

# Disclosures

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- Flora Lum, Scott P. Kelly, and Danielle Fujino are employees of the American Academy of Ophthalmology
- Ipek Özer Stillman, Corey Joseph, and Csaba Siffel are employees of and owns stock/stock options in Shire
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# Patients With Dry Eye Disease (DED) in an Eye-Care Specialized Clinical Registry: Data From AAO's IRIS<sup>®</sup> Registry

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# Background

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## Dry Eye Disease (DED)

- DED is a chronic, progressive **ocular surface disorder** that impairs *visual functioning* and incurs *negative social impact* for those affected<sup>1-3</sup>

## AAO IRIS<sup>®</sup> Registry (Intelligent Research in Sight)

- The IRIS Registry is the first comprehensive eye disease clinical registry developed for the profession's shared goal of continual improvement in eye care delivery

## Study Objective

- Study objective: to assess clinical and demographic characteristics of patients with DED, stratified by DED-specific treatments and comorbid conditions.

# Methods – Patient Population (IRIS Registry)

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American Academy of Ophthalmology IRIS Registry (Intelligent Research in Sight)

- A comprehensive clinical ophthalmic database with >37 million unique patients and 148 million patient visits in the United States

Study Period

- Study data covered January 1, 2013 through December 31, 2017
- We report on data from patients with  $\geq 1$  eye care visit in 2017

# Methods – DED Rule-Based Diagnoses

## Diagnosis of DED

- International Classification of Disease (ICD)-9 or ICD-10, Current Procedural Technology codes, and medication codes were used to identify clinical indicators of DED.
- Specifically, either:
  - 2 instances of a DED driving indicator within 12 months, or
  - 1 DED driving indicator and 1 DED nondriving indicator within 12 months

Driving Indicators	Nondriving Indicators
Keratoconjunctivitis sicca	Superficial keratoconjunctivitis
Conjunctival xerosis	Punctate keratitis
Tear film insufficiency unspecified	Exposure keratoconjunctivitis
Sicca syndrome, Sjögren's	Rheumatoid arthritis
Closure of the lacrimal punctum by thermocauterization, ligation, or laser surgery	Lupus – DLE, SLE, DLE of eyelid
Punctal plugs	Conjunctivochalasis
Obliteration of lacrimal punctum	MGD
Prescription for cyclosporine ophthalmic emulsion 0.05%	–
Prescription for lifitegrast ophthalmic solution 5%	–

# Methods – Stratification by DED Severity and DED Comorbidity

- DED severity was defined by expert opinion and based on the Tear and Film Surface Society Dry Eye Workshop II (TFOS DEWS II) staged management algorithm<sup>1</sup>
- DED comorbidity groupings were defined by diagnosis and/or treatment code claims

Treatment Intensity Level	1	2	3
Hypothesized Disease Severity	Mild	Moderate	Severe
Treatments Captured	<ul style="list-style-type: none"> <li>• Treatment naive</li> <li>• Topical and systemic omega-3 fatty acids</li> </ul>	<ul style="list-style-type: none"> <li>• Tacrolimus</li> <li>• Lifitegrast ophthalmic solution 5%</li> <li>• Cyclosporine ophthalmic emulsion 0.05%</li> <li>• Topical corticosteroids (and corticosteroid combinations)</li> <li>• Nonthermal or collagen punctal plugs occlusion</li> </ul>	<ul style="list-style-type: none"> <li>• Tetracyclines</li> <li>• Systemic cholinergic agonist (pilocarpine or cevimeline)</li> <li>• Systemic anti-inflammatory agents (excluding topical and systemic omega-3 fatty acids)</li> <li>• Mucolytic agents (acetylcysteine eye drops)</li> <li>• Punctal occlusion by thermocauterization, ligation, or laser surgery</li> <li>• Tarsorrhaphy</li> </ul>
Cataract (ICD and CPT codes)		Sjögren's syndrome	
MGD		Lid abnormalities	
Glaucoma		-	

1. Jones L, et al. *Ocul Surf.* 2017;15(3):575–628.

DED, dry eye disease; ICD, International Classification of Disease; CPT, Current Procedural Technology; MGD, meibomian gland dysfunction.

