveld 1969
Impression cytology	Sjogren syndrome—Direct sialometry	Tear film breakup time (TFBUT)
***	Sjogren syndrome—Salivary-scintigraphy	Thermography
Lacrimal biopsy	Sjogren syndrome—Sialography	Time-trade-off approaches to dry eye severity
Lid margin disease criteria	Sjogren syndrome—Hematology	
LASIK-induced Neuro-Epitheliopathy (LINE)	Sjogren Serology—Martin	
***	SSI (Sjogren Syndrome Index)—Bowman	
	Symptoms DEQ (questionnaire)	

DRY EYE EXPLAINED

What we thought we knew about dry eye and what we know now.

By MILE BRUJIC, OD, & DAVID L. KADING, OD July 1, 2017



una superficie oculare sana aiuta a supportare la tecnologia delle lenti a contatto che sono negli occhi. Come tale, è diventato incombente per i professionisti dell'ottica prestare particolare attenzione alla superficie oculare e trattare adeguatamente l'occhio per ottimizzare e promuovere la sua salute.

Chi è l'assassino della nostra lacrimazione??



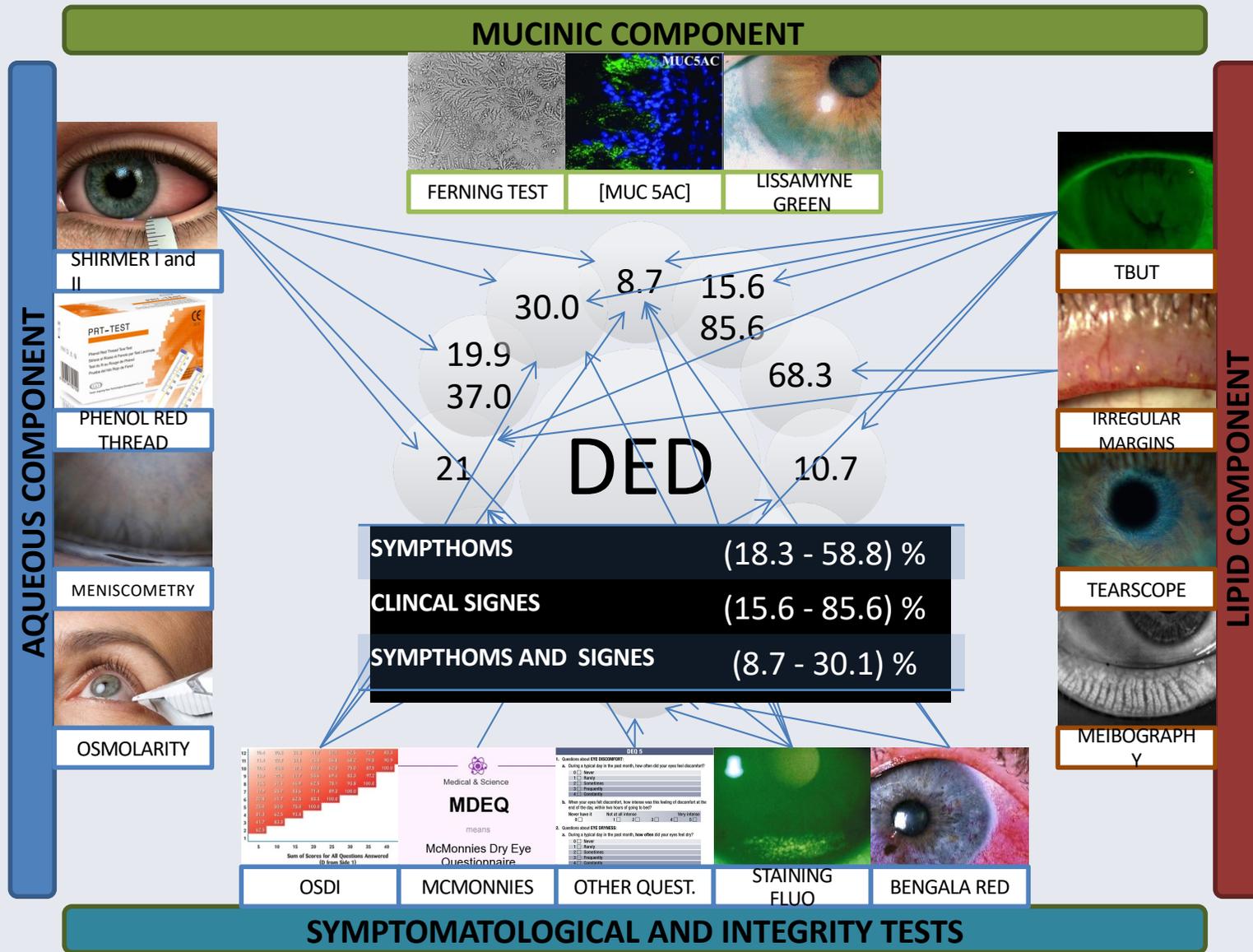
Occhio secco

POSSIBILI FATTORI

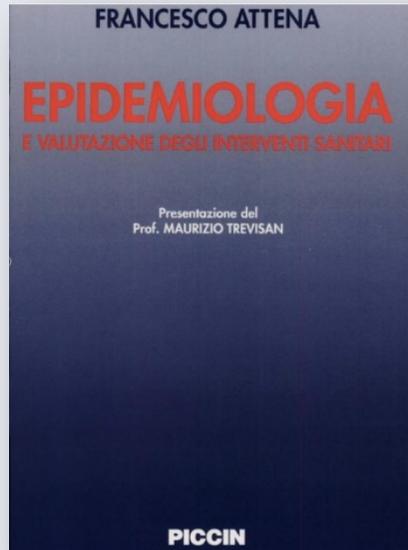
- Deficit dell'acquoso
- Deficit del mucinico
- Deficit del lipidico
- Anomalie della rima palpebrale
- Epiteliopatia

...quindi ci sono anche più assassini???





Lettura di un test diagnostico



SENSIBILITÀ

Probabilità che il test sia positivo se un individuo è malato. Capacità di classificare correttamente i soggetti malati.

ALTA SENSIBILITÀ: pochi falsi negativi.

SPECIFICITÀ

Probabilità che il test sia negativo se un individuo è sano. Capacità di classificare correttamente i soggetti sani.

ALTA SPECIFICITÀ: pochi falsi positivi.

The infographic is set against a light blue background. On the right side, there is a cartoon illustration of a male doctor with short black hair and glasses, wearing a dark blue scrub top and a name tag. He is holding a black pointer stick. In the top right corner, the 'MED CARE' logo is displayed, with 'MED' in a small circle and 'CARE' in a larger font with a stylized cross.

- F. Attena. Epidemiologia e valutazione degli interventi sanitari. Piccini ed. 312;2004
- <https://www.med4.care/sensibilita-specificita-di-un-test-diagnostico/>

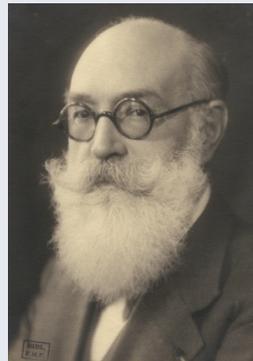
II GIALLO - Schirmer



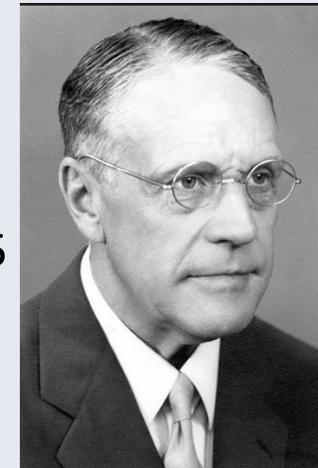
Johann von Mikulicz-Radecki
1883



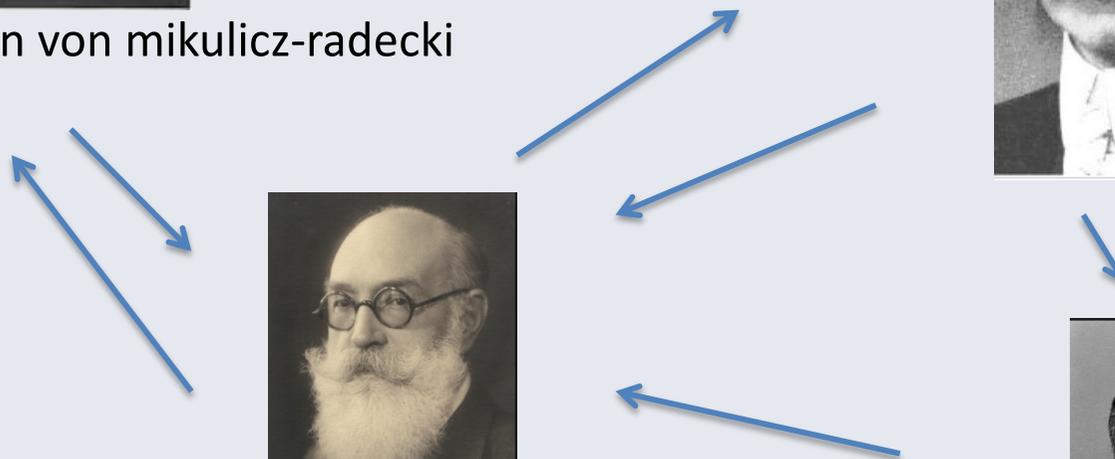
Otto Schirmer 1903



Henry Gougerot 1890



Henrik Siogren 1915



The Reproducibility of the Schirmer Test

Jin Hak Lee, M.D. and Pil Mok Hyun, M.D.

