Thomas Quinn has received honoraria from:
- Alcon
- Allergan
- Bausch & Lomb
- BioScience Communications
- CooperVision
- GPLI
- STAPLES Program
- JJ VC Vistakon

The Importance of Proper Contact Lens Care

Microbial Keratitis
- Corneal infection/ulcer
- Pain
- Photophobia (light sensitivity)
- Blurred vision
- Corneal destruction can be complete within 24-48 hours
- May result in permanent loss of vision

The Importance of Proper CL Care
- “…giving information about lens care and hygiene (i.e., hand washing, use of soap, and “rub and rinse” practice at CL insertion) was shown to dramatically reduce the relative risk of MK in our study”
- “In our study, patients using multipurpose solutions or those exceeding a 3-month delay for the renewal of the CL case or disinfecting solution experienced an increased risk of infectious complications.”

The Players

Patient

Contact Lens — Care System
Key Questions
- What’s the right solution?
  - For this patient
  - Wearing this lens
- What’s the right way to use it?

Lens Types
- Gas Permeable
- Soft
- Hybrid (firm center, soft skirt)

Gas Permeable Lenses
- Types
  - Corneal
  - Scleral
- Materials
  - Silicone acrylate (SA)
  - Fluorosilicone acrylate (FSA)

Silicone acrylate
- First generation material
  - Silicone added to lens for oxygen transport
  - Eg. SGP, SGP II, Boston II
- Characteristics
  - Propensity toward protein deposits

Fluorosilicone acrylate
- Added flourine
  - Oxygen permeable and wettable!
  - Eg. SGP III, Optimum extra, Boston XO
    - http://www.gpli.info/materials/
- Characteristics
  - Propensity toward lipid deposits

What about oxygen level?
- The higher the Dk, greater propensity to scratch/coat
  - Greater care required
  - Annual replacement likely
GP Lens Care Systems

- **All-in-One Systems**
  - Easy/convenient
  - Compromised effectiveness?
- **Boston Simplus (B&L)**
  - Protein removal?
- **Menicon Unique pH (Menicon)**
  - Same as previous “Alcon Unique pH”
  - Viscosity adjuster (hydroxypropyl guar)
  - Non-abrasive

Multi-Step GP Systems

- **Boston Original System (B&L)**
  - Two solutions: cleaner/conditioner
  - More abrasive cleaner
  - Thicker conditioning solution
- **Boston Advance System (B&L)**
  - Two solutions: cleaner/conditioner
  - Less abrasive cleaner
  - Thinner conditioning solution
  - Added preservative:
    - polyaminopropyl bioguanide

- **Optimum Care System (Lobob)**
  - Three solutions:
    - Extra strength cleaner
    - Cleaning and soaking
    - Wetting
      - Thin consistency
    - Benzyl alcohol
      - Good with oil-based deposits

Multi-Step GP Systems

- **Menicare GP (Menicon)**
  - Two solutions:
    - CDS: cleaning/storage
    - WRW: wetting

Surface Wetting

- **What does it do?**
  - Enhances wettability of the lens surface
- **How does it do it?**
  - Cold gas plasma sterilizes front surface of lens
    - Transforms molecular structure → removes impurities
  - Second cleaning action:
    - Activated O₂ combines with organic contaminants → evacuated from chamber during process

Plasma Treatment
OcularDynamics Coating

- New CL Surface Treatment
- Original name: Hydra-PEG
- For GP and Soft Lenses
  - Retains surface water
  - Resists build-up and fogging
  - Reduces friction

Care of Treated Surfaces

- Non-abrasive cleaners
- For OcularDynamics coating
  - No alcohol
  - Unique pH (Menicon) recommended

Protein Removers/Lab Cleaners

- Boston One Step Liquid Enzymatic Cleaner (B&L)
- Optifree Supraclens (Alcon)
- Boston Lens Laboratory Cleaner (B&L)
- Progent (Menicon)

- Boston One Step Liquid Enzymatic Cleaner (B&L)
  - Weekly protein remover for GP lenses
  - Instill in soaking solution in CL case
    - At least 2 drops per well
    - Soak at least 4 hours (or overnight)
  - Prior to applying lens to eye
    - Rub, rinse (no tap water!), rewet
  - After applying lens to eye
    - Empty solution from the case and clean case
Protein Removers/Lab Cleaners

- **Optifree Supraclens (Alcon)**
  - Daily protein remover for *Soft* lenses
  - Instill in soaking solution in CL case
    - One drop per well
    - Soak at least 6 hours (or overnight)
    - Prior to applying lens to eye
      - Rub, rinse (no tap water!), rewet
    - After applying lens to eye
      - Empty solution from the case and clean case

- **Boston Lens Laboratory Cleaner (B&L)**
  - For *GP* lenses
  - Good for new, non-wetting lens
  - In-office use only
  - 5-surfactants
  - Following treatment:
    - Reclean lens with daily cleaner
    - Rub conditioner into lens surface

- **Progent (Menicon)**
  - For protein removal from *GP* lens surfaces
  - Mix two agents: soak for 30 minutes
  - In office
  - Patient home use: every 2 wks

Scleral Lenses

- Solution in the bowl must be non-toxic
  - No preservatives
  - No buffers

Soft Lens Care

New Large case for scleral lenses!
Soft Lens Care
- Multipurpose Solutions (MPS)
- Hydrogen Peroxide Systems

An MPS must:
- Clean lens
- Disinfect lens
- Wet lens
- Be compatible with lens surface
- Not irritate the eye

