Ten New Innovations In Eye Care

Jim Owen, OD, MBA, FAAO
First Innovation

Automating Cataract Surgery
Current Manual Cataract Surgery

Multiple steps and multiple devices
Limitations of Manual Cataract Surgery

Visual Outcomes

- Distance Correction Predictability Far less than that of LASIK
  - Astigmatism Correction
  - Effective Power of IOL
  - Limits Presbyopia Correction

Safety

- Complications > LASIK

Surgeon Confidence

- Critical for Widespread Adoption

<table>
<thead>
<tr>
<th>Common</th>
<th>Incidence</th>
<th>Vision Threatening</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior Capsular Opacification</td>
<td>10-30%</td>
<td>Retinal Detachment</td>
<td>0.6-1.7 %</td>
</tr>
<tr>
<td>Cystoid Macular Edema (transient)</td>
<td>2-10%</td>
<td>Cystoid Macular Edema (persistent)</td>
<td>1-2%</td>
</tr>
<tr>
<td>Vitreous Loss</td>
<td>1-5%</td>
<td>IOL Malposition</td>
<td>0.3%</td>
</tr>
<tr>
<td>Corneal Endothelial Cell Loss</td>
<td>4-10%</td>
<td>Need for Corneal Transplant</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Endophthalmitis</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Manual Cataract Surgery

- Corneal Incisions
- Capsulotomy
- Lens Removal
- IOL Implantation
Pre-Production Model Complete & In Clinical Use

- Live Video
- OCT
- Procedure Templates

- Touch Screen
- Data Entry

- Ergonomic
- Space saving design
Intuitive Software Control Delivers Image-Guided Surgery

Procedure Precision & Integration
Technology Summary

- 2 systems in clinical use
  - Europe and USA
- >500 cases, fully sighted eyes, lens, capsule and cornea
Image-Guided Laser Cataract Surgery

- Micron Level Precision and Reproducibility
- Key Steps Performed in Low Stress “Closed Eye”
- Unparalleled Procedure Flexibility and Innovation
Image-Guided Laser Cataract Surgery

The lens liquefaction and fragmentation is not available for sale in the United States
Goals of Laser Cataract Surgery

- Improve Every Procedure, Technology and Surgeon
  - Presbyopia, Astigmatism & Monofocal
  - Refractive Precision and Integration

<table>
<thead>
<tr>
<th>Key Step</th>
<th>Current Surgery</th>
<th>Refractive Impact</th>
<th>Safety Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corneal Incision</td>
<td>Underutilized, Not Optimized</td>
<td>Astigmatism</td>
<td>Infection</td>
</tr>
<tr>
<td>Capsulorhexis</td>
<td>Variable Sized, Not Centered</td>
<td>Variable IOL Position &amp; Effective Lens Power</td>
<td>Capsular Tears, Posterior Capsule Opacification</td>
</tr>
<tr>
<td>Lens Fragmentation</td>
<td>Excessive Ultrasound Power</td>
<td>Delayed visual recovery</td>
<td>Loss of endothelial cells, Capsule Rupture</td>
</tr>
</tbody>
</table>
Visibility to Better Medicine

- Two fold reduction in IOL position
- Major opportunity for improvement in refractive correction
2 Weeks PostOp OCT
Conclusions

- Femtosecond laser applications in liquefaction was safe, effective and efficient.

- Capsulotomy size, shape and reproducibility was statistically improved over manual techniques.

- Corneal incisions were reproducible and had precise dimensions and geometry.