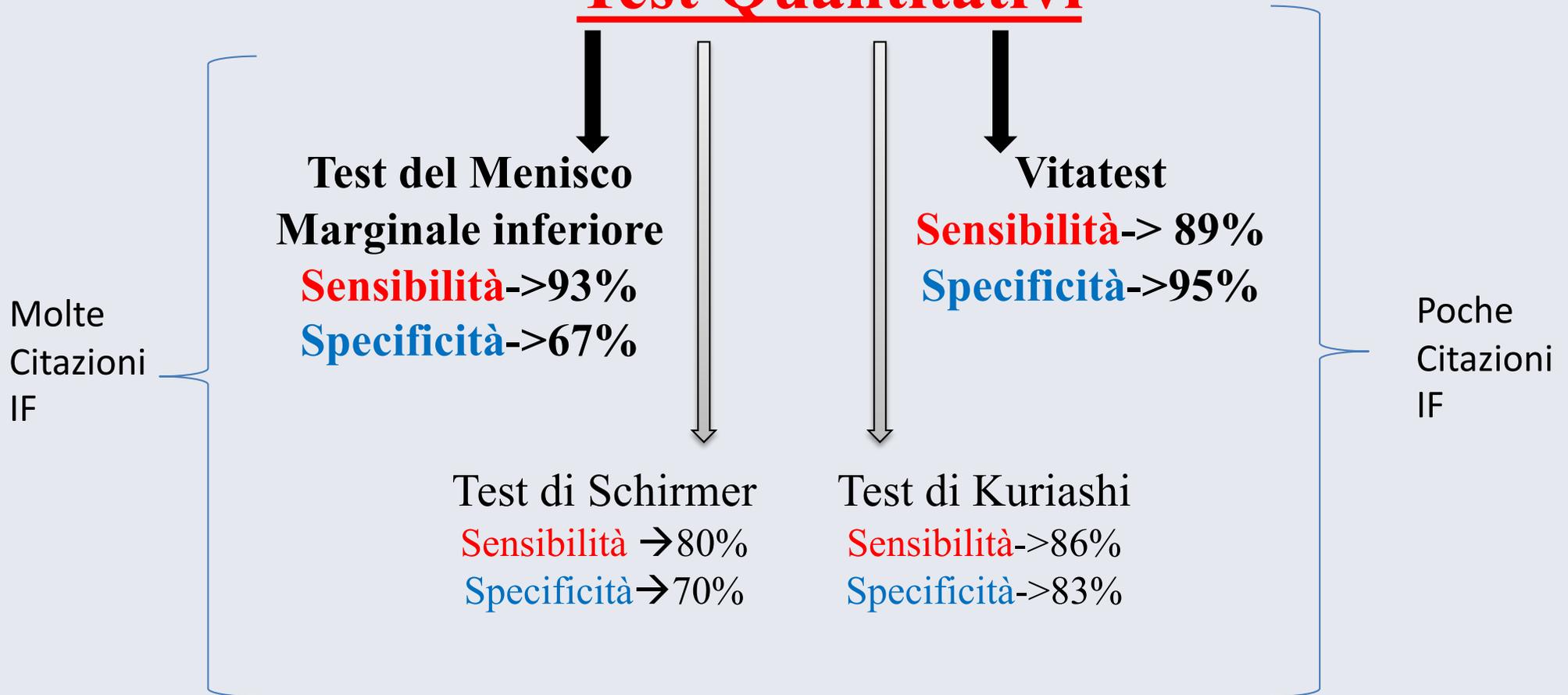
*Department of Ophthalmology, College of Medicine, Seoul National University,
Seoul, Korea*

The Schirmer test was performed 1350 times in 110 normal individuals and 15 dry eye patients to investigate the significance of the test as a diagnostic method for dry eye. The reproducibility of the Schirmer test was 54.5% in normal individuals and 41.9% in dry eye patients. There was no difference in the reproducibility between the groups with topical anesthesia and those without it. The ratio of misdiagnosis by Schirmer test was 48.4%.

These results suggest that it is impossible to differentiate dry eye patients from normal individuals by the Schirmer test.

Film Lacrimale

Test Quantitativi



Colorazione superficie

Colorazione fluoresceina
Rosa bengala
Verde di lissamina

Sensibilità 63%

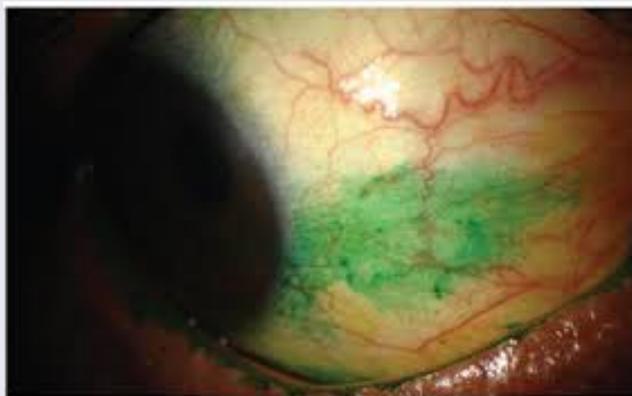
Specificità 89%

Versura 2007

Cornea. 1999 May;18(3):328-32.

Evaluation of the effect of lissamine green and rose bengal on human corneal epithelial cells.

Kim J¹, Foulks GN.



1969

TBUT

1971

Abstract ▾

Acta Ophthalmol (Copenh). 1969;47(4):865-80.

Desiccation of the precorneal film. I. Corneal wetting-time.

Norn MS.

PMID: 4187469 [PubMed - indexed for MEDLINE]

Exp Eye Res. 1971 Mar;11(2):239-50.

Wettability and wetting of corneal epithelium.

Holly FJ, Lemp MA.

PMID: 5121745 [PubMed - indexed for MEDLINE]

Kor. J. Ophthalmol.
Vol. 2 : 69~71, 1988

The Significance of Tear Film Break-Up Time in the Diagnosis of Dry Eye Syndrome

Jin Hak Lee, M.D. and Chang Won Kee, M.D.

*Department of Ophthalmology, College of Medicine, Seoul National University,
Seoul, Korea*

The significance of tear film break-up time (BUT) was investigated by analyzing its distribution and reproducibility in 30 normal subjects and 20 dry eye patients. The BUTs* were all above 5 seconds and the reproducibility was 65% in normal subjects. However, those were all below 10 seconds and the reproducibility was 95% in dry eye patients.

These results suggest that: 1) The patient whose BUT* is below 5 seconds can be diagnosed as dry eye syndrome. 2) The value of BUT* above 10 seconds can be regarded as normal. (*The mean value of 4 different visits)

Sensibilità 72%

Specificità 61%

Vitale 1994

NIBUT

The Ocular Surface 15 (2017) 539–574

Contents lists available at ScienceDirect

The Ocular Surface

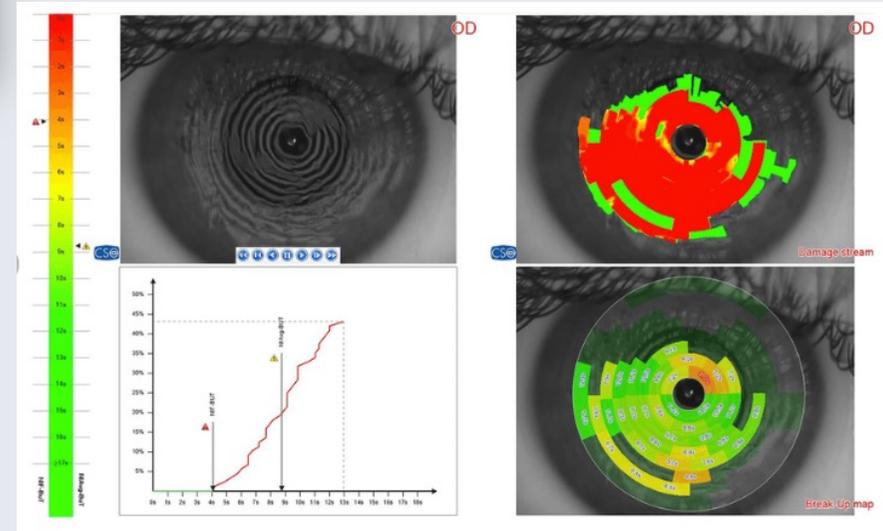
journal homepage: www.theocularsurface.com

ELSEVIER

CrossMark

TFOS DEWS II Diagnostic Methodology report

James S. Wolffsohn, FCOptom, PhD ^{a,1,*}, Reiko Arita, MD, PhD ^b, Robin Chalmers, OD ^c,
Ali Djalilian, MD ^d, Murat Dogru, MD, PhD ^e, Kathy Dumbleton, MCOptom, PhD ^f,
Preeya K. Gupta, MD ^g, Paul Karpecki, OD ^h, Sihem Lazreg, MD ⁱ,
Heiko Pult, MSc (Optom), PhD ^{a,j,k}, Benjamin D. Sullivan, PhD ^l,
Alan Tomlinson, FCOptom, DSc ^m, Louis Tong, FRCS, PhD ⁿ, Edoardo Villani, MD ^o,
Kyung Chul Yoon, MD, PhD ^p, Lyndon Jones, FCOptom, PhD ^q,
Jennifer P. Craig, MCOptom, PhD ^r



sensibilità 82% dry eye <3'' da algoritmo <10'' se osservato
specificità 80% normale > 10'' da algor >15'' se osservato



Test interferometrico

TFOS DEWS II Diagnostic Methodology report



James S. Wolffsohn, FCOptom, PhD ^{a,1,*}, Reiko Arita, MD, PhD ^b, Robin Chalmers, OD ^c, Ali Djalilian, MD ^d, Murat Dogru, MD, PhD ^e, Kathy Dumbleton, MCOptom, PhD ^f, Preeya K. Gupta, MD ^g, Paul Karpecki, OD ^h, Sihem Lazreg, MD ⁱ, Heiko Pult, MSc (Optom), PhD ^{a,j,k}, Benjamin D. Sullivan, PhD ^l, Alan Tomlinson, FCOptom, DSc ^m, Louis Tong, FRCS, PhD ⁿ, Edoardo Villani, MD ^o, Kyung Chul Yoon, MD, PhD ^p, Lyndon Jones, FCOptom, PhD ^q, Jennifer P. Craig, MCOptom, PhD ^r

LIPID LAYER INTERFERENCE PATTERNS. FROM TOP TO BOTTOM: OPEN MESHWORK, CLOSED MESHWORK, WAVE, AND COLOR FRINGE

Sample image	Regions of interest (ROIs) from 10 different images	Appearance	Thickness
		Grey appearance of low reflectivity and meshwork pattern faintly visible.	~13-15 nm
		More compact meshwork pattern with grey appearance of average reflectivity and more lipid than open meshwork.	~30-50 nm
		Vertical and horizontal grey waves of good visibility.	~50-80 nm
		Discrete brown and blue well-spread lipid layer interference fringes superimposed on a whitish background.	~90-140 nm

sensibilità 65 %
specificità 63%

dry eye < 75nm spessore (rilevabili?)