Multipurpose Solutions
- American Medical Optics (AMO)
  - Complete MoisturePlus
    - Single Preservative: PHMB
  - Revitalens OcuTec
    - 2 Preservative System:
      - Polyquaternium-1
      - alexidine

- Alcon
  - Opti-Free Express
    - 2 Preservative System:
      - Polyquad
      - Aldox (for fungus)
  - Opti-Free RepleniSH
    - TearGlyde: moisture retention
    - Opti-Free Puremoist
    - EDTA: enhanced disinfection

Multipurpose Solutions
- Bausch + Lomb (B+L)
  - ReNu MPS Product Line
    - ReNu sensitive
      - Preservative: Dymed
    - ReNu fresh
      - Hydranate: for protein removal
  - BioTrue
    - 2 Preservative System:
      - polyquaternium
      - Polyaminopropyl biguanide

- Generics!
  - Eg. Equate

Issues
- Old chemistry
- Quarterly content change?
“My eye is red”
- 25 yo cell culture tech
- Oasys OU x 3 yrs; 12hr/day, 9 hrs at exam
- Opti-Free Replenish
- Presents for annual examination reporting:
  - “right eye tends to get red around the iris”
  - “seems associated with lens wear”
  - “worse when at work”

“My eye is red”

“OS:
- minimal injection
- 1+ infiltrates superior cornea

Whatcha Gonna Do?

“My eye is red”
- What we did...
  - Switched her to Hydrogen Peroxide-based care system
  - Asked to return in 2 weeks

Before After
Hydrogen Peroxide Systems

- **Oxysept Ultracare** (AMO)
  - Neutralizing tablet
  - Color indicator and lubricant (HPMC)
  - Not for use with *PureVision (B+L)* or *Illusions (Alcon)* lenses

- **Neutralizing tablet**
  - Color indicator and lubricant (HPMC)

- **Clear Care** (Alcon)
  - Soak at least 6 hrs
- **Clear Care Plus** (Alcon)
  - With HydraGlyde moisturizer

Hydrogen Peroxide Systems

- **Peroxiclear** (B+L)
  - Minimum 4 hr soak

Hybrid Lens Care

- Multipurpose solution
  - Hydrogen Peroxide systems
  - White ring in soft portion possible
  - Discomfort?

The Quest for Comfort

- Discomfort
  - Leading cause of contact lens dropout
  - Estimated between 12 and 51% of wearers


Lens Care and Comfort

- 3 month study (retrospective)
  - senofilcon A material
  - Comparison of 4 Groups:
    - PHMB-based MPS (Aquify, Renu Multiplus)
    - Polymquad-based MPS (Opti-Free Express, Opti-Free Replenish)
    - H2O2 (Clear Care, AO Sept)
    - Daily Disposable

Lens Care and Comfort

- End-of-Day Comfort Scores:
  - MPS (both groups): 7.7 ± 1.7
  - H2O2: 7.2 ± 1.8
- Daily Disposable: 8.5 ± 1.2

Solution Effects on CL Surface:
- MPS and H2O2-based solutions impact surface roughness

End-of-Day Comfort Scores
1. MPS (both groups) 7.7 ± 1.7
2. H2O2 7.2 ± 1.8

Daily Disposable 8.5 ± 1.2

Statistically significant

2. Lira M, Surface roughness and refractive index changes in contact lens induced by lens care systems. Eye Contact Lens. 2014 May;40(3):140-7

Contact Lens Safety: Case Care

- Poor storage case hygiene can put patients at as much risk for MK as EW.
- Most asked question on ContactLensSafety.org: “How should I clean my contact lens case?”

3. Szczotka-Flynn LB. New gold standard references for contact lens-related MK. Cont Lens Spect. 2009 January

Ask Us

Contact Lens Wear in Various Environments

Do You Know?

Contact lenses are among the most common cause of contact lens related injuries. Follow manufacturer instructions, see your doctor if you experience any discomfort.

Poor storage case hygiene can put patients almost as much risk for MK as EW.

Most asked question on ContactLensSafety.org: “How should I clean my contact lens case?”

3. Szczotka-Flynn LB. New gold standard references for contact lens-related MK. Cont Lens Spect. 2009 January
Immediately after lens removal:
- Discard old solution
- Rub case with clean fingers (5 sec)
- Rinse with disinfecting solution
- Wipe dry with clean cloth
- Storage: with lids off, upside down
- In clean area
- Avoid tap water


Case Contamination
- Written and verbal instructions (Group 1) significantly reduced the rate of case contamination compared to verbal only
  - 13% still used tap water

Tina D, et al. OVS 2014;91:262-271

How often to replace the case?
- 3 month vs 6 months or more
  - Every 3 months safer
  - ↓ risk of mod/severe MK by 5.4 times


How often to replace the case?
- Cases may develop significant contamination after two weeks!
- Suggests monthly replacement is advisable

Lakkis C, et al. Time course of the development of contact lens case and contact lens contamination. ARVO, 2009
CL Case Care

- Daily Disposable
  - No case!

Recommendations for Clear/Safe Contact Lens Wear

- Always wash and dry your hands before handling your CLs
- Carefully and regularly clean your CLs
- Store lenses in a clean and proper case
  - Replace the case at least every 3 months
- Use only the care system recommended by your doctor
  - Always rub your lenses before storage, even if no rub
- Never re-use old solution
  - No "topping off"
- Replace your contact lenses as prescribed by your doctor

Thank You!