- A refractive capsulotomy (perfect shape, size, centration), liquefied lens removal with simple I/A, plus the precision of laser-created corneal incisions may enable surgeons to design and deliver an entirely new level of refractive cataract surgery.
Second Innovation

Replacing Our Natural Lens
Synchrony Dual Optic IOL

- Single-piece, silicone IOL
- 5.5 mm high plus anterior optic (+32 D)
- 6.0 mm variable negative posterior optic
- Optics connected by spring haptics
  - Size 9.5 mm x 9.8 mm
  - Theoretical accommodation 3.5 D with 1.5 mm of anterior lens movement
Synchrony Video
Synchrony dual-optic accommodating intraocular lens
Part 2: Pilot clinical evaluation

- Enrolled patients older than 40 with visual significant cataracts and less than 2.00 D of corneal cylinder
- 26 Eyes of 21 Patients
- 67% Female
- All Hispanic
Results - Distance

- No loss of BCVA in all eyes
- Mean SE -0.52 (+/- 0.77D)
- 50% within +/- (0.50)
- 79.4% 20/40 or better
Results - Near

- 95.8% J3 or Better
- Minimal add to J1 +0.75
- All stable at 1 and 2 years
Methods: Subjective Testing

- Subjective tests performed at the 2 year visit
  - Distance-corrected near VA
  - Push Down accommodative amplitude
  - Defocus curve (-3.0 D to +1.5D in 0.5 D steps)
- Tests repeated at the 3 year visit
  - Distance-corrected near VA
  - Push Down accommodative amplitude
- All subjective tests performed with distance correction in place.
Results: Subjective Testing

- Defocus curve confirms Push Down amplitude of accommodation
Mean Reading Acuity at 1 year was 0.15 logRAD (SD 0.13), and at the 2 year follow-up improved to 0.07 logRAD (SD 0.11). This difference was found to be statistically significant (p< 0.01).

VICTOR BOHORQUEZ, MD., ASCRS 2009
Higher (better) scores were seen at smaller font sizes (0.3 and below) at the 2 year follow-up. This difference was statistically significant (p<0.001)
Long Term Objective Evidence of Accommodation of the Synchrony Dual Optic IOL

David Chang, M.D., Ricardo Alarcon, M.D.,
Victor Bohorquez, M.D., ASCRS 2010
Methods: Objective Testing

- 5 eyes with demonstrated UBM accommodation at 1 year were evaluated at 2 and 3 years with iTrace wavefront aberrometer.

UBM @ 1 year

iTrace @ 2 & 3 years
Methods: Objective Testing

• UBM
  • Front and back optic position were compared between cycloplegic and near states

• iTrace
  • Measurements were performed for a 3 mm pupil
  • Average of 3 measurements at cycloplegic and near states were obtained for each patient
  • Refractive maps of the average measurements were created
Synchrony vs. ReSTOR
Randomized Double-masked Multicenter Clinical Study

• Study Design
  • Randomly assigned to receive binocular Synchrony or ReSTOR
  • 50 subjects (100 eyes) in each arm
  • Patient and technician are masked

Ivan Ossma, MD, MPH, Victor Bohorquez, MD, Ricardo Alarcon, MD,
Andrea Galvis, MD, ASCRS 2009
Contrast Sensitivity

1 Year Results

Significantly better contrast sensitivity in patients implanted with Synchrony in mesopic & photopic conditions
Significantly lower rates of Halos with Synchrony vs. ReSTOR at 1 year.
Nu Lens
Purpose

- To evaluate the accommodative range of the NuLens AIOL in 5 patients and to study its behavior and biomechanics in 5 eyes

- Implanted by one experience surgeon (L. Izquierdo) at Oftalmosalud Eye Institute Lima-Peru.
Material and Methods

- Material and Methods: 5 eyes of patients range between 27 and 65 years old,
- 4 women and 1 men,
- No corneal pathology who had impaired vision in one eye due to amblyopia (4 high myops and 1 cataract patient).
Results

• Pre-Implantation values:
  • sphere -5.60 cylinder -2.55,
  • LogMar BCVA (media 0.6520)
  • Near VA at 40cm (media 12.25).

• Post-Implantation values:
  • sphere -0.45 cylinder -2.50
  • LogMar BCVA (0.7380)
  • near VA at 40cm (media 14.50).