Meibomiografia

The Ocular Surface 15 (2017) 539–574



Contents lists available at ScienceDirect

The Ocular Surface

journal homepage: www.theocularsurface.com



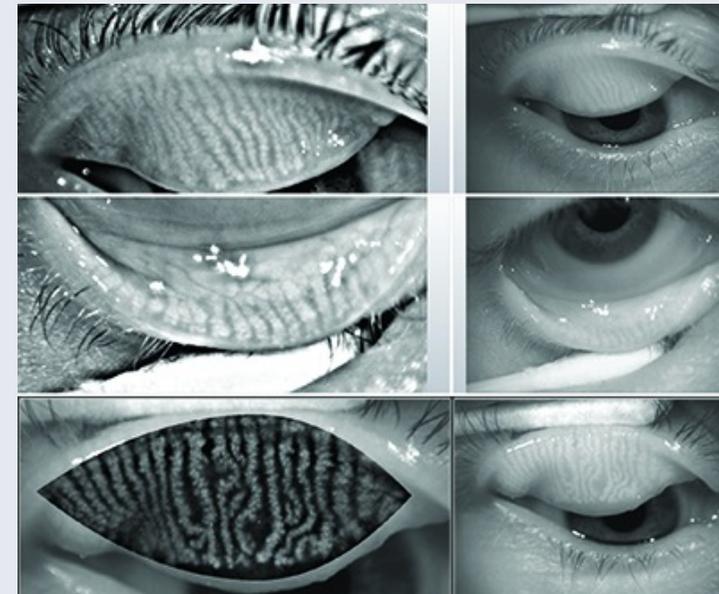
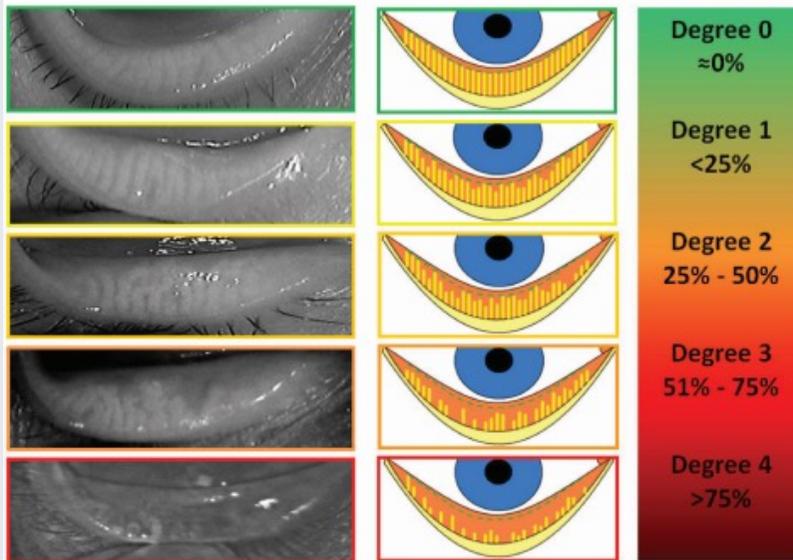
TFOS DEWS II Diagnostic Methodology report



James S. Wolffsohn, FCOptom, PhD ^{a,1,*}, Reiko Arita, MD, PhD ^b, Robin Chalmers, OD ^c,
 Ali Djalilian, MD ^d, Murat Dogru, MD, PhD ^e, Kathy Dumbleton, MCOptom, PhD ^f,
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 Alan Tomlinson, FCOptom, DSc ^m, Louis Tong, FRCS, PhD ⁿ, Edoardo Villani, MD ^o,
 Kyung Chul Yoon, MD, PhD ^p, Lyndon Jones, FCOptom, PhD ^q,
 Jennifer P. Craig, MCOptom, PhD ^r

Meiboscale

Area of Loss



sensibilità 85%

specificità 97%

H.Pult. A Review of Meibography. Optometry and Vision Science, Vol. 89, No. 5, May 2012

Webinar UNIFI - Pietro Gheller

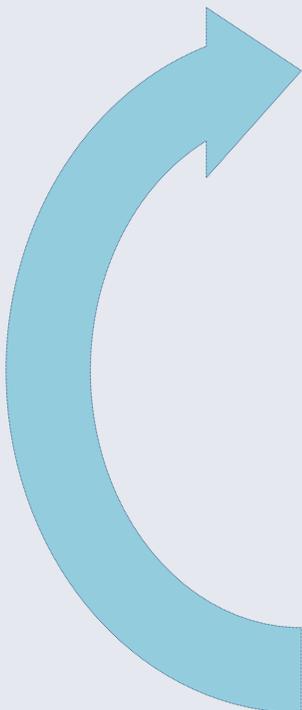
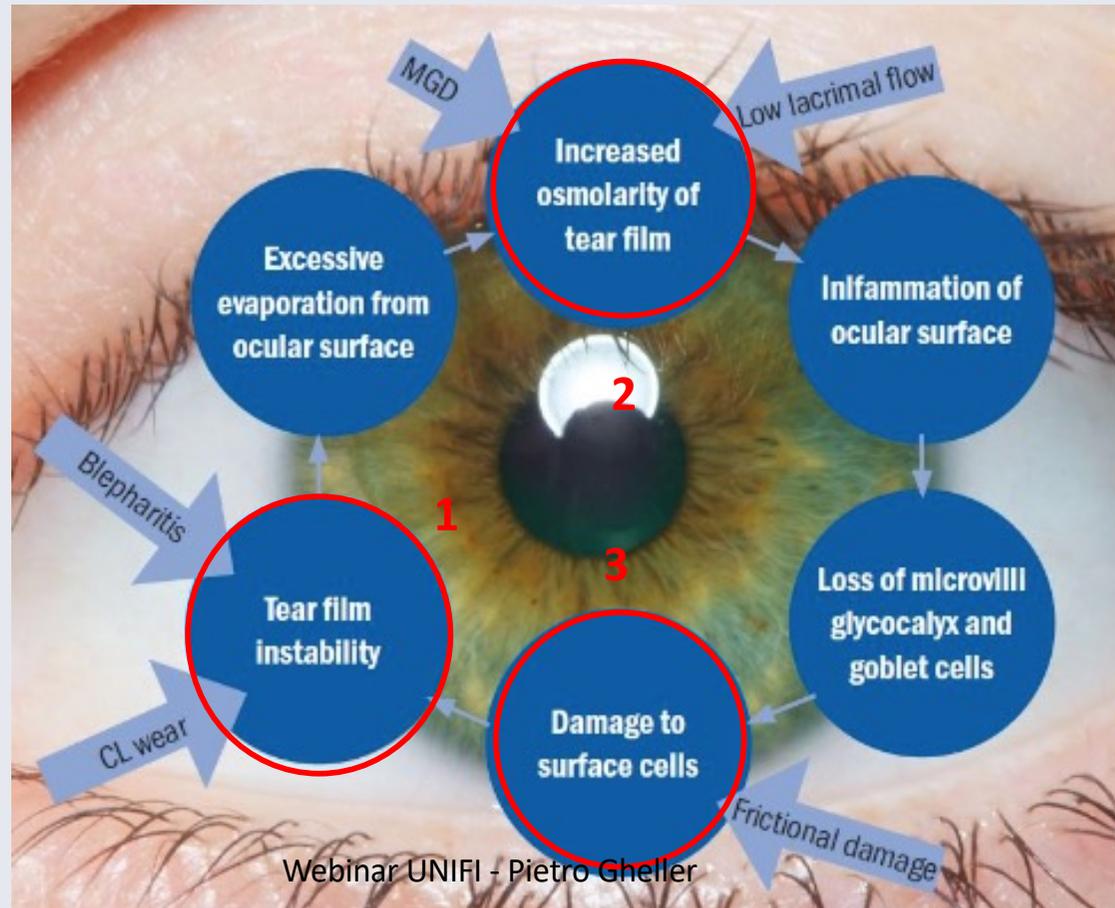
- 'Lunch & Learns'
- Multi-modal imaging demos
- CPD lectures
- **NEW:** Optos AI for Diabetic R

