Contact Lenses and Dry Eye

Joe Barr, OD, MS, FAAO

Emeritus Professor, The Ohio State University

barr.2@osu.edu

Financial Disclosures

Stock holder: Envision, Access Media (not a major shareholder)

SMM, Tree House

Consulting - Bausch+Lomb/Valeant, NovaBay (Avenova), Google, Allergan, Vistakon, Alcon

Innovega – Contract research

Mutual fund holdings: Novartis, J&J (I do not select these)

TFOS International Workshop on Contact Lens Discomfort
The TFOS International Workshop on Contact Lens Discomfort:
IOVS October 2013

Contact lenses cause increased evaporation of the tear film and reduce blink rate when using digital devices and reading and doing concentrated visual tasks

Symptoms from dry eye patients overlap symptoms of convergence insufficiency sufferers and keep in mind many early presbyopes and uncorrected cylinder patients wear spherical contact lenses which worsens their CL symptoms

Erin Rueff, OD, MS, Melissa Bailey, OD, PhD TOSU

(CL) Dryness Diagnosis

DX

Lens care issues

Lagophthalmos

Blepharitis and MGD

Conjuntivochalasis

Hypothyroid

Sjogren's

Stop, treat and then restart

Pre-insertion OTC or Rx allergy med

Steroid or combo AB/Steroid treatment with discontinued CL wear

Lid scrubs

Lens and Lens Care change can reduce dropout!

Heal the dry eye with anti-inflammatories both pulse steroid short term off label and cyclosporine long term Azithromycin 250mg/day > doxycycline 200mg/dayX 5 days,

Debride lid margins, hydration, preventing dehydration, omega 3s, lid cleansers, hypochlorous acid, hot compresses, low dose doxycycline, humidify environment, Tx allergic conjunctivitis, watch for dehydrating orals

Blinking training by Korb, Non-squeezed to touch, Pause, Squeeze lightly, Open, Repeat Every hour every day

Use eye drops including lipid containing drops, CL drops

CL Dryness Diagnosis and TX

Use DD contact lenses that dehydrate less or if PRP lenses then use latest and consider H202 lens care

You must be COMPREHENSIVE! THERE IS NO MAJIC SILVER BULLET!!!

Breakthrough Science: Water Gradient Contact Lenses

Lipid layer of our tear film contains natural surfactants

A surfactant is added to material formulation, and is an integral part of HyperGel™

Surfactant is permanently enriched at outer surface during manufacturing process

New: HydraLuxe™ Technology

Bausch + Lomb ULTRA™ contact lenses
with MoistureSeal™ technology

Material: samfilcon A

Technology: MoistureSeal™

Water content: 46%

Transmissibility (Dk/t): 163 at center of a -3.00D

Lens design technology: Aspheric optics to reduce inherent and induced spherical aberration

Base curve: 8.5 mm

Diameter: 14.2 mm

Center thickness: 0.07 mm at -3.00D

Powers: +6.00D to -12.00D in 0.50D steps above -6.00D

Visibility tint: Light blue

Modality: Monthly; Daily wear indication

2-phase polymerization of novel silicones and
4 Times PVP as the
Leading Silicone Hydrogel

PVP is highly hydrophilic

High PVP creates high
water content

Keeps moisture on the surface of the lens, away from hydrophobic silicones

Frictional Energy and Feeling of Tired Eyes

ACUVUE OASYS® 1-Day
with HydraLuxe™ Technology

ACUVUE OASYS® 1-Day
Additional Design Highlights vs. ACUVUE OASYS® 2-Week

New Peroxide Lens Care

Peroxiclear

Bausch+Lomb Valeant Pharmaceuticals

ClearCare Plus

Alcon Novartis

3 ingredients in Triple-Moist TechnologyTM

Poloxamer 181 – surfactant

Propylene Glycol - moisturizer

Carbamide – moisturizer and

platinum modulating agent

Currently found in OPTI-FREE® PureMoist® MPDS
and now in CLEAR CARE® PLUS with HydraGlyde®

How HydraGlyde® Moisture Matrix Technology Works

HydraGlyde® Moisture Matrix is an innovative, proprietary reconditioning agent that surrounds the contact lens with long-lasting moisture.1

Interferometer built by Dr. Ewen King-Smith

Ewen King-Smith low resolution
lipid layer imaging 83nm

Show Video

POINT IN TIME!
Grey color indicates a lipid layer up to 80 nm
Brown corresponds to thicknesses around 130 nm,
Blue becomes apparent when the lipid layer reaches ~ 230 nm.

Baseline Lipid Layer Thickness Data

Testing 35 meibomian gland dysfunction (MGD) subjects over 3 visits, with each visit occurring on a different day

Strong bilateral consistency between the two eyes

The average thickness stayed within 3 nanometers

Relatively low standard deviations

Points to strong accuracy in the measurement and reproducibility

Oculus K5M
Topography, Meibomography, Imaging