• Accommodative range: 6.00 Diopters. p=0.0000 (See Table).
Zonule implantation of the haptic of the NULENS AIOL
Conclusions

- This is a new technology which seems to be an alternative in the future to achieve more accommodative range and therefore a better quality of vision. We are still working in adjusting the power of the AIOL and its size to improve its biomechanics inside of the eye.

- NuLens demonstrated to have an accommodative range of 6 Diopters in all patients studied so far and a central positioning without damaging any anterior and posterior chamber structures of the eye.
Third Innovation

Can You Do That on the Cornea
Intracor Procedure
INTRACOR Presbyopia

4 days preop

1 hour postop

1 day postop

Cavitation gas in ring cuts

Gas escaped from cornea

4 days preop

1 hour postop

1 week postop

Mike P. Holzer, MD
Evaluation Study Design

- 132 eyes – 6 months follow up
- Average age 52.8 (44-67)
- Bilateral Procedure
Results

- Distance Corrected Near Vision
  - Pre-op average J8
  - 3 months average J2
- Uncorrected Near Vision
  - 97.6% J3 or better
- Uncorrected Distance and Near
  - 93.75% J3 and 20/25
Results

- Wavefront Data
  - Pre-op HO RMS 0.24
  - Post-op HO RMS 0.21
- Spherical Abberation
  - Pre-op 0.080
  - Post-op -0.065
- No change in Pachymetry, Hysteresis, Endothelial Cell Count
Summary: INTRACOR

» High potential for correction of presbyopia
  • Non invasive  → very low risk for infections
» Stable refractive outcome during follow up period
» Significant gain in uncorrected near visual acuity
» Slight central steepening and negative q-value
  • No weakening of cornea
  • Future treatments: low myopia / hyperopia / astigmatism, retreatments of remaining refractive errors following IOL- or Excimer Laser Surgery

Mike P. Holzer, MD
FORTH INNOVATION

Computer Based Cortical Vision Training
Company History

- Originally developed in Israel in 1999.

- US FDA 510(K) approval given in August 2001 for the treatment of amblyopia.

- Relocated to Singapore in 2004 under the company name NeuroVision, Inc.
  - due to government interest in the treatment of pediatric myopia in the Asian Pacific Region.

- Purchased by RevitalVision LLC in 2009 and operations were relocated to Lawrence, Kansas.
Clinical Concept

- RevitalVision optimizes cortical visual processing
- Neurologically trains the brain to see better
PRESENT PRODUCT OFFERINGS

OTHER PRODUCTS ON THE MARKET:
Sports Vision, Night Driving, Low Myopia, Amblyopia
Step 1: ECP VA data creates baseline for RevitalVision treatment

Step 2: Patient completes two sessions; neural performance analyzed

Step 3: Twenty customized sessions completed at home via internet; darkened room

Step 4: Treatment completed. Vision performance maximized

Results sent to server. Sessions adjust to progress, improving neural performance
SCIENTIFIC BUILDING BLOCKS

- Neuronal lateral interactions
- Gabor patch visual stimulus
- Use of flankers
- Perceptual learning
- Brain plasticity
Gabor Patches developed by Nobel Prize winning physicist, Dennis Gabor

- Widely used in the field of visual neuroscience to describe the shape of receptive fields of neurons in the primary visual cortex
- Represent the most effective stimulus target for the primary visual cortex
The software measures the contrast threshold of a Gabor target with the presence of flankers.

The patient is exposed to two short displays in succession and the patient identifies which display contains three Gabors.
Clinical Research Summary


- Studied 54 adult amblyopic patients who were randomized to amblyopic cortical vision training or a placebo vision-training program.

- Pretreatment visual acuity improved by 2.5 lines to 20/30 in the cortical training treatment group, with no improvement in the control group.

- The cortical vision training group experienced a commensurate increase in CSF to within the normal range.