Interactive dry eye management – 1

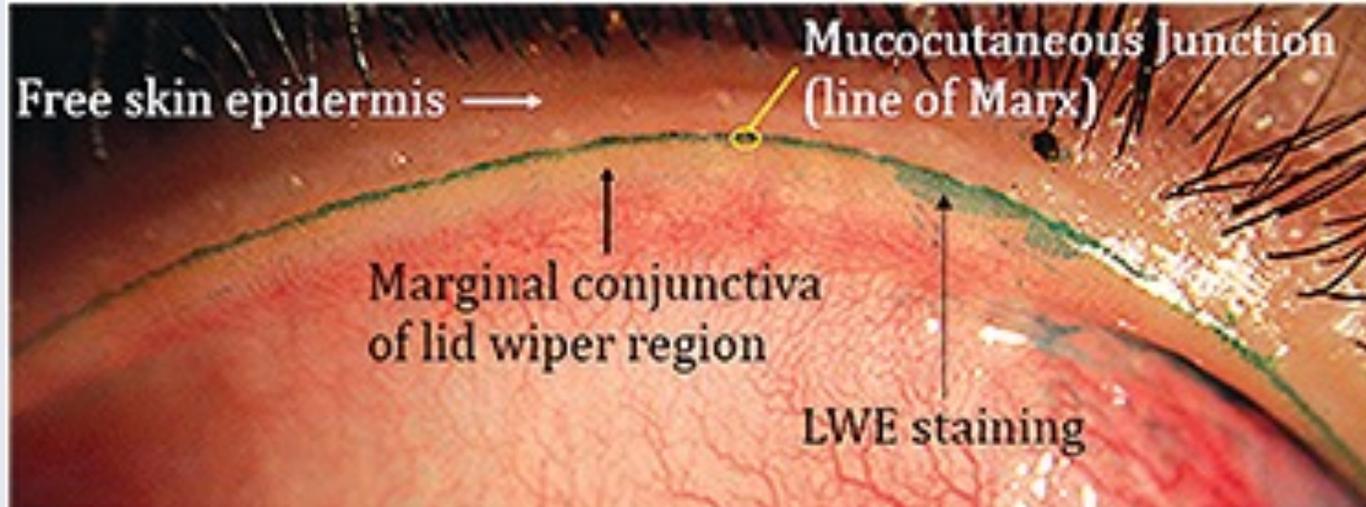
Closing Date: 31/07/2020


TFOS and DEWS

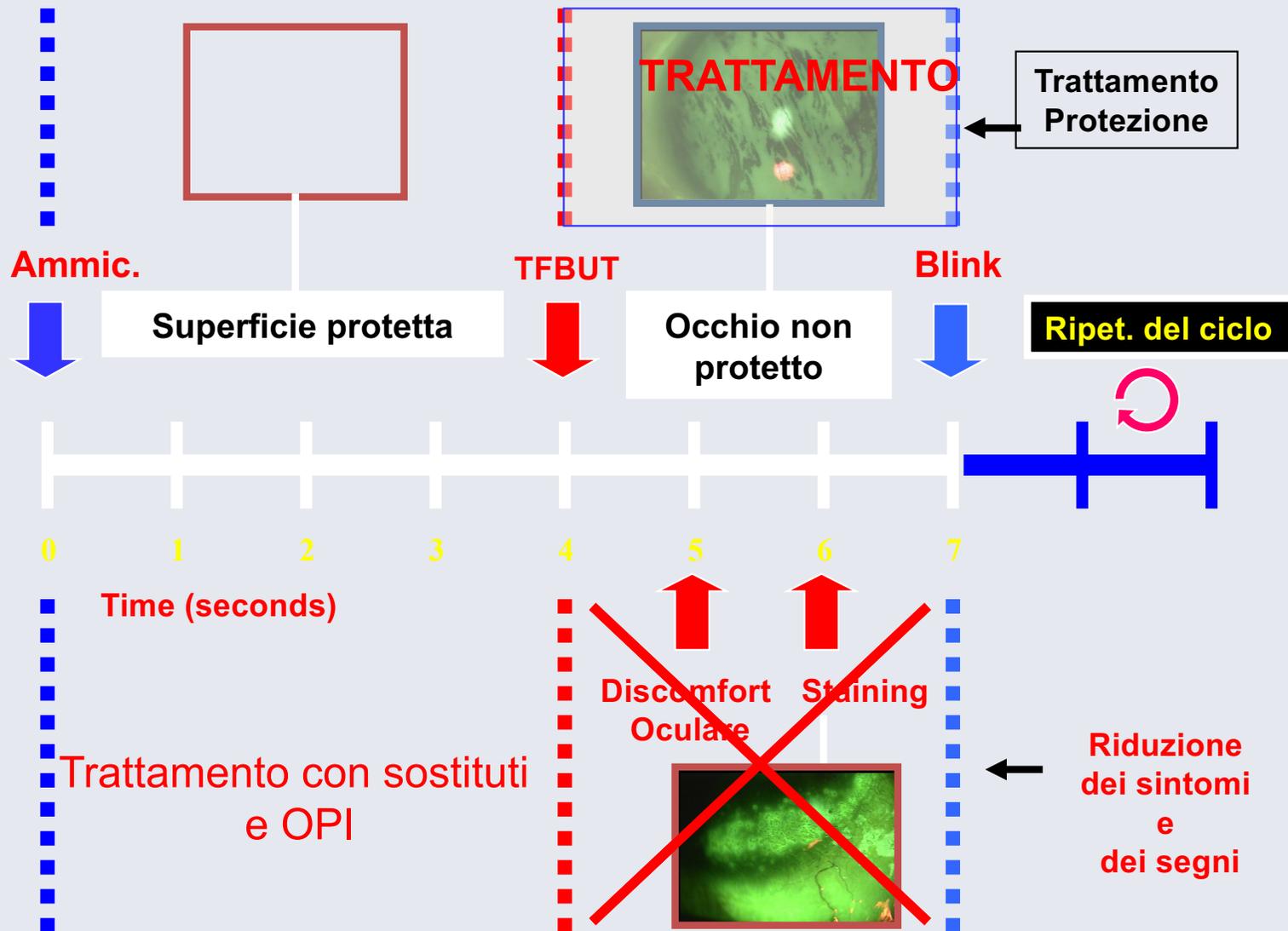
1° film instabile
2° deficit lipidico
3° danno di superficie



- Il 74% degli utilizzatori sintomatici che presentano una condizione denominata "**epiteliopatia del margine palpebrale**" (LWE), caratterizzata da "segni di attrito" sul margine palpebrale superiori.



LA DINAMICA DELL'OCCHIO SECCO



Quante volte facciamo lavori che lo impediscono??

BATTI LE PALPEBRE



OGNI VOLTA



CHE CAMBI



MESSA A FUOCO



Fattori che influenzano l'ammiccamento

- Ocular Conditions
- Ocular Surface Exposure
- Palpebral Aperture Size
- **Corneal Sensitivity**
- Damage to Ocular Surface
- Lid Margin Sensitivity
- Mental Disorders
- Muscular Fatigue
- Muscular Tension
- **Tear Film Break-Up Time**
- Visual Acuity
- **Contact Lens Wear**
- Drug Interactions
- Deception (guilt)
- Anxiety
- Mental Fatigue
- Emotional State
- **Visual Fluctuation**
- Rate of Tear Evaporation
- Shifting Gaze (focal distance)
- Ionic Changes
- Ocular Saccades
- Basal Tear Production
- **Cognitive Processes**
- Talking
- Dopamine Levels
- Concentration Time
- Awareness of Measurement

Carney LG, Hill RM. *The Nature of Normal Blinking Patterns*. Acta Ophthalmologica 1982 60(3): 427-33.

Ousler G, Abelson MB. *An inside look at the NEI dry eye meeting*. Review of Ophthalmology. 2001 8: 82-84.

Tinker M. *Involuntary Blink Rate and Illumination Intensity in Visual Work*. J. Exp. Psychol. 1949 29: 558-560.

Luchiesh M, Moss F. *Frequency of Blinking as a Clinical Criterion of Ease of Seeing*. Am. J. Ophthalmol. 1939 22: 616-625.

Nakamori K, Odawara M, Nakajima T, Mizutani T, Tsubota K. *Blinking is Controlled Primarily by Ocular Surface Conditions*. American J. of Ophthalmology 1997 124(1): 24-30.

Bentivoglio AR, Bressman SB, Cassetta E, Carretta D, Tonali P, Albanese A. *Analysis of Blink Rate Patterns in Normal Subjects*. Movement Disorders 1997 12(6): 1028-1034.

Karson CN, Berman KF, Donnelly EF, Mendelson WB, Kleinman FE, Wyatt RJ. *Speaking, Thinking, and Blinking*. Psychiatry Res. 1981 5: 243-246.

Holland MK, Tarlow G. *Blinking and Thinking*. Percept. Motor Skills 1975 41: 403-406.

Ponder E, Kennedy WP. *On the Act of Blinking*. Quart. J. Exp. Physiol. 1928 18: 89-119.

Hall A. *The Origin and Purpose of Blinking*. Br. J. Ophthalmol. 1945 29: 445-467.

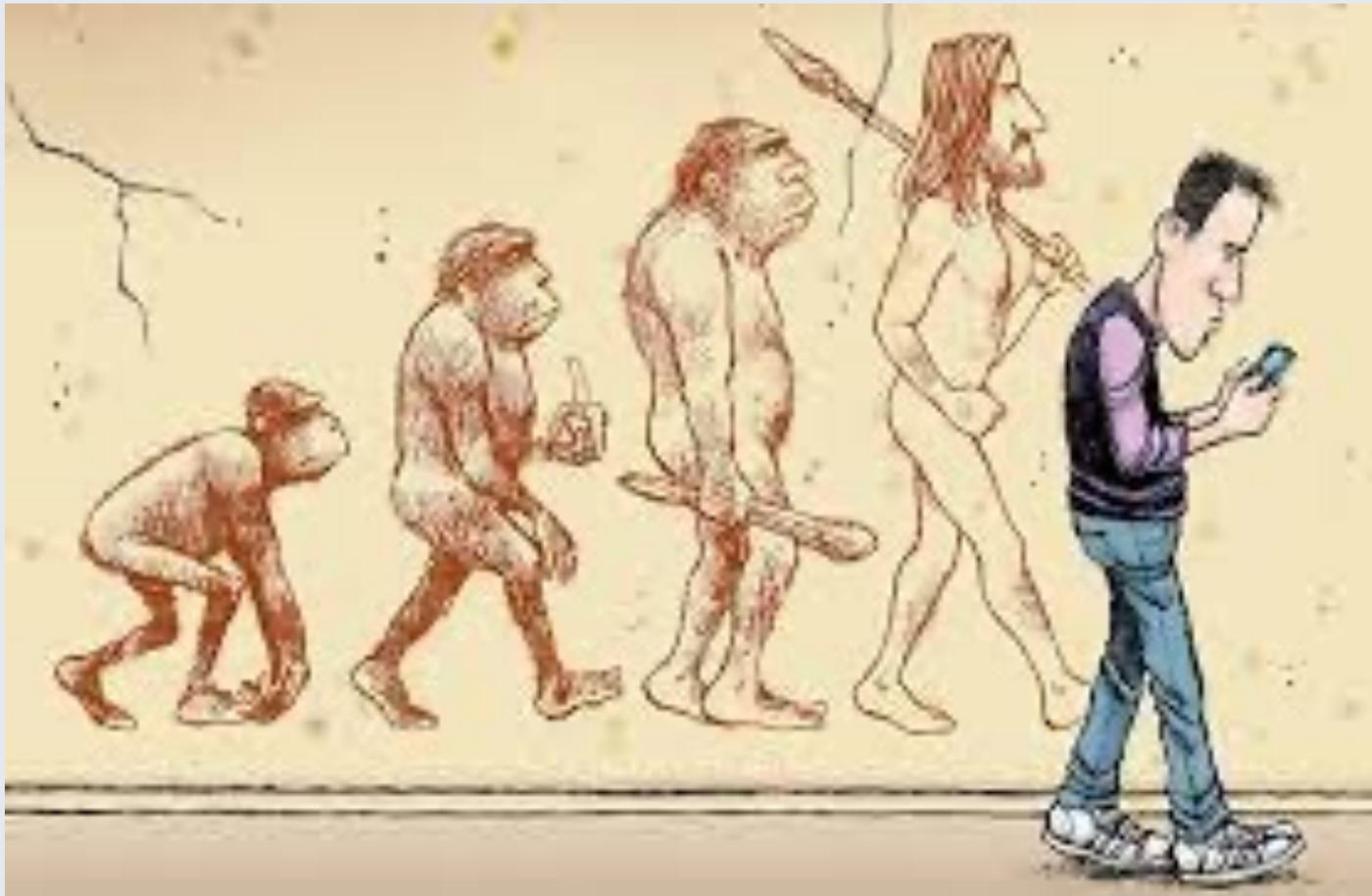
Orchard LN, Stern JA. *Blinks as an Index of Cognitive Activity During Reading*. Integ. Physiol. Behav. Sci. 1991 26(2): 108-116.

Fukuda K. *Eye Blinks: New Indices for the Detection of Deception*. International J. of Psychophysiology 2001 40(3): 239-245.

Karson CN. *Physiology of Normal and Abnormal Blinking*. Adv. Neurol. 1988 49: 25-37.

Karson CN. *Spontaneous Eye-Blink Rates and Dopaminergic Systems*. Brain 1983 106: 643-653

IL MONDO ATTUALE



Da sempre l'uomo soffre di occhio secco, forse il futuro sarà più grave/diffuso?

