Disclosures
- Dr. Cunningham has received honorarium or research funding from Albon, Allergan, Acme De, Valeant, Tearlab.
- Walter Whiteley, OD, MFA, FAAO has received honorarium or research funding from Albon (Advisory Board, Research, Speaker), Allergan (Advisory Board, Research, Speaker), Valeant (Advisory Board, Speaker), Tearlab (Advisory Board), Transcience (Research, Speaker).

**RPS Adeno Detector™**

**Test Procedure**

1. Open the buffer vial.
2. Assemble the detector by transferring the sample to the test strip.
3. Press firmly where indicated.
4. Dab the test cassette window.

**Four Step Testing Process**

1. Immerse the assembled RPS Adeno Detector™ into the sample transfer window of the sampling pad.
2. Transfer sample to the test strip.
3. Place detector besides the sample collector to collect a concentrated sample of the eye fluid.
4. Assemble the detector by transferring the sample to the test strip.

**Assembling the Detector**

1. Locate the test cassette.
2. Assemble the detector by gently placing the sampling pad into the sample transfer window of the sampling pad with the test strip.
3. Press firmly where indicated and then exposing the cornea to ultraviolet (UV) light with a 370-nm wavelength at 15 - 45 mW/cm².

**RPS Adeno Detector™ Components**

- Case Package: 20 Boxes
- Unit Package: 1 Box

**Diagnostics**

**Background**

- Soaking the cornea with riboflavin (vitamin B₂) and then exposing the cornea to ultraviolet (UV) light with a 370-nm wavelength at 15 - 45 mW/cm².

**Basics**

- UV Absorption
- Method
- Post op

**Result**

- © 2012 Avedro

**Treatment Groups**

**Zirgan for EKC**

**OLD**

**ND**

**Result**

- Handle like a surface ablation patient
- Steroid, antibiotic, NSAID
- Bandage lens for 1 week

**Method**

- Post op
- Slit lamp check to assure AC penetration
- Unstable

**Running the Test**

- Ensure the RPS Adeno Detector™ is properly assembled, transferring the sample to the test strip.

**A double auditable click means the detector is properly assembled, transferring the sample to the test strip.**

**RPS Adeno Detector™ Reading & Interpreting the Results**

**Positive Results**

- The VibeX™ / KXL™ System is not approved for sale in the United States

**Dbol**

**MA**

**Result Window**

**Results Line**

**Control Line**

**Results Line and Control Line**

**Positive Results**

- The VibeX™ / KXL™ System is not approved for sale in the United States

**Reading & Interpreting the Results**

- The VibeX™ / KXL™ System is not approved for sale in the United States

**Results Line**

**Control Line**

**Results Line and Control Line**

**Positive Results**

- The VibeX™ / KXL™ System is not approved for sale in the United States
**Corneal Crosslinking Complications**
- Treatment failure – 7.6%
- Risk factors:
  - 35 yrs or older
  - VA 20/25 or better
  - Ks >58D
- Postoperative infection/ulcer
- Stromal haze
- Increased IOP

**What’s new in CXL?**
- CXL and other corneal refractive treatments
  - Topo-guided PRK
  - Corneal ring segment
- Trans-epithelial treatments: “epithelium on”
- CXL for microbial keratitis
- CXL for corneal edema
- Other advances and applications

**Conclusions**
- Improve UCVA, BCVA
- Improve contact lens fit/comfort
- Improve or stabilize cornea
- Decrease/stop progression
- Defer surgery
- Less cost and morbidity
- Potential for combination therapies

**Biomarkers for Dry Eye**

**What is MMP-9?**
- Matrix metalloproteinases (MMPs) are proteolytic enzymes that are produced by stressed epithelial cells on the ocular surface
- Non-specific inflammatory marker
- More sensitive diagnostic marker than clinical signs
- Correlates with clinical exam findings
- Normal range between 3-41 ng/ml
- Ocular surface disease (i.e. dry eye) demonstrates elevated levels of MMP-9 in tears

**Cycle of Inflammation**

**InflammaDry**
- Sensitive detection levels of MMP-9 in tear fluid
- 15 minutes of wait required
- Easy to perform by technicians or nurses
- Disposable – no additional equipment required

**TearLab**

**Osmolarity in the Diagnosis of Dry Eye Disease**

**Osmolarity in Diagnosis & Grading of Dry Eye**

**Oculus Keratograph**

**LipiFlow® Thermal Pulsation System**
- Safely treats Meibomian gland obstruction in both upper and lower eyelids simultaneously, in an in-office procedure, taking only 12 minutes per eye
- Activator applies intermittent pressure to the outer eyelid
- Inflatable air bladder
- Insulated lid warmer shields eye from heat and vaults above the cornea to prevent corneal contact
- Heats comfortably to liquefy the Meibomian gland contents
- Lid warmer applies directional heat to the inner eyelid

**Therapeutic Goal of Pulsation**
- Activator applies intermittent pressure to the outer eyelid
- Inflatable air bladder
- Insulated lid warmer shields eye from heat and vaults above the cornea to prevent corneal contact
- Heats comfortably to liquefy the Meibomian gland contents
- Lid warmer applies directional heat to the inner eyelid
- Increase heat transfer efficiency
- Enable patient to experience little to no discomfort during treatment as compared to manual expression
LipiFlow: Does it Work?
- Uplift resulted in significant improvement:
  - MG secretion at 2 and 4 weeks
  - TBUT at 2 and 4 weeks
  - Significant reduction in dry eye symptoms

Don’t Have $100,000 for a LipiFlow?
- **Eye Care Applications**
  - Viscoelastic
  - Blink Tears and Blink Gel
  - Oasis tears
  - BioTrue contact lens solution
  - Safelens contact lenses