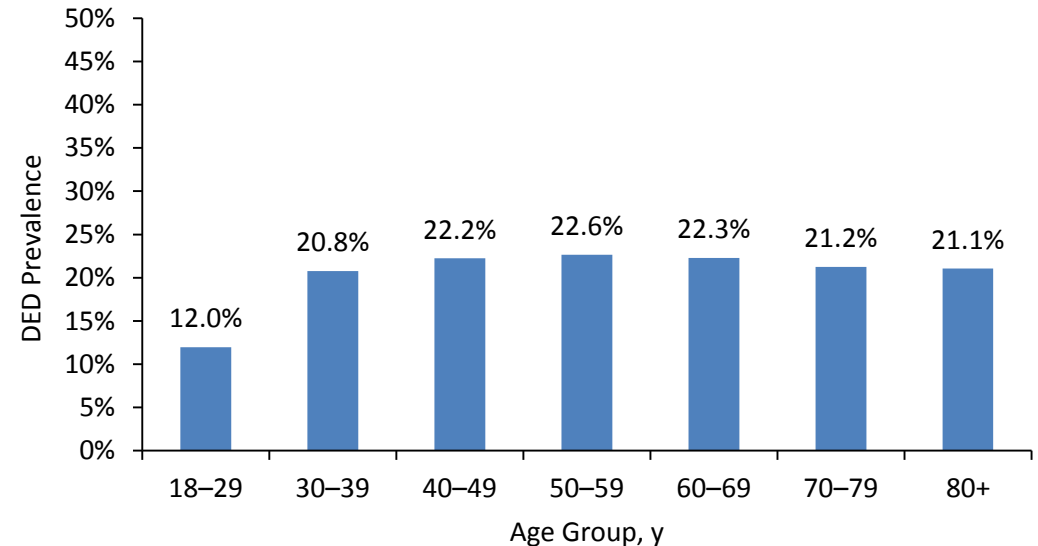
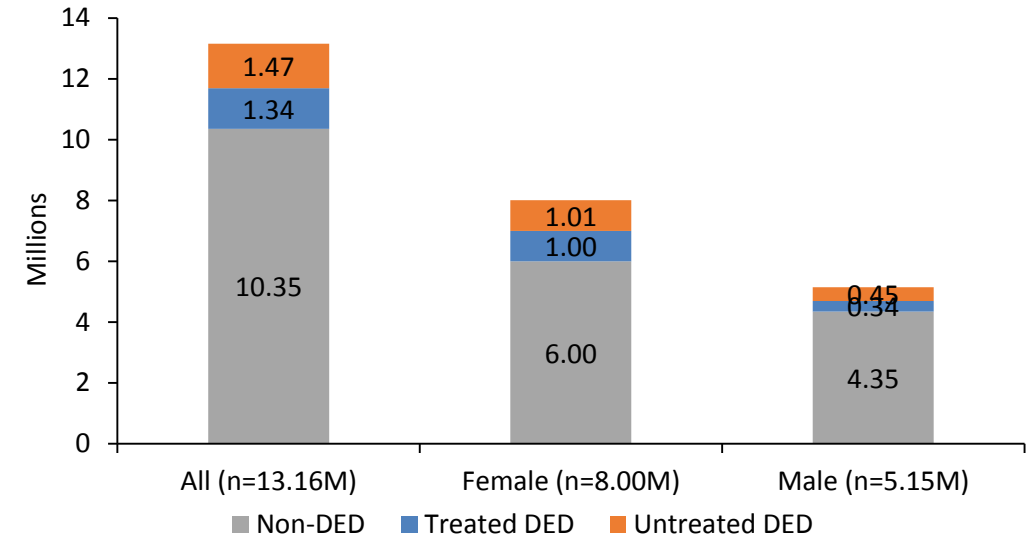
# Results – Demographics

## Total 2017 Adult Population

- 13.2 million patients (60.9% female, 39.1% male)
- 2.8 million patients with DED (71.5% female, 28.5% male)
  - 21.3% DED prevalence (25.0% female, 15.5% male)
- 1.5 million (52.5%) patients with untreated DED (50.4% female, 61.9% male)