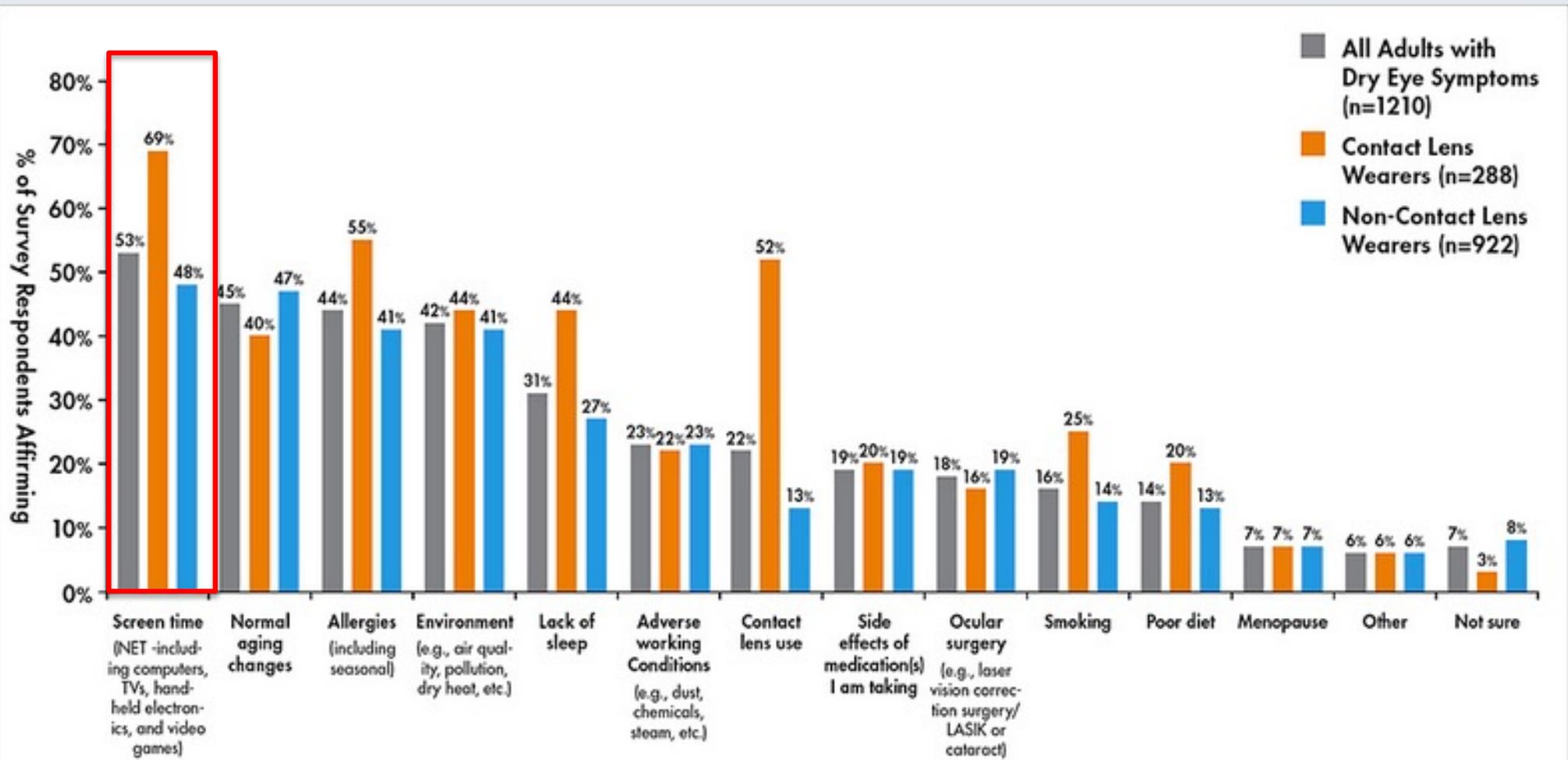


obbligati digitali



Nativi digitali

Quanto NON ammicchiamo davanti al nostro SD



Webinar UNIFI - Pietro Gheller

Walffshon J. TFOS Lifestyle: Impact of the digital environment on the ocular surface. [The Ocular Surface Volume 28](#), April 2023, Pages 213-252

E' corretto usare le lacrime artificiali?

Eviscerare una rana gialla
mescolare le interiora con il
latte cagliato e applicarlo negli
occhi

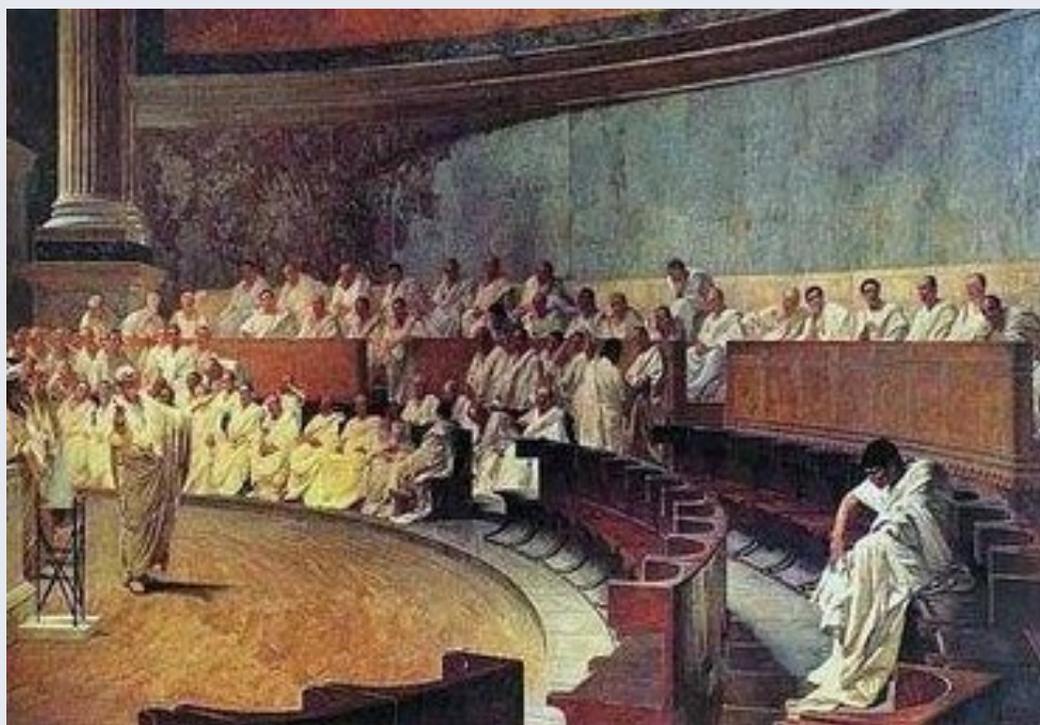


Medici egiziani 1300 anni a.c.



.....e i romani usavano

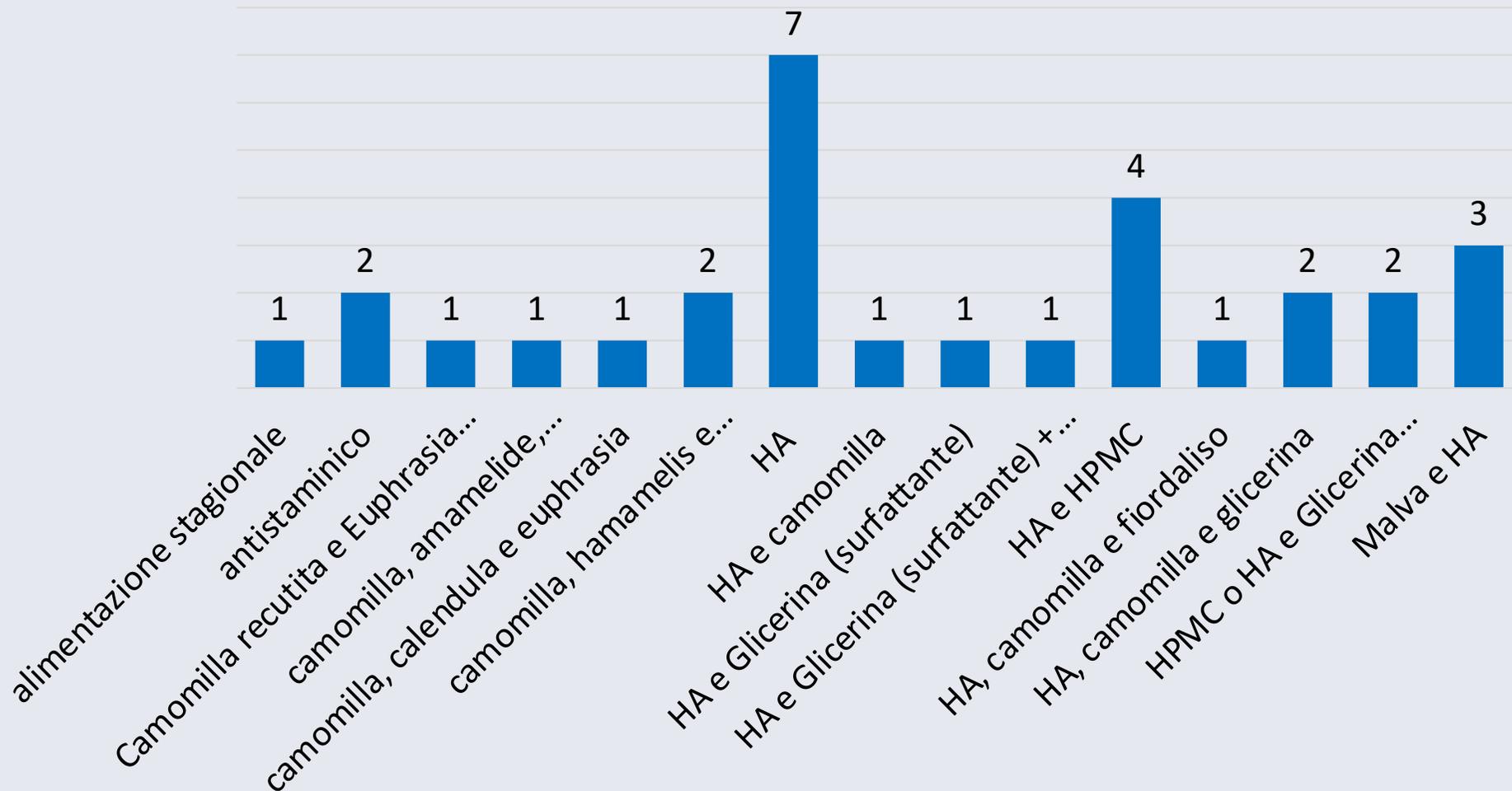
su larga scala il collyrium (risciacqua occhi)



