

DEWS II

And the Continuing Evolution of the Dry Eye Algorithm

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Disclosures

CORE SPEAKER ALLERGAN PHARMACEUTICALS
CORE SPEAKER NOVABAY PHARMACEUTICALS
CORE SPEAKER SHIRE PHARMACEUTICALS


DEWS I (2007)

- ▶ Widespread recognition DED
- ▶ Growing prevalence worldwide
- ▶ Impact on quality of life
- ▶ Develop initial definition and classification
- ▶ Future trials and studies



DEWS II (2017)

- ▶ 150 clinical/research experts, 23 countries
- ▶ 12 subcommittees
- ▶ Updates to definitions, classifications, diagnostic methodology
- ▶ Investigates causes, mechanisms, and global impact
- ▶ Aspect of neurosensory component/neuropathic pain
- ▶ Evidence-based consensus approach to treatment



DEWS II Subcommittee Highlights

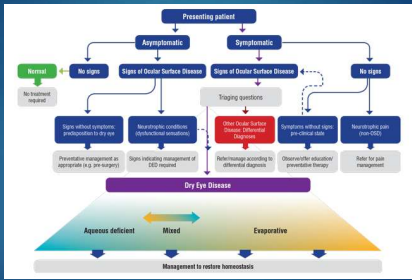
- ▶ Definition and Classification
- ▶ Sex, Gender and Hormones
- ▶ Epidemiology
- ▶ Tear Film
- ▶ Pain and Sensation
- ▶ Pathophysiology
- ▶ Iatrogenic Dry Eye
- ▶ Diagnostic Methodology
- ▶ Management and Therapy



DEWS II Definition

"A multifactorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability, hyperosmolarity, inflammation, and ocular surface damage, and neurosensory abnormalities play etiological roles."

Classification



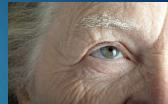
Sex, Gender and Hormones

- ▶ Increased prevalence in women
- ▶ Androgen deficiency
- ▶ Anatomical differences in ocular surface structures
- ▶ Sex matters...except in MGD
- ▶ Need more understanding



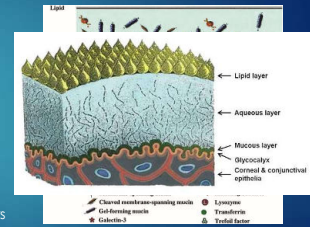
Epidemiology

- ▶ Difficult due to lack of standardizations
- ▶ Estimated between 5%-30% of pop
- ▶ Evaporative most common subtype
- ▶ Sex
- ▶ Race
- ▶ Age
- ▶ Risk Factors
- ▶ Economic burden



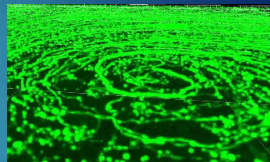
Tear Film

- ▶ 3 layer vs 2 layer system
- ▶ Mucoaqueous layer
- ▶ Overlying lipid layer
- ▶ ALL components maintain tear stability and ocular surface homeostasis
- ▶ Hyperosmolarity
 - >308 mOsm/L Early
 - >316 mOsm/L Moderate
 - >336 mOsm/L Severe
 - Difference >8 mOsm/L
- ▶ Proteins, growth factors, other mediators



Pain and Sensation

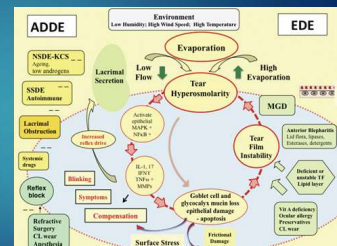
- ▶ Trigeminal ganglion
 - Noiceptors
 - Cold Thermoreceptors
- ▶ Nociceptive vs Neuropathic pain
- ▶ DED associated w changes in morphology of corneal nerves
- ▶ Damage can be variable
- ▶ Lack of correlation signs/symp's potential red flag for neuropathic etiology



Pathophysiology

The Vicious Circle of DED

- ▶ Core mechanism is Hyperosmolarity
- ▶ ADDE and EDE
- ▶ Vicious Circle of DED
 - Release of inflammatory mediators
 - Goblet and epithelial cell loss
 - Damage to epith glycocalyx
 - Activation of T-cells
 - Surface damage/tear film instability
- ▶ Mixed mechanism DED



Iatrogenic Dry Eye

- ▶ Definition
"Dry eye induced unintentionally by medical treatment..."
- ▶ Classification/Categories
 - Ophthalmic surgery
 - Pharmaceuticals
 - Contact lenses
 - Non-surgical Ophthalmic procedures




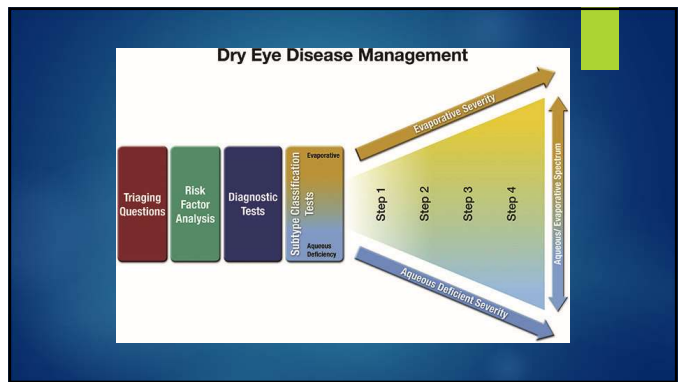
Iatrogenic Dry Eye

- ▶ Ophthalmic surgery
Refractive, Cataract, Lid, Penetrating Keratoplasty, Others
- ▶ Pharmaceuticals
Topical (glaucoma, BAK), Systemic (HBP, antihistamines, anxiety)
- ▶ Contact lens
Biophysical changes tear film, altered goblet cells, LWE, MG's
- ▶ Non-surgical ophthalmic procedures
Botox, corneal crosslinking, radiation, tattooing, piercing




