

# Brief Overview of the Medical Device Review Program

Ophthalmic Devices Advisory Panel – April 25, 2008

Donna-Bea Tillman, PhD  
Director, Office of Device Evaluation



## CDRH's mission is:

Getting safe and effective devices to market as quickly as possible...



... while ensuring that devices and radiological products currently on the market remain safe and effective.

Helping the public get science-based accurate information about medical devices and radiological products needed to improve health



# Risk-Based Paradigm

The law gives us the flexibility to calibrate our regulatory approach to the level of potential risk posed by new products

**General  
Controls**

**510(k)**

**De Novo**

**PMA**

**HDE**



# Risk-Based Paradigm

## Medical Device Classes:



### Class I

General Controls  
Most exempt from premarket submission



### Class II

Special Controls  
Premarket Notification  
[510(k)]



Class III  
Premarket  
Approval

Require Premarket Application [PMA]

## Additional Classification:



### De Novo

Device "types" that have never been marketed in the U.S., but whose safety profile and technology are now reasonably well understood



### Humanitarian Device Exemption (HDE)

Devices for orphan diseases intended to benefit patients in diagnosis and/or treatment of disease or condition affecting or manifested in fewer than 4,000 patients per year in the United States



# Pre-market Approval (PMA)

- ❖ High risk or “first-of-a-kind” devices
- ❖ Must demonstrate *reasonable assurance* of Safety and Effectiveness
- ❖ Each PMA must “stand on its own”





# Valid Scientific Evidence



- ❖ Well controlled studies
- ❖ Partially controlled studies
- ❖ Objective trials without matched controls
- ❖ Case histories
- ❖ Robust human experience



# Safety



“There is reasonable assurance that a device is safe when it can be determined based on **valid scientific evidence** that the **probable benefits** to health from use of the device for its intended uses and conditions of use, **when accompanied by adequate directions and warnings against unsafe use, outweigh the probable risks.**”

21 CFR 860.7



# Effectiveness



“There is reasonable assurance that a device is effective when it can be determined, based upon **valid scientific evidence**, that in a **significant portion of the target population**, the use of the device for its intended uses and conditions of use, **when accompanied by adequate directions for use and warnings against unsafe use**, will provide **clinically significant results**.”

21 CFR 860.7



# Indications

- ❖ **FDA approves devices for specific patient populations – “Indications for Use”**
- ❖ **This is the patient population for which there is sufficient data to demonstrate a reasonable assurance of safety and effectiveness**
  - o For example, specific myopic range



# Indications

## ❖ However, FDA does NOT regulate “practice of medicine”

*Nothing in this Act shall be construed to limit or interfere with the authority of a health care practitioner to prescribe or administer any legally marketed device to a patient for any condition or disease within a legitimate health care practitioner-patient relationship (FDAMA § 906 (21 USC § 396))*



# Labeling

- ❖ **FDA regulations defining both safety and effectiveness acknowledge the need for appropriate labeling**
  
- ❖ **Physician labeling includes:**
  - o Indications for Use
  - o Contraindications
  - o Warnings and Precautions
  - o Clinical Study Summary
  - o Directions for use



# Informing patients

- ❖ **Ensuring that patients have appropriate information about devices is a critical part of FDA's mission**
  - o Patient labeling
  - o Websites
  - o Consumer outreach programs
  - o Public health notifications



# Patient Labeling

- ❖ **FDA reviews patient labeling to ensure that it provides:**
  - o A complete description of risks and benefits so that patients can make informed choices
  - o Information about what to expect from devices/procedures



# Postmarket Activities

- ❖ **FDA's job is not over once a device is approved**
- ❖ **We continue to monitor device performance**
  - o Post-approval studies (in some cases)
  - o Mandatory adverse event report system (MDR)
  - o Annual reports from manufacturers
  - o Attendance at scientific/clinical meetings
  - o Monitoring the scientific literature