Metodo

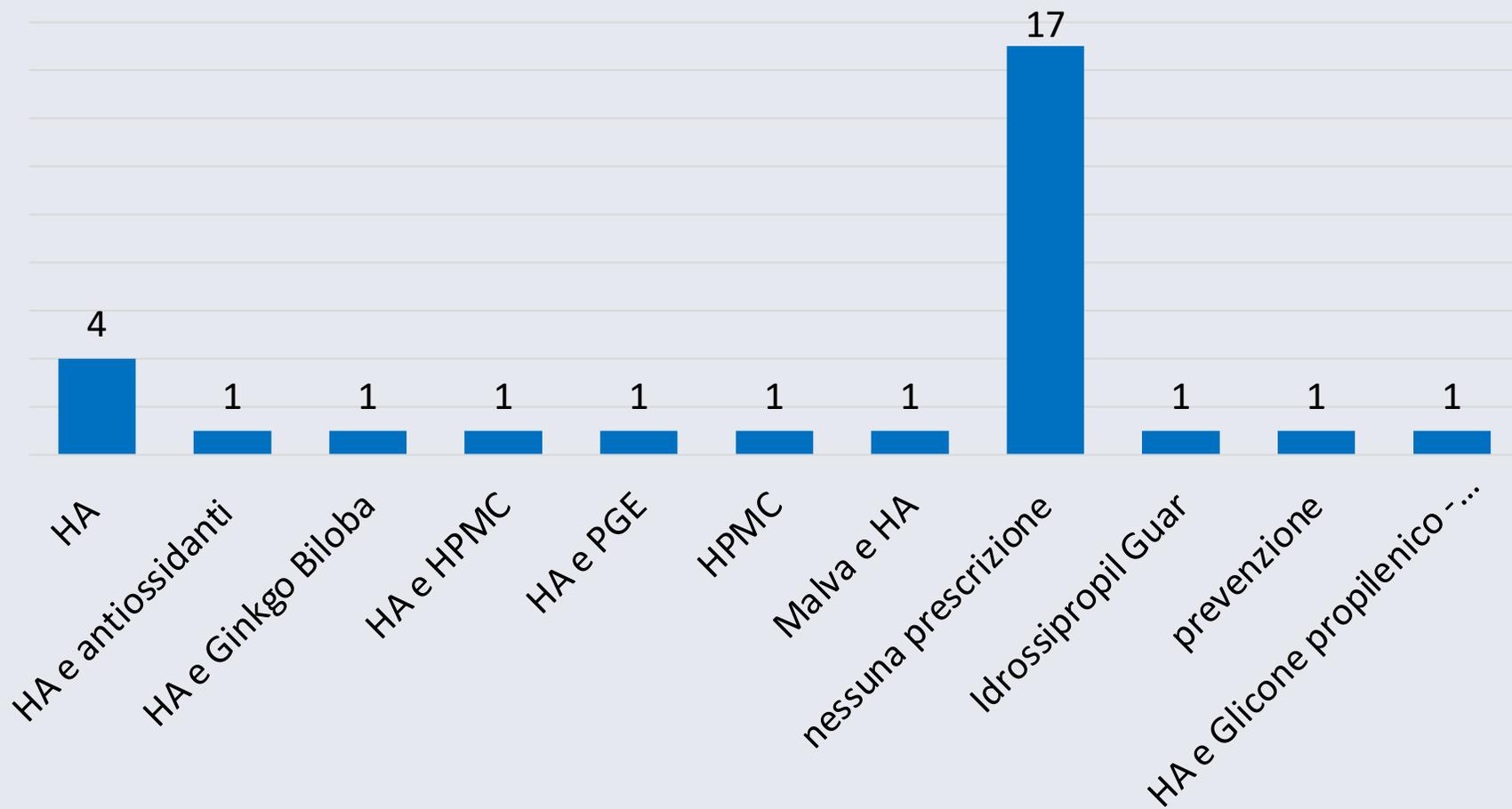
- 30 farmacie e 30 ottiche;
- Investigazione diretta:
« sento fastidio agli occhi, di cosa si tratta? Come può aiutarmi? »
- Dati registrati:
 - ❖ Richiesta di una prescrizione;
 - ❖ Diagnosi suggerita;
 - ❖ Rinvio per consulto a terzi;
 - ❖ Terapia proposta;
- Intervistati ignari dello studio in corso.





Risultati

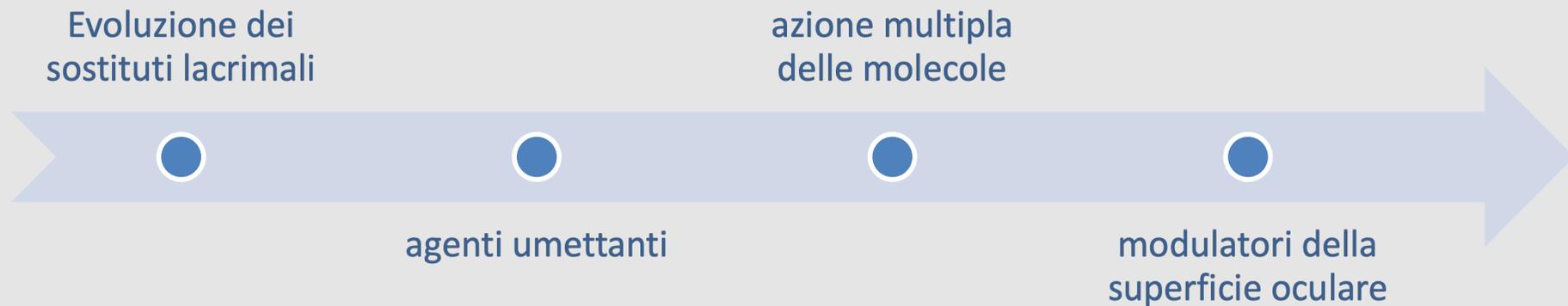
Terapia proposta - farmacisti



Risultati

Terapia proposta - ottici

come stanno cambiando le lacrime artificiali?

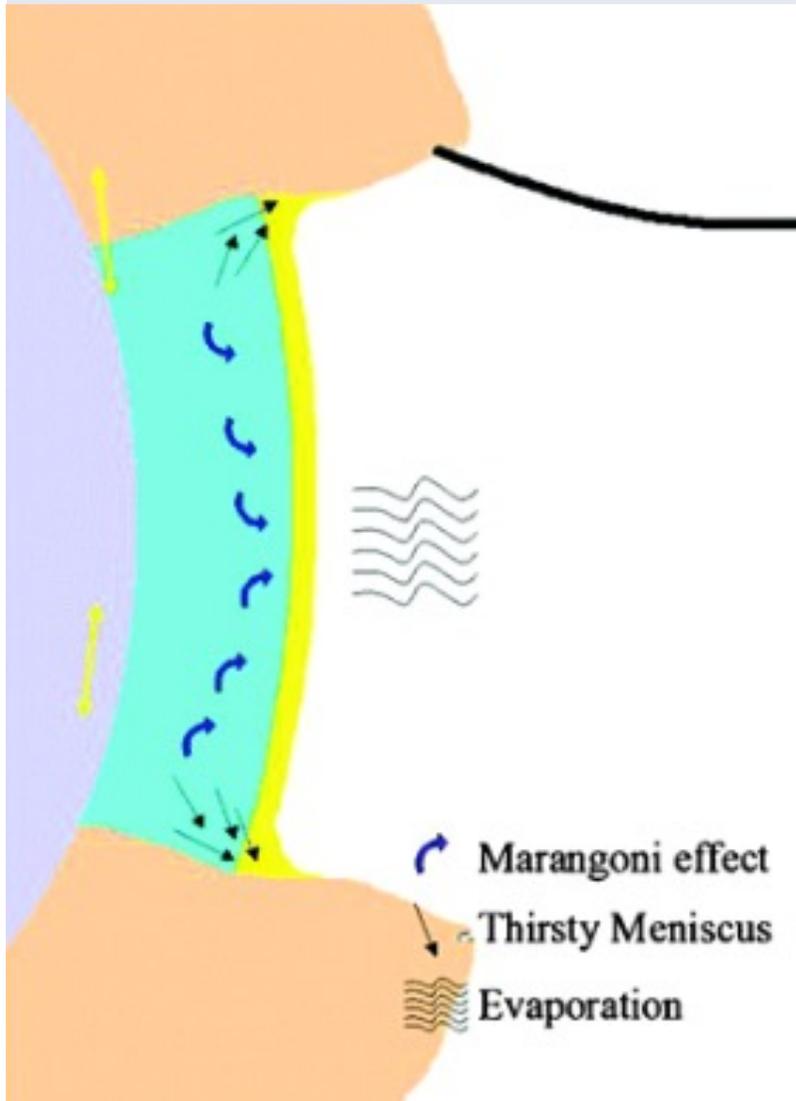


IERI → **Polimeri singoli** = molecole che possono lubrificare la superficie oculare ma tempo limitato

OGGI → **azione multipla delle molecole** = combinazioni di molecole che possono migliorare del film lacrimale con limitata interazione con la superficie epiteliale oculare

DOMANI → **Modulatori della superficie oculare** = polimeri con dimostrata capacità di interagire con le cellule epiteliali, promuovere l'omeostasi, regolare l'ormesi e la vitalità cellulare