Diagnostic Methodology

- ▶ Consistent criteria
- ▶ Battery of tests
- ▶ Triage questions
- ▶ Symptoms and signs
- ▶ ADDE vs EDE contribution

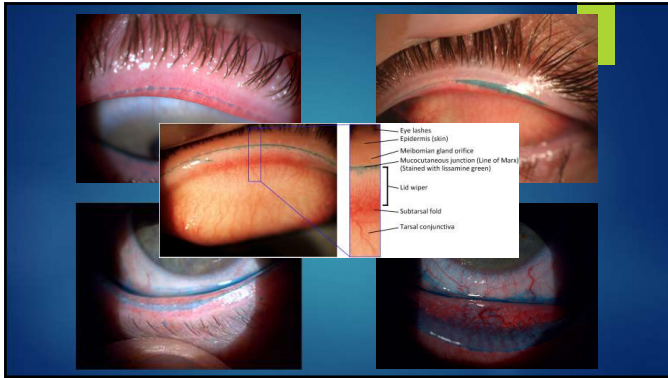



Triage Questions

- How often is the eye discomfort?
- Do you have any mouth dryness or swollen glands?
- How long have your symptoms lasted & was there any triggering event?
- Is your vision affected and does it clear on blinking?
- Are the symptoms or any redness much worse in one eye than the other?
- Do the eyes feel, appear swollen or crusty, or have given off any discharge?
- Do you wear contact lenses?
- Have you been diagnosed with any general health conditions (including recent respiratory infections) or are you taking any medications?
- Detailed anterior eye examination differential diagnosis where indicated by answers

Suspect dry eye

Risk Factor Analysis



Predominant Identifying Subtype

- ▶ Primary contributor to evaporative process
- ▶ Tailor therapeutic treatments
- ▶ ADDE diagnostic testing
- ▶ EDE diagnostic testing

Management and Therapy

- ▶ Evidence-based approach
- ▶ Organizational tool
- ▶ Start with primary subtype
- ▶ Severity-based treatment

Management and Treatment Stage 1

- ▶ Education
- ▶ Topical lubricants (targeted)
- ▶ Lid hygiene/compresses
- ▶ Dietary modifications
- ▶ Environmental modifications
- ▶ Identification and potential modification of systemic/topical meds

Management and Therapy Stage 2

- ▶ Treatment of inflammation
 - Topical antibiotics/steroids
 - Cyclosporine/Lifitegrast
 - Oral macrolides (Doxyl/Azith)
 - Topical secretagogues
- ▶ Non-preserved lubricants
- ▶ Tea-tree oil / Hypochlorous Acid
- ▶ Tear conservation / stimulation?
- ▶ In office heating and expression of MG's
- ▶ Intense pulsed light therapy/microblepharoexfoliation

Management and Therapy Stage 3

- ▶ More interventional
- ▶ Silicone Punctal plugs
- ▶ Oral secretagogues
- ▶ Topical autologous serum
- ▶ Therapeutic contact lenses

Stage 4

- ▶ Topical steroids (longer duration)
- ▶ Amniotic membranes
- ▶ Surgical punctal occlusion
- ▶ Tarsorrhaphy
- ▶ Higher concentration cyclosporine


THERMAL/HEAT	HYGIENE	TOPICAL/SUPPLEMENTAL	ORAL
Compresses/Washcloth	Diluted Baby Shampoo XXX	Targeted Artificial Tears	Omega-3 Supplements (Concentrated)
Heat Mask (Bruder)	Detergent-based Products (Ocusoft, Steri-lid)	Topical Antibiotics (ointments/gels)	Oral Tetracycline Derivatives (short-term)
MiBo Theraflow	Hypochlorous Acid (Avenova)	Steroid/Combo	Oral Tetracycline Derivatives (chronic)
Thermal Pulsation (LiPiFlow)	4-Terpineol, Tea Tree Oil (Cliradex)	Cyclosporine/Lifitegrast	Oral Secretagogues
	Microblepharoexfoliation (BlephEx)	Punctal Plugs Autologous Serum Amniotic Membrane Nasolacrimal Neurostim	

DEWS II Management Summary

- ▶ Not rigid recommendation
- ▶ List of treatment options
- ▶ Movement away from grading to step approach
- ▶ Aggressiveness is risk-based/time-based
- ▶ Ophthalmic subspecialty?
- ▶ Other algorithms

Take home

1. Ask the right questions
2. Use screening tests
3. Determine predominant subtype
4. Target your management plan
5. Manage expectations



THANK YOU

MIDWEST OPTOMETRIC SOCIETY
2019



CINCINNATI APRIL 13-14
CLEVELAND JULY 20-21