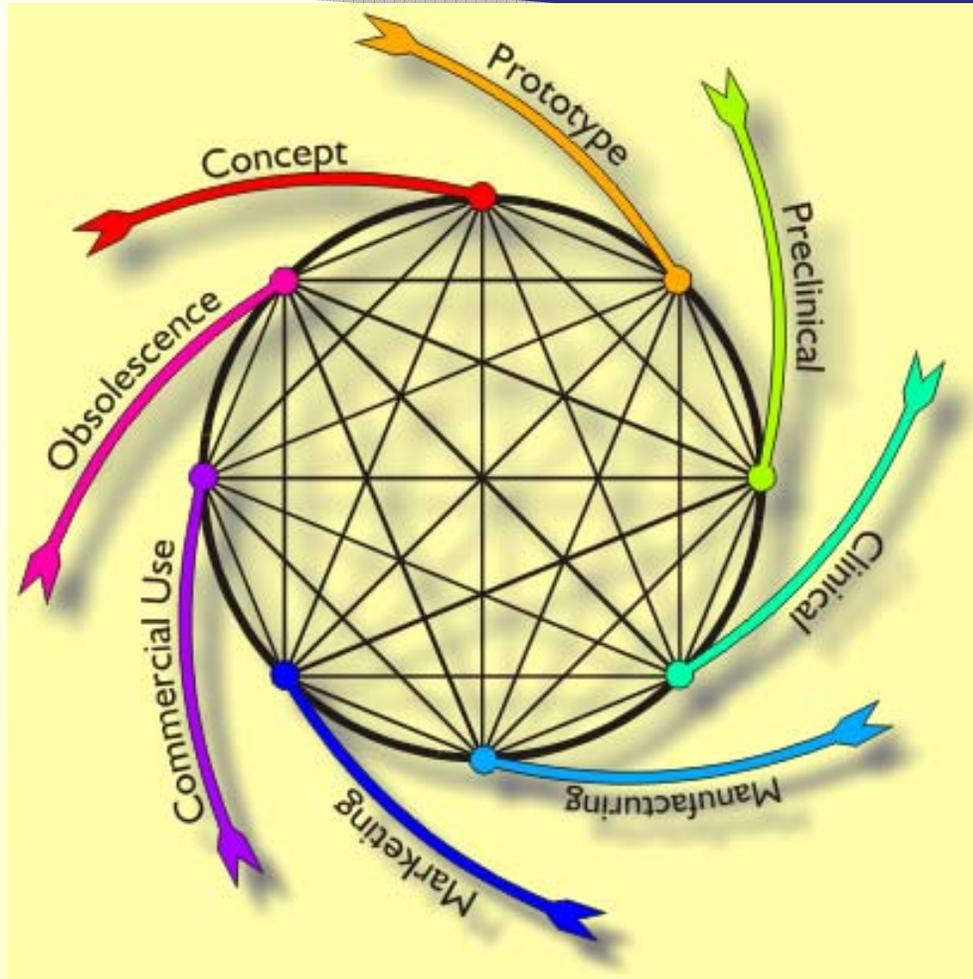


# Postmarket Activities

- ❖ **Information learned in the post-market setting may be used in a number of ways:**
  - o Device modifications
  - o Labeling changes
  - o Directed physician and patient outreach
  - o Inform the premarket review of the next generation of products



# Total Product Lifecycle





# Today's Meeting

- ❖ **FDA is seeking the Committee's input on FDA's efforts to protect public health throughout the total product life cycles of**
  - o phakic intraocular lenses and
  - o lasers for laser-assisted in situ keratomileusis (LASIK)
- ❖ **FDA will also inform the Committee and the public about its recent activities in these areas**

# LASIK Regulatory Background

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Kwame Ulmer, M.S.

Chief, Diagnostic and Surgical Devices Branch  
Division of Ophthalmic and ENT Devices  
Office of Device Evaluation  
Center for Devices & Radiological Health

# Panel Input

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- Patient labeling
- LASIK website
- ANSI Z80.11-2007 Laser Systems for Corneal Reshaping Standard
- SightNet

# Agenda

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- LASIK Regulatory Background - Kwame Ulmer
- ANSI Refractive Laser Standard - Gene Hilmantel
- FDA Postmarket Assessment - Quynh Hoang
- QOL Assessment - Eva Rorer
- Adverse Event Reporting - Bernard Lepri

# Topics

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- LASIK developments
- Data recommendations
- Labeling considerations
- Public education

# LASIK Developments

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- First approval – 1998: Conventional Treatment based on manifest refraction and input by surgeon

# LASIK Developments

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- Wide Beam lasers
- Small Spot scanning lasers
- Eye trackers
- Transition zones from optical zone to cornea surface
- Larger optical zones
- Wavefront-Guided lasers
- Eye torsional (rotational) control
- Iris registration

# Excimer Laser Approvals

<b>Indication</b>	<b>Number of approvals</b>	<b>Highest Refractive Range Approved</b>
<b>Conventional</b> Myopic astigmatism	10	Up to -14 D
<b>Conventional</b> Hyperopic astigmatism	5	Up to +6 D
<b>Wavefront-Guided</b> Myopic astigmatism	4	Up to -11 D
<b>Wavefront-Guided</b> Hyperopic astigmatism	2	Up to +5 D

# Excimer Pre-Clinical Studies

# Excimer Pre-Clinical Studies

## 1. Device Description

Each important component, property and principle of operation of the device and any anticipated changes in the device during the investigation. The description should be detailed enough to permit a thorough understanding of the function of the device. It should also identify all significant risks to subjects attributable to the device.