- These improvements in acuity and CSF were sustained after 12 months.
Durrie, D. Slade, S. Waring IV, G. 2008 Unpublished data
Prospective, controlled comparison of cortical training after LASIK to sham treatment after LASIK

<table>
<thead>
<tr>
<th>Postoperative 3 Months</th>
<th>All Patients</th>
<th>Worse than 20/20 postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N=98</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NeuroLASIK</td>
<td>0.80 lines</td>
<td>1.56 lines</td>
</tr>
<tr>
<td>Control Video Game</td>
<td>0.28 lines</td>
<td>0.34 lines</td>
</tr>
<tr>
<td>UCDVA Improvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79%</td>
<td>52%</td>
<td>90%</td>
</tr>
<tr>
<td>Contrast Sensitivity Improvement</td>
<td>47%</td>
<td></td>
</tr>
</tbody>
</table>
NeuroLASIK
UCDVA Improvement

Suggests a cortical limit to how much a patient may improve.
NeuroLASIK
Subjective Improvement after NeuroLASIK

A Moderate Amount
- Reading Road Signs
- Watching TV, Movies
- Day Time Driving
- Night Time Driving
- Sports
- Recognizing Faces
- Using Computer
- Reading Books

A Little
- NeuroLASIK: [Bar Graph]
- Control: [Bar Graph]

Not at All
- NeuroLASIK: [Bar Graph]
- Control: [Bar Graph]
Prospectively evaluated cortical training after IOL implantation in 60 eyes.

IOLs included aspheric monofocal, multifocal and accommodative (5 IOL styles total)

Improvement in UCDVA and UCNVA for the entire group was 1.3 and 1.0 lines respectively

Mean improvement in distance and near CSF were 223% and 197% respectively.
## STUDY RESULTS:

The table below summarizes the results of an IOL study among 70-year-old patients.

<table>
<thead>
<tr>
<th>Lens</th>
<th>No. of Eyes</th>
<th>Distance VA Improvement</th>
<th>Near VA Improvement</th>
<th>Distance CSF Improvement</th>
<th>Near CSF Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rezoom</td>
<td>24</td>
<td>1.5 Lines</td>
<td>0.6 Lines</td>
<td>157%</td>
<td>160%</td>
</tr>
<tr>
<td>Restor</td>
<td>6</td>
<td>1.6 Lines</td>
<td>1.2 Lines</td>
<td>135%</td>
<td>143%</td>
</tr>
<tr>
<td>Crystalens</td>
<td>6</td>
<td>0 Lines**</td>
<td>1.8 Lines</td>
<td>370%</td>
<td>227%</td>
</tr>
<tr>
<td>Alcon Monofoal</td>
<td>10</td>
<td>1.3 Lines</td>
<td>0.6 Lines</td>
<td>250%</td>
<td>238%</td>
</tr>
<tr>
<td>AMO Monofoal</td>
<td>10</td>
<td>1.3 Lines</td>
<td>1.7 Lines</td>
<td>354%</td>
<td>263%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>56</strong></td>
<td><strong>1.3 Lines</strong></td>
<td><strong>0.9 Lines</strong></td>
<td><strong>223%</strong></td>
<td><strong>197%</strong></td>
</tr>
</tbody>
</table>

*Average Age - 70 years old

*Standard and premium lenses

** Patients Baseline VA 20/15 – No room to improve
STUDY RESULTS:

CONTRAST SENSITIVITY

Spatial Frequency

UCVA=

Spatial Frequency

After

Before

Spatial Frequency

Contrast Sensitivity

Percent Contrast

A (1.5)
B (3)
C (6)
D (12)
E (18)
Novel approach to improvement in visual function
  ➢ “Physical therapy for vision”
  ➢ Computer based primary cortex vision training

Founded on proprietary cortical visual science therapeutic strategies

Average improvement of 2 lines visual acuity and 100% in contrast sensitivity

Non-invasive and safe

Multiple product offerings including post IOL implant therapy, post refractive surgery, presbyopia

Future product offerings in development
FIFTH INNOVATION

Quantifying Dry Eye
Osmolarity in the Diagnosis of Dry Eye Disease

- Osmolarity is the “gold standard” test for Dry Eye Disease
  - 45 years peer reviewed research
  - Osmolarity has been added to definition of Dry Eye
  - Global marker of Dry Eye, indicating a concentrated tear film