Clinical Trial Results vs. Our Experience
- **HA**: Eye’s Natural Lubricant
  - General Properties of HA
    - **Regenerative**
      - Acts like hyaluronic acid
    - **Protective**
    - **Anti-Angiogenic**
    - **Immune**
      - **Anti-Inflammatory**
      - **Anti-Angiogenic**
      - **Immunosuppressive**
    - **Wound Healing**
      - **Regenerative**

Ocular Surface Disease
- May be defined as “any disorder affecting the integrity of natural structures of the ocular surface...”
- Accounts for approximately 20% of visits to eye care practitioners annually
- Diagnosis can be difficult due to the similarities of various disease entities
- Classification should be made on the pathologic and pathophysiologic characteristics of OSD

OSD Pathology
- **Inflammation**
  - Keratitis
  - Uveitis
  - Fungal
- **Ulceration**
  - Ocular surface ulcer disease
  - Corneal abrasions
  - Chemical burns
  - Ulcerative keratitis
- **Emigration**
  - Neutrophils
  - Lymphocytes

PROKERA®
- **Biologic Corneal Bandage**
  - Provides a temporary biological corneal bandage
  - Prevents recurrence
  - CASE: Filters 680-nm laser
  - Fibrinogen
  - Collagen

PROKERA® Biologic Corneal Bandage
- **COMPANION**
  - **Shape in barrier**
  - **Induced regeneration**
  - **Fibrinogen**
  - **Collagen**
  - **Sodium hyaluronate solution**

Recommended Treatment Tips
- **PROKERA®**
  - AmbioDisk by IOP Ophthalmics
  - AmbioDisk by IOP Ophthalmics
  - Ambio Disk by IOP Ophthalmics

**HA**: Eye’s Natural Lubricant
- General Properties of HA
  - **Regenerative**
    - Acts like hyaluronic acid
  - **Protective**
  - **Anti-Angiogenic**
  - **Immune**
    - **Anti-Inflammatory**
    - **Anti-Angiogenic**
    - **Immunosuppressive**
  - **Wound Healing**
    - **Regenerative**

Management of OSD
- **Amniotic Membrane (AM): An Emerging Clinical Option**
  - **Compression/Activation**
    - Biologic therapy
    - Transient regeneration
    - Reduced inflammation
    - Minimizes scar formation
    - Minimizes contraction
    - Minimizes pain

Sodium Hyaluronate
- **HA**
  - Is the sodium salt of hyaluronic acid
  - A natural biocompatible polymer that can maintain the integrity of...
Case Example

The Sjö™ In-Office Testing Kit

Impact of Sjögren’s

Excellent Samples

Recent Clinical Findings for Sjögren’s –

IMPLICATIONS FOR OPTOMETRY

Femtosecond Cataract surgery

Femto-Phaco

Light Adjustable IOLs

Current Premium Lenses Require Compromises

Why the Light Adjustable Lens?

LAL Procedure

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Light Adjustable IOLs

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Why the Light Adjustable Lens?

LAL Procedure

5/18/2014
Customized Presbyopia Solutions
- Adjustable Monovision
- Customized Near Add
- Controlled Addition of Asphericity

Pseudophakic Verification

Microplasmin
- For Vitreomacular traction
- Vitrectomy in one injection

Genetic testing for AMD

- Risk Score
  - Category: Risk Category
  - Lifetime Risk
    - Low Risk: 0.0 – 7.9% (1.0% – 5.0%)
    - Intermediate Risk: 0.0 – 10.0% (2.0% – 5.0%)
    - High Risk: 0.0 – 29.9% (4.0% – 25.0%)
    - Very High Risk: 0.0 – 100.0% (5.0% – 100.0%)

Case Studies: ORA Improves Accuracy, Reduces Surgical Enhancements & Follow-up Costs

ORA (Optiwave Refractive Analysis)

VITREOMACULAR TRACTION

RetnaGene AMD: The Gold Box

RetnaGene LTD: The Gold Box

Image and Plan Video

Registration at the Scope
Summary
- AMD is increasing
  - More than 30 million people have AMD
  - More than half of AMD patients are referred too late
- AREDS Supplements are a new Standard of Care?
  - Standard approach
    - 25% benefit
  - Genome Directed Therapy
    - May double the efficacy
    - For Certain genotypes AREDS may cause harm
- Macula Risk PGx
  - 90% accurate AMD prognosis
  - Optimized AREDS vitamins can reduce AMD progression
  - Minimize progression and refer earlier

Filtering tubes

Implantable IOP monitor?
- Sensus Triggerfish
  - Electronic strain gauge lens that transmits curvature change at the corneoscleral junction
  - 3µm change equals an IOP change of 1 mm Hg
  - True 24 hour data!!

Instent
- Titanium, L-shaped, trabecular microbypass instent
- Snorkle through TM
- Use Gonio to place it

Solx Gold Shunt
- Candidates: failed trabeculoplasty to refractory disease
- Safety: no bleb-related complications, highly biocompatible material
- Efficacy: novel mechanism of action, advanced engineering to optimize performance

Transcend CyPass System
- 300um lumen, 6mm long
- Fenestrations in tube allow aqueous to egress through its length
- Place into the supraciliary space

PEEK (portable eye exam kit app)
- Refractions
- External photos
- Cataract evaluation
- Fundus photos (using led flash)
- Possibly even eye alignment testing
- Very accurate

New magnification contact lens
- Uses tightly fitting mirror surfaces to make a telescope that is integrated into a contact lens just over a millimetre thick. The lenses' arrangement is such that it has two modes. The centre of the lens provides unamplified vision, which is at the periphery of the regular contact lens, magnifies the view 2.8 times.
- Need liquid crystal polarized glasses to change view