## DED by Age Group

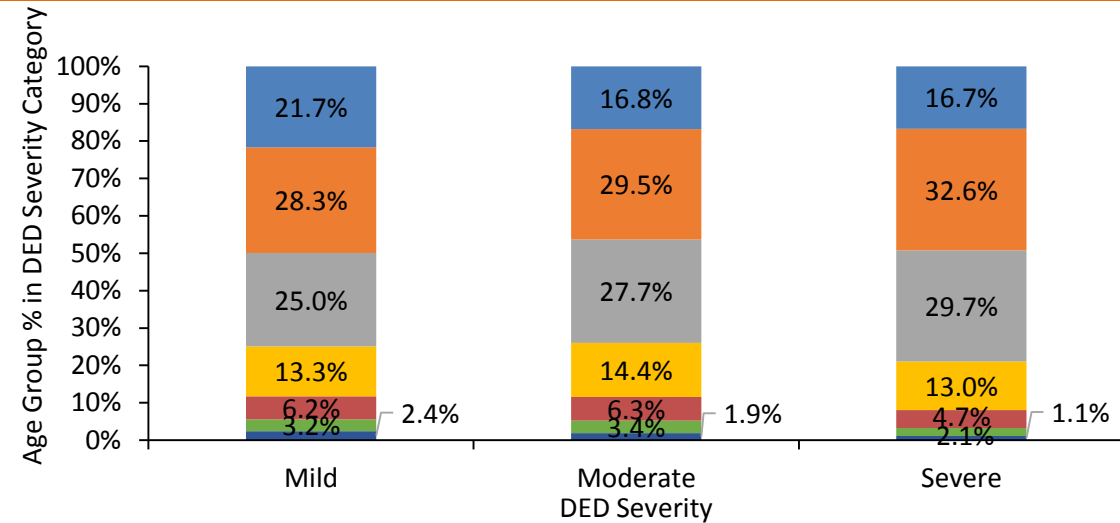
- Prevalence rises rapidly from the 20's to 30's age groups and affects nearly a quarter of the study population by the 40's and beyond



# Results – DED Severity and Treatment Patterns

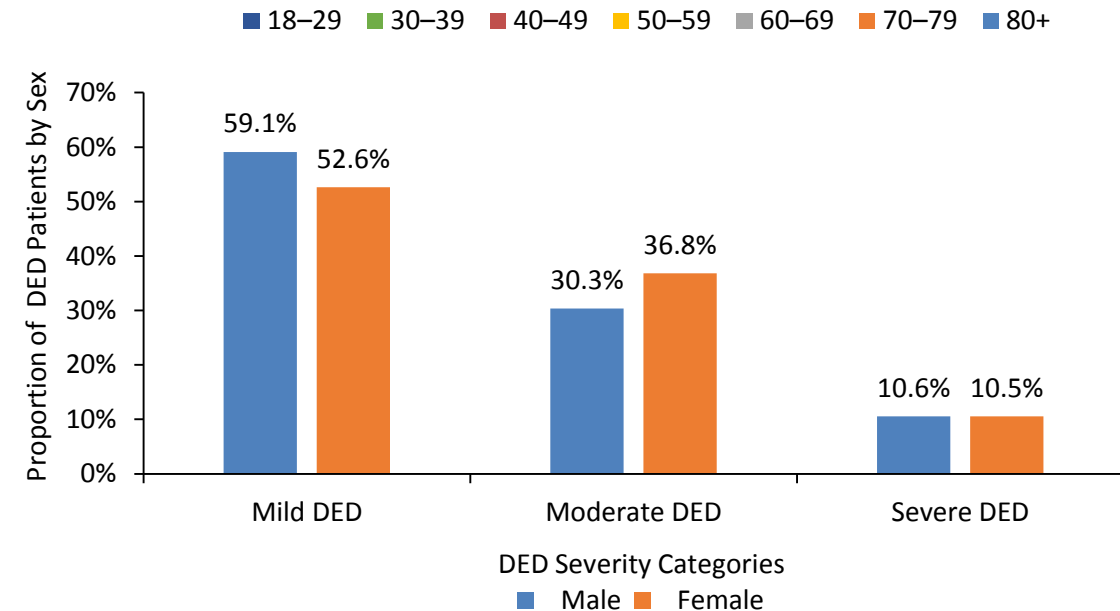
## By Age Group

- DED severity and more specific treatment of DED is seen to increase with age



## By Sex

- DED severity and DED treatment patterns show sex differences for mild and moderate DED