Problemi evaporativi

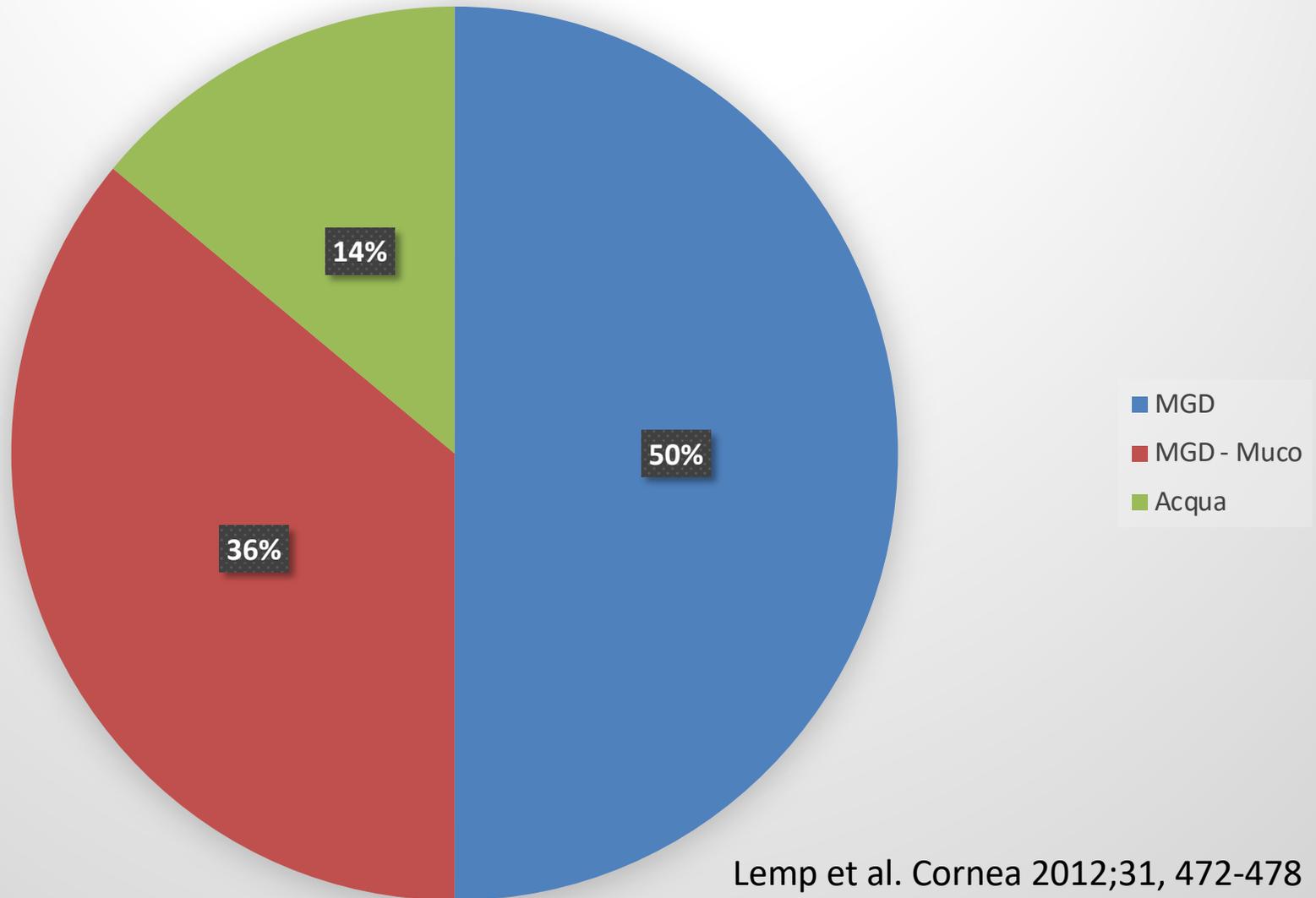


~~ADDE = Aqueous-deficient dry eye~~

EDE = evaporative dry eye

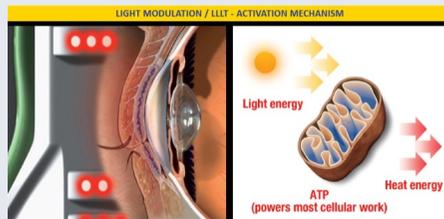
DED
Dry Eye
Desease

86% del dry eye ha origine dal MGD



Lemp et al. Cornea 2012;31, 472-478

LOW LIGHT LEVEL THERAPY – FOTOBIOIMODULAZIONE



- **fotobiomodulazione**, che sollecita i mitocondri delle cellule ad aumentare la produzione di energia;
- **calore endogeno** sulle palpebre superiori e inferiori.

Effetto termico significativamente elevato: **scioglimento del meibum** (32-45°C). Funziona a una profondità doppia rispetto ad impacchi caldi o trattamenti simili.

Sono stati osservati **miglioramenti significativi nella funzione della ghiandola di Meibomio** dopo un solo trattamento. Le **misurazioni oggettive e soggettive dell'occhio secco** migliorano significativamente.



1. H.Pult. Skin temperature measurement after intensive pulse light (IPL) and low-level light therapy (LLLT) application. die Kontaktlinse. 2020; 6-11.
6. H.Pult. Low-Level Light Therapy in the Treatment of Meibomian Gland Dysfunction. IOVS | ARVO Journals; 2020.
7. Karl Stonecipher, Thomas G Abell, Bennett Chotiner, Erik Chotiner, Rick Potvin. Combined low level light therapy and intense pulsed light therapy for the treatment of meibomian gland dysfunction. Clinical Ophthalmology 2019; 13:993–999.
8. Karl Stonecipher, et al. Combined low level light therapy for the treatment of recalcitrant chalazia: a sample case summary. Clinical Ophthalmology 2019;13 1727–1733.

Quale lente a contatto scegliere?



Quale materiale può esserci d'aiuto???



Fattori che NON influenzano DCL

- Dk/t elevati
- Ionicità del materiale
- Modulo di rigidità/elasticità
- Bagnabilità in vitro
- Scambio idrico



Fattori che **PROBABILMENTE** influenzano il CLD

- Buona applicazione
 - Buon movimento
 - Lente sottile
- Basso idrofilia
- Basso coefficiente di frizione
- Alta bagnabilità in vivo
- Manutenzione efficace (detergente)
- Cambio molto frequente (giorn/quindic)
- Utilizzo parziale (fine settimana)





Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Contact Lens and Anterior Eye

journal homepage: www.elsevier.com/locate/clae



Review article

All soft contact lenses are not created equal

Nathan Efron ^{a,*}, Philip B. Morgan ^b, Jason J. Nichols ^c, Karen Walsh ^d, Mark D. Willcox ^e,
James S. Wolffsohn ^f, Lyndon W. Jones ^{d,g}

^a School of Optometry and Vision Science, Queensland University of Technology, Kelvin Grove, Queensland, Australia

^b Eurolens Research, Division of Pharmacy and Optometry, The University of Manchester, Manchester, UK

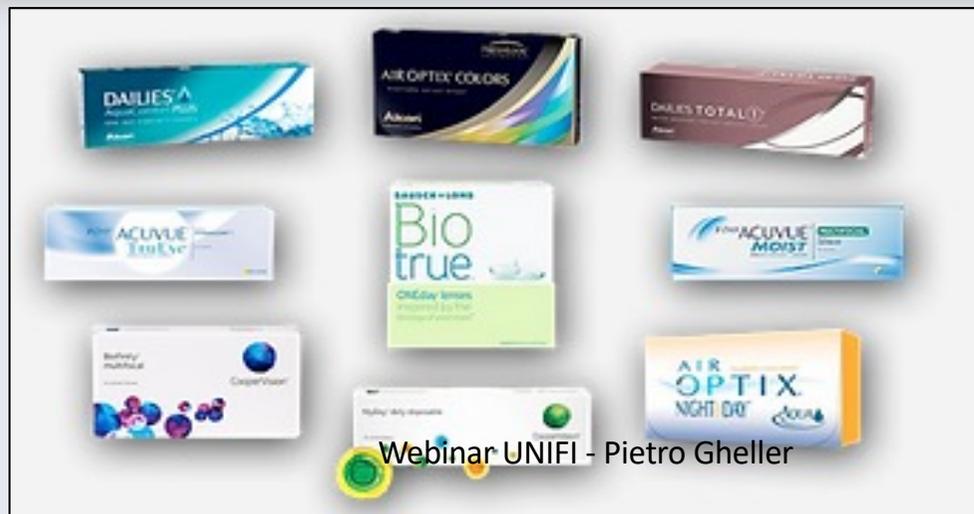
^c School of Optometry, The University of Alabama at Birmingham, Birmingham, AL, USA

^d Centre for Ocular Research & Education (CORE), School of Optometry and Vision Science, University of Waterloo, Waterloo, Ontario, Canada

^e School of Optometry and Vision Science, University of New South Wales, Sydney, Australia

^f School of Optometry, Aston University, Birmingham, UK

^g Centre for Eye and Vision Research (CEVR), Hong Kong



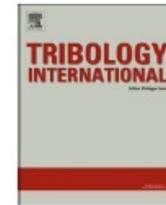
Webinar UNIFI - Pietro Gheller



Contents lists available at ScienceDirect

Tribology International

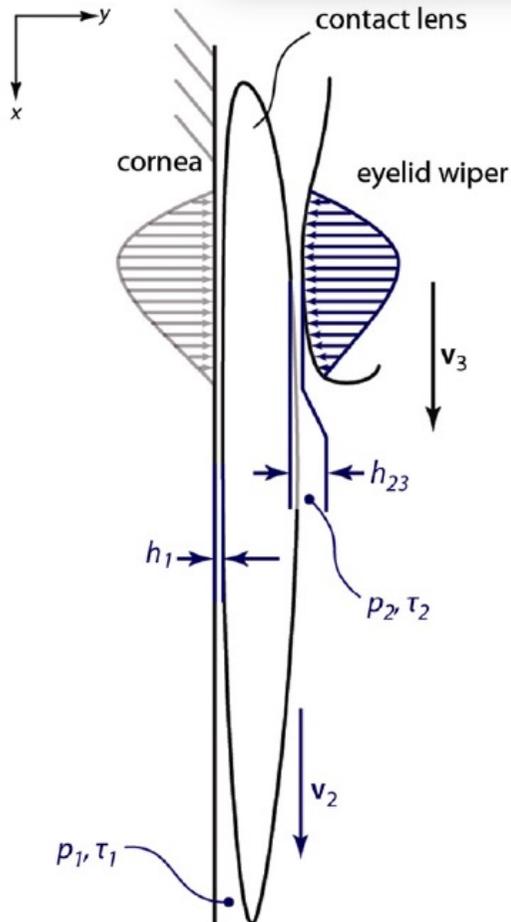
journal homepage: www.elsevier.com/locate/triboint



In vitro friction testing of contact lenses and human ocular tissues: Effect of proteoglycan 4 (PRG4)



M. Samsom^a, A. Chan^b, Y. Iwabuchi^c, L. Subbaraman^d, L. Jones^d, T.A. Schmidt^{a,b,c,*}



1200 ammiccamenti all'ora
Velocità di ammiccamento fino a 100 mm/sec
Film pre-lente in media 260-820 nm
Pressione delle palpebre sulla superficie corneale, 1-5 kPa



Contents lists available at SciVerse ScienceDirect

Tribology International

journal homepage: www.elsevier.com/locate/triboint



Lubrication regimes in contact lens wear during a blink

Alison C. Dunn^{a,*}, John A. Tichy^c, Juan Manuel Urueña^a, W. Gregory Sawyer^{a,b}

^a Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL 32611, United States

^b Department of Materials and Manufacturing Engineering, University of Florida, Gainesville, FL 32611, United States

^c Department of Mechanical, Aerospace, and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY 12180, United States

Webinar UNIFI - Pietro Ghelardi

Mantenere alto il comfort

ARTICLE IN PRESS

Contact Lens and Anterior Eye xxx (xxxx) xxx–xxx



Contents lists available at ScienceDirect

Contact Lens and Anterior Eye

journal homepage: www.elsevier.com/locate/clae



Daily versus monthly disposable contact lens: Which is better for ocular surface physiology and comfort?