<table>
<thead>
<tr>
<th>Clinical Test</th>
<th>PPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osmolarity</td>
<td>87%</td>
</tr>
<tr>
<td>Schirmers</td>
<td>31%</td>
</tr>
<tr>
<td>TBUT</td>
<td>25%</td>
</tr>
<tr>
<td>Staining</td>
<td>31%</td>
</tr>
<tr>
<td>Meniscus Height</td>
<td>33%</td>
</tr>
</tbody>
</table>

Source: DEWS Report, Ocular Surface April 2007 Vol 5 No 2, & Tomlinson A, et. al., IOVS 47(10) 2006
Clinical Evaluation of Osmolarity

- Standard osmometers require 10 µL
  - Dry eye patients have less than 1/200th of that volume available

- Traditionally rely on glass capillaries to collect tears
  - Collection can cause reflex tearing
  - Fluid can evaporate during transfer

- Older instruments require half an hour to get one reading

- As a result, tear film osmometry was confined to the laboratory
Advanced Instruments Tear Osmometer
TearLab Precision @ 50 nL

- < 2% coefficient of variation @ 50 nanoliters
  - Glucose ≥ 5.0% CV @ 5 microliters (5,000 nL)
  - Cholesterol > 4.0% CV @ 20 microliters

- Safe, simple collection
  - No reports of corneal or conjunctival trauma in 468 eyes
    [TearLab™ FDA 510(k) submission]
- Winner 2009 MDEA for In Vitro Diagnostics

Osmolarity Severity Analysis

\[ y = 142.44x + 274.96 \]
\[ R^2 = 0.6358 \]
Osmolarity Provides Improved Standard of Care

- Tear osmolarity is the most accurate diagnostic test for dry eye disease
- Elevated osmolarity is the central mechanism causing ocular surface damage
- Allows a physician to rapidly diagnose & classify patients with a global assessment
  - In combination with a slit lamp exam, physicians can select therapies based on mechanism of disease and severity
- Modulate therapy using a quantitative endpoint

TearLab Reveals Biocompatibility of Contact Lenses

Osmolarity response of different types of contact lens material

Prior to Lens Insertion

Montani Giancarlo Optometrist FIACLE, Dept di Optometria, Università del Salento
Osmolarity in Refractive Surgery

- 30 subjects were recruited for the study
  - n = 24 dry eye, n = 6 normal
  - Classified as dry eye if the maximum preoperative osmolarity was greater than 308 mOsms/L
- LASIK vision correction with the LADARVision 4000 or the WaveLight ALLEGRO™ WAVE Excimer Laser System
- Vitamin, Prednisolone 1% and lubricant drops prescribed post-op
- Bilateral osmolarity measurements were performed in triplicate at each visit using the TearLab Osmolarity System
  - Measurements were made preoperatively, 14 days, and 1 month post-operatively
Osmolarity in Refractive Surgery

- Maximum osmolarity of both Normal and DED subjects increased by 10 mOsm/L following surgery ($p = 0.067$)
  - Normal: $304.0 \pm 3.5 - 314.5 \pm 13.1$ mOsm/L
  - DED: $329.8 \pm 13.7 - 339.5 \pm 24.0$ mOsm/L
- Normal subjects had significantly lower post operative osmolarity than DED subjects ($p = 0.021$)
- Very large increases >10 mOsm/L were observed in 13 of the 30 subjects (average increase = 29.1).
Tear Osmolarity in the Diagnosis of Dry Eye Disease

- If > 308 mOsms/L or larger than a 8 mOsms/L difference between eyes
- Normal subjects have a tight band of variability
- Patients with mild/moderate DED show variability
  - Variability is the hallmark of this stage in which compensatory mechanisms are still operative in response to environmental stress
- Patients with moderate to severe DED have tear osmolarity which varies between eyes and over time but generally remains within the abnormal range
Sixth Innovation