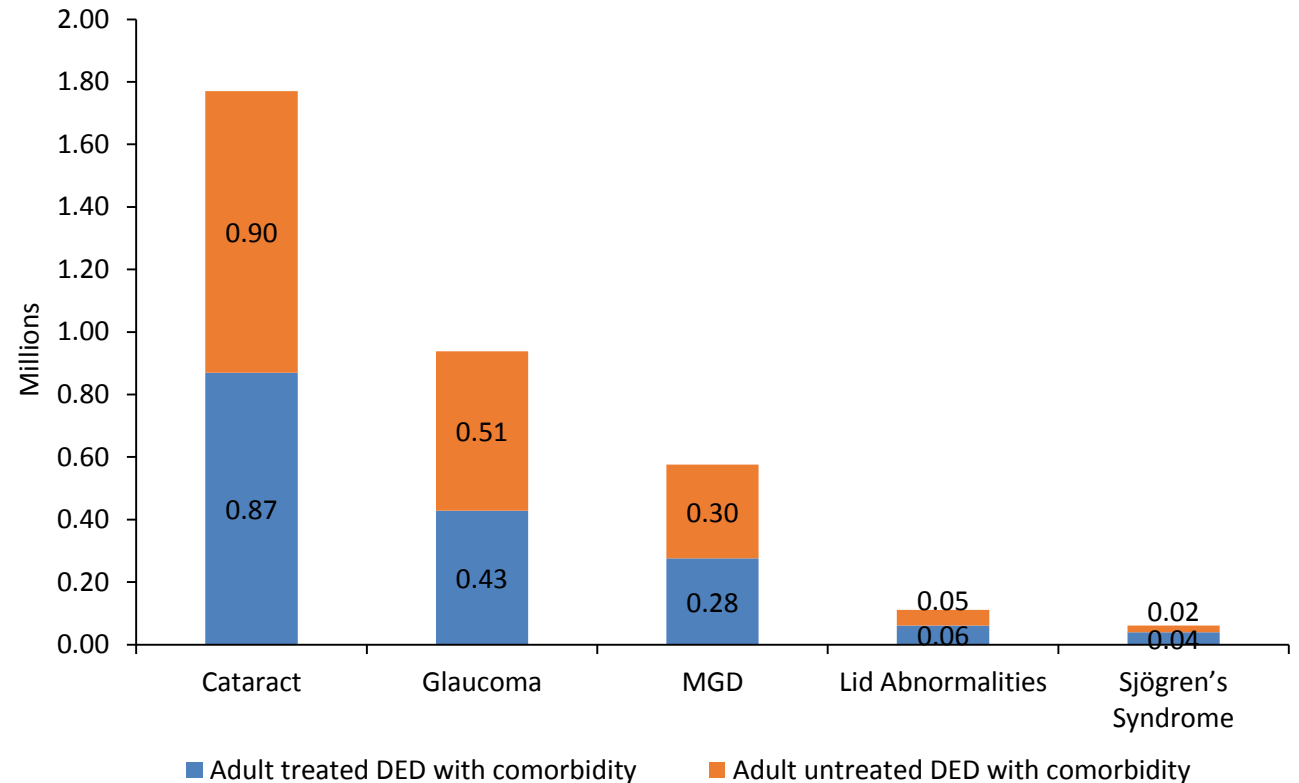
# Results – DED Comorbidities and Treatment

## DED Comorbidities

- A total of 3.4 million instances of 5 major DED-associated comorbidities
- 1.8 million (61.2%) patients had cataract diagnoses

## DED Treatment in Comorbid Patients

- ~50% of all patients with DED comorbidities, excepting Sjögren's syndrome, are untreated for their DED



# Conclusions

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- Data from the IRIS Registry show that DED affects a substantial proportion of eye care patients, especially women, and that prevalence increases with age from the 20s to 40s
- Age group analysis indicates DED severity may worsen with age
- Among patients with DED, high rates of DED-associated ocular comorbidities and low rates of DED-targeted treatments were found
- The majority of patients identified with DED did not have record of a prescribed treatment and, given the high prevalence of associated ocular conditions, undertreatment is plausible