Kishor Sapkota*, Sandra Franco, Madalena Lira

Center of Physics, University of Minho, Braga, Portugal

Comfort



Comfort

Conclusion: Two months of SCL wear increased conjunctival redness, conjunctival and corneal staining, which were not associated with the lens wearing modality. There was a reduction in end-of-day comfort, similar to daily and monthly lenses. The change in limbal redness and reduction in end-of-day comfort were associated with the characteristics of the lens material.

Webinar UNIFI - Pietro Gheller

6.633. Development of Contact Lenses from a Biomaterial Point of View – Materials, Manufacture, and Clinical Application

N Efron, Queensland University of Technology, Kelvin Grove, QLD, Australia

C Maldonado-Codina, The University of Manchester, Manchester, UK

Contact Lens & Anterior Eye 36 (2013) 4–12

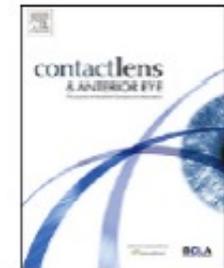


Contents lists available at SciVerse ScienceDirect

Contact Lens & Anterior Eye

journal homepage: www.elsevier.com/locate/clae

BCLA
British Contact Lens Association



Review

Daily disposable lenses: The better alternative

P. Cho*, M.V. Boost

The Hong Kong Polytechnic University, Hong Kong



Journal
of **Optometry**

www.journalofoptometry.org



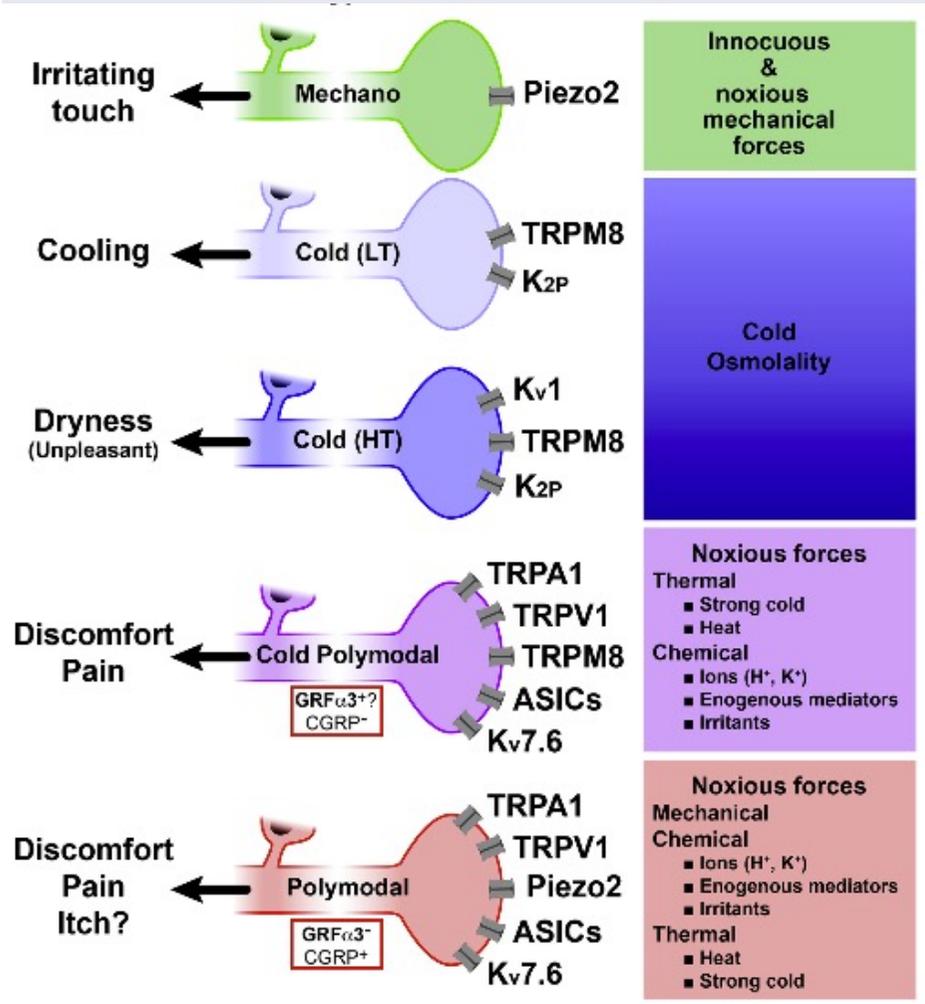
REVIEW

The potential role of neuropathic mechanisms in dry eye syndromes

Charles W. Mcmonnies*

- Alterazione somatosensoriale corneale
 - Alterazione delle soglie sensoriali (> sensibilità)
 - Alterazione del sonno
 - Ansia e stress
 - Disagi oculari in qualsiasi ambiente
 - Cefalee frontali atipiche
- Scarsa relazione tra sintomi e segni (test di lacrimazione)
- ***Ipersensibilizzazione alle lenti a contatto***

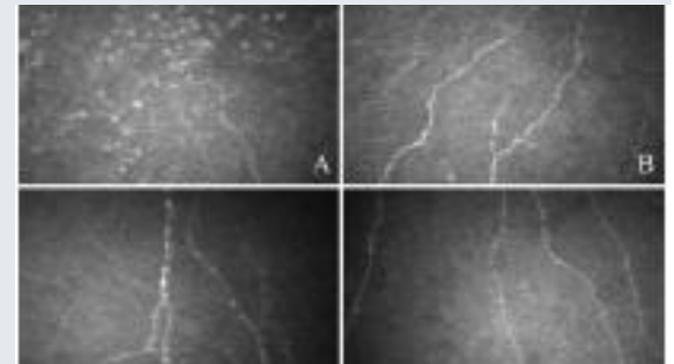
Innervazione corneale



20% di meccanicocettori

70% di nocicettori polimodali
 (risp chimiche, calore, **infiammazione**, dolore, **frizione**)

10% termocettore (sensibile a +/- 0,5°C)



Neuralgie e cefalee oculari oftalmiche non oculari

Il dolore della regione orbitaria di origine non bulbare

di Amedeo Lucente

TABELLA 2 - Classificazione delle cefalee ICHD II

CEFALEE PRIMARIE

1. Eemicrania
2. Cefalea di tipo tensivo
3. Cefalea a grappolo e altre cefalalgie autonomico-trigeminali
4. Altre cefalee primarie

CEFALEE SECONDARIE

5. Cefalea attribuita a trauma cranico e/o cervicale
6. Cefalea attribuita a disturbi vascolari cranici o cervicali
7. Cefalea attribuita a disturbi intracranici non vascolari
8. Cefalea attribuita all'uso di una sostanza o alla sua sospensione
9. Cefalea attribuita a infezione
10. Cefalea attribuita a disturbi dell'omeostasi
11. Cefalea o dolori facciali attribuiti a disturbi di cranio, collo, occhi, orecchie, naso, seni paranasali, denti, bocca o altre strutture facciali o craniche
12. Cefalea attribuita a disturbo psichiatrico

NEURALGIE CRANICHE E DOLORI FACCIALI CENTRALI O PRIMARI E ALTRE CEFALEE

13. Neuralgie craniche e dolori facciali di origine centrale
14. Altre cefalee, neuralgie craniche e dolori facciali di origine centrale o primari

Trigger point e nevralgie del trigemino



Ocular Neuropathic Pain: An Overview Focusing on Ocular Surface Pains

This article was published in the following Dove Press journal:
Clinical Ophthalmology

Discussion:

neuropathic pain syndrome. The first step in conventional evaluation of ocular discomfort is search for tear insufficiency. Pathologies of lid and blinking as well as conjunctival irregularities should be addressed. Anti-inflammatory agents and, in resistant cases, systemic neuromodulators are shown to be helpful. Education on behavioral changes and reassurance are essential steps. Considering the neuropathic origin for the ocular pain, treatment modalities used for such pain in other parts of the body can be considered for this syndrome.

Keywords: ocular pain, dry eye, neuropathic pain

Ocular Neuropathic Pain



Majid Moshirfar ¹, Erin E. Benstead, Paige M. Sorrentino, Koushik Tripathy ²

In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan. 2023 Aug 25.

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PMID: 31194422 Bookshelf ID: [NBK542282](#)

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ACTIONS

“ Cite

📖 Collections

Excerpt

Ocular neuropathic pain is a diagnosis of exclusion which refers to the heightened perception of pain in response to normally non-painful stimuli. It usually presents without any visible objective exam findings, making it extremely difficult to identify. For this reason, it often gets misdiagnosed as dry eye disease.

Ocular neuropathic pain may present with accompanying visible damage to tissue; however, it can also occur as a result of a physiological dysfunction of the nervous system. With other corneal pathologies, the intensity of corneal pain often correlates with vital dye staining. However, in patients with ocular neuropathic pain, symptoms are severe and unaccompanied by equivalent signs, which is why ocular neuropathic pain is sometimes referred to as “corneal pain without stain” or “phantom cornea.” This is the ocular analog of complex regional pain syndrome, systemic neuropathic pain, or reflex sympathetic dystrophy.

Other names for this condition include, but are not limited to corneal neuropathic pain, corneal neuralgia, ocular pain syndrome, keratoneuralgia, corneal neuropathic disease, and corneal allodynia.

Ocular neuropathic pain is an important differential to consider because many patients get misdiagnosed due to its significant overlap with dry eye disease. The disparity between signs and symptoms often results in patients being dismissed or considered malingering, hysterical, or psychosomatic. As demonstrated by case reports, patients with extreme cases of this condition have even committed to suicide due to the severity of chronic pain. An important first step in treating ocular neuropathic pain is to communicate the belief that the condition and the symptoms

OPEN

Association between Dry Eye Disease and Psychological Stress among Paramedical Workers in Korea

Received: 18 September 2018

Accepted: 19 February 2019

Published online: 07 March 2019

Joon Young Hyon ¹, Hee Kyung Yang¹ & Sang Beom Han ²

adjustment for sex, duration of computer use and PSS-4 score. In conclusion, DED was prevalent among paramedical workers in Korea. Its risk increased among females and workers with increased psychological stress. Prolonged use of computer was possibly associated with DED.