The Lid Hygienist
Challenges of Current MGD Therapies

Therapy

- Warm compresses
- Eyelid scrubs
- Manual gland expression

Challenges

- External heat application is inadequate\(^2,3\)
- Compliance\(^1\)
- Only the upper portion of the glands is treated or expressed


Warm Compresses Are Ineffective

- Anterior lid is highly vascular; therefore, difficult for heat application to reach gland contents

- Adequate temperatures cannot be achieved by the use of external warm compresses
Intense Pulsed Light Therapy

- Flash lamp emits energy from 400 – 1300 nm
- Filter narrows the range to around 500 nm
- Hemoglobin absorbs the light energy and eliminates the blood vessels
- Closed vessels no longer send inflammatory mediators to the meibomian glands
- Liquifies “plugged” meibomian gland secretions
Treatment

- 8-12 J/cm at 20-30 milliseconds pulse width
- Treat directly below the lid margin
- Apply sunblock
- Non-steroidal bid 4 days
- 4-6 Treatments within 30 days
Results

- Decrease in telagiectastic vessels
- Increase in TBUT
- Improvement in quality of meibomian secretions
- Decrease in patient symptoms
LipiFlow® safely and effectively treats Meibomian gland obstruction in both upper and lower eyelids simultaneously, in an in-office procedure, taking only 12 minutes per eye.
LipiFlow® Offers a Solution for Patients With MGD

- **In both upper and lower eyelids simultaneously**

- **Lid warmer**
  - Applies directional heat to inner eyelid

- **Activator**
  - Applies intermittent pressure to the outer eyelid

- **Insulated lid warmer shields eye from heat and vaults above the cornea to prevent corneal contact**

- **Inflatable air bladder**

- **Heats comfortably to liquefy the Meibomian gland contents**

- **Facilitates release of secretions from the Meibomian glands**
Therapeutic Goal of Pulsation

Lid warmer
Applies directional heat to inner eyelid

Activator
Applies intermittent pressure to the outer eyelid

Insulated lid warmer shields eye from heat and vaults above the cornea to prevent corneal contact

Heats comfortably to liquefy the Meibomian gland contents

Inflatable air bladder

During the heating phase of the treatment (as opposed to after)

Increase heat transfer efficiency

Alleviate the obstruction

Enable patient to experience little to no discomfort during treatment
LipiFlow® Provides Heat and Pressure to Liquefy and Evacuate Obstructed Glands

**Lid warmer**

Heat is applied to the palpebral surfaces of the upper and lower eyelids directly over the Meibomian glands

**Activator**

Graded pulsatile pressure is delivered to the outer eyelid
Complete Gland Expression

- Obstructed glands should be monitored for gland atrophy
- LipiFlow® offers relief through evacuation of gland contents

The LipiFlow treatment provides improved quality and quantity of gland secretions
Safety

• The globe is insulated/protected from heat during treatment\textsuperscript{1}

• Massaging pressure is not transferred directly onto the eyeball\textsuperscript{1}

• Pressure required is significantly less compared with unheated manual expression\textsuperscript{2}


AcuFocus™ KAMRA Corneal Inlay

Overall diameter: 3.8 mm

- Designed to improve near vision in patients with Presbyopia
  - Easily implanted
  - Minimal impact on distance vision
  - Removable

Central aperture: 1.6 mm
AcuFocus™ KAMRA
How it Works

- The small aperture created by the AcuFocus™ ACI 7000 blocks the unfocused light on the retina

![Diagram of eye and AcuFocus™ ACI 7000](image.png)

- Blocks unfocused light
- Allows focused light into the eye
Inlay Design

1.6 mm Ø

Thickness: 5 µ

Curvature: 7.5 mm radius

8,400 holes (5-11 µ)

3.8 mm overall diameter

Weighs less than a salt crystal
Corneal Health

- Variable Hole Size
- Controlled Hole Density
- Solid Edges

Pseudo-random Pattern
The AcuFocus™ KAMRA Procedure

- Topical anesthetic eye drops
- Flap created
- The AcuFocus™ ACI 7000 is inserted and centered
- The flap is closed
- Takes less than 30 minutes - start to finish
Depth of Focus Simulation

- **f/5.6** simulates human eye ~ 4.0 mm pupil
- **f/22** Simulates the effect of the Inlay ~ 1.6 mm pupil
8th Innovation
Annidis - Multi-spectral Digital Ophthalmoscope
RHA™

Optometrist’s Gateway to the RPE

FDA approved
Health Canada approved
European CE Mark obtained
Conventional vs. Multi-Spectral Fundus Camera Range

Relative Sensitivity

Xenon Flash

Wavelength
Spectral Slicing
PID 79 - Optos Composite
PID 79 – RHA,
PID 79 – OCT, Macular Hole
PID 144 – Fundus Photo
PID 144 – RHA,

AMD
Ninth Innovation

A New Age in Refraction
Surpassing Yester-decade’s’s Refraction Technology

PSF Refractor

Classical Phoropter
Subjectivity is the Key to Reliability

- Vmax PSF refraction reliability is maximized where the optics of the eye, retina and the brain are working together
- Since it is refracting using PSF, higher order aberrations are eliminated as well.
- Patient Vision is thereby, maximized
PSF Refraction is More Sensitive

- Changes in 0.05D are now noticeable
Easier than Snellen Letter Chart
NOW THAT I'VE RET
IRE DI PLAN
TO BECOME AN INVENTOR
MY FIRST IDEAS
AMUTE BUTTON FOR MY WIFE
Vmax PSF Refractor- a Phoropter “Extreme Makeover”

• Increase sensitivity of measurement- 5x
• Easier for Patient, moves quicker to the end point
• Ergonomic, no strains and no aches
• Connectivity to EMR, error-free operation
• Positioning- Differentiate your practice!!
Clinical Test Results

- Eight clinical test sites in the US
- Over 800 patient data points
- Male/female: 49% : 51%
- Age range: 5 to 92
- Tested over 9 months
OS Results of Clinical Trials

- Better
- Equal
- Better and Equal

Bar chart showing:
- 5% contrast: 41% Better, 52% Equal, 3% Better and Equal
- 12% contrast: 32% Better, 64% Equal, 57% Better and Equal
- Snellen: 96% Better, 93% Equal, 92% Better and Equal
OD Results of Clinical Trials

- OD Better
- OD Equal
- Equal and Better

- 5% contrast:
  - OD Better: 34%
  - OD Equal: 25%
  - Equal and Better: 55%

- 12.5% contrast:
  - OD Better: 28%
  - OD Equal: 25%
  - Equal and Better: 72%

- Snellen:
  - OD Better: 97%
  - OD Equal: 63%
  - Equal and Better: 91%
Overall Patient Response

Responses from Patients

- Better: 90%
- Equal: 7%
- Worse: 3%
Encepsion Lenses Options

- Designs: Hard, Intermediate, and Soft
- Corridor: from 11mm to 18mm
- Pantoscopic, Vertex Distance, Seg Height, PD
- Materials: All Standard, 1.60, 1.67, 1.74, Trivex
- Transition, Polarized
- Lens Coating: Premium Only with 2 Yr warranty
  (Reflection Free, AR, Super Hydrophobic, Extra Tough Thermal Cure)
- Sport, Sun
Tenth Innovation

There is an “App” for That
IPad

- [www.ipadfordoctors.com](http://www.ipadfordoctors.com)
- [www.mobilehealthnews.com](http://www.mobilehealthnews.com)
- Fits in a white coat
- Allows point of care display
- Battery last a full clinic day
Current Trends

- 46% of physicians plan on purchasing an iPad in 2012
- 32% of physicians currently use an iPad
- 58% of those with iPads use them in their clinic
Cool Apps

- EyeXM
- Eye Exam Pro
- Islet for Diabetes
- Pollen Count
Questions