# Excimer Pre-Clinical Studies

## 2. Laser Output

- Fluence calibration
- Beam homogeneity & profile
- Pulse stability
- Fluence control & fail-safe
- Beam alignment systems
- Cooling method
- Laser cavity
- Wavelength
- Pulse repetition rate
- Pulse width, energy, spatial dimensions, beam divergence

# Excimer Pre-Clinical Studies

## 3. Device Specific Information

- Electrical Safety
- Critical Engineering Aspects
  - » Ablation patterns & how produced
  - » Beam calibration methodology
  - » Hazards Analysis and Failure Modes
- Subsystems
  - » Optical system & beam path
  - » Aiming system and corneal alignment
  - » Online monitoring of fluence

# Excimer Pre-Clinical Studies

## 3. Device Specific Information (*cont'*)

- Subsystems (*cont'*)
  - » Optical components: lenses, mirrors
    - Material
    - Coatings
    - Threshold for damage
    - Optical performance
  - » Mechanics of beam modulation (scanning, masking, etc.)
  - » Beam characteristics at the treatment plane
  - » Feedback control systems
  - » Corneal alignment accuracy

# Excimer Pre-Clinical Studies

## 3. Device Specific Information (*cont'*)

- Subsystems (*cont'*)
  - » Mechanical systems
    - Patient alignment & centration
    - Gas handling
    - Manual control systems
    - Beam configuration control
  - » Software system
    - Description & flowchart
    - Narrative about function
    - Certification
    - Validation

# Excimer Pre-Clinical Studies

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## 4. Additional Systems Information

- Features/software/firmware locked-out
- Separation distance from electrical medical devices
- Maintenance Procedures
- Conformance to Good Manufacturing Processes and Quality Systems

# Labeling

# Labeling Considerations

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## Physician Labeling

- Device description
- Indications
- Contraindications, Warnings & Precautions
- Clinical results
- Surgical procedure

# Labeling Considerations

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## Patient Labeling

- Eye Function
- Device function
- Benefits
- Risks
- What to expect
- Questions to ask your Doctor
- Questionnaire

# Labeling

## Contraindications

LASIK is contraindicated in:

- pregnant or nursing women.
- patients with collagen vascular, autoimmune or immunodeficiency diseases.
- patients with signs of keratoconus
- patients who are taking one or both of the following medications: isotretinoin (Accutane®) or amiodarone hydrochloride (Cordarone®).

# Labeling

## Warnings

LASIK is not recommended in patients who have:

- Diabetes
- a history of herpes simplex or herpes zoster keratitis
- significant dry eye that is unresponsive to treatment
- severe allergies

# Labeling

## Precautions

It is unknown whether LASIK is safe and effective for the following conditions. You should discuss these conditions with your doctor.

- Unstable eyes that have changed in their visual acuity more than 0.5 diopters in nearsightedness or astigmatism in the last 12 months
- Corneal disease or abnormality (e.g., scar, infection, etc.)
- History of injury or surgery to the center of the cornea

# Labeling

## Precautions (cont')

- Corneas are too thin
- History of glaucoma
- Take medicines that might make it harder for wounds to heal, such as sumatriptan succinate (Imitrex) used for migraine headaches
- Younger than **XX** years of age or over 65 years of age
- Nearsightedness is worse than **XX** Diopters or astigmatism is worse than **XX** Diopters
- Over the long term
- For retreatment with this laser for LASIK
- Undiagnosed dry eyes. Your doctor should also evaluate you for dry eyes before surgery

# Labeling

## Precautions (cont')

- Large pupils. Before surgery, your doctor should measure your pupil size under dim lighting conditions. If your pupils in dim light are  $\geq$  XX mm, consult with your doctor about the risk that the surgery may cause negative effects on your vision, such as glare, halos, and night driving difficulty
- Dim lighting, rain, snow, fog, or bright glare. You might have difficulty seeing in dim lighting, rain, snow, fog, or bright glare
- Any other medications you are taking
- Additional information regarding LASIK may be found on the FDA website at:

<http://www.fda.gov/cdrh/LASIK/risks.htm>

# Panel Question

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- Please discuss any recommendations you may have for modifications to patient labeling of excimer lasers for LASIK.

# FDA LASIK Website

- Question-based
- Launch: October 2000
- Average 650,000 page visits per year
- LASIK related inquiries were #1 search terms for FDA websites in February, 2008
- Frequent updates

# “LASIK Surgery Checklist”

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- Know what makes you a poor candidate
- Know all the risks and procedure limitations
- Know how to find the right doctor
- Know preoperative, operative, and postoperative expectations

# “When is LASIK not for me?”

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- You are not a risk taker
- It will jeopardize your career
- Cost is an issue
- You required a change in your contact lens or glasses prescription in the past year
- Precautions

# “When is LASIK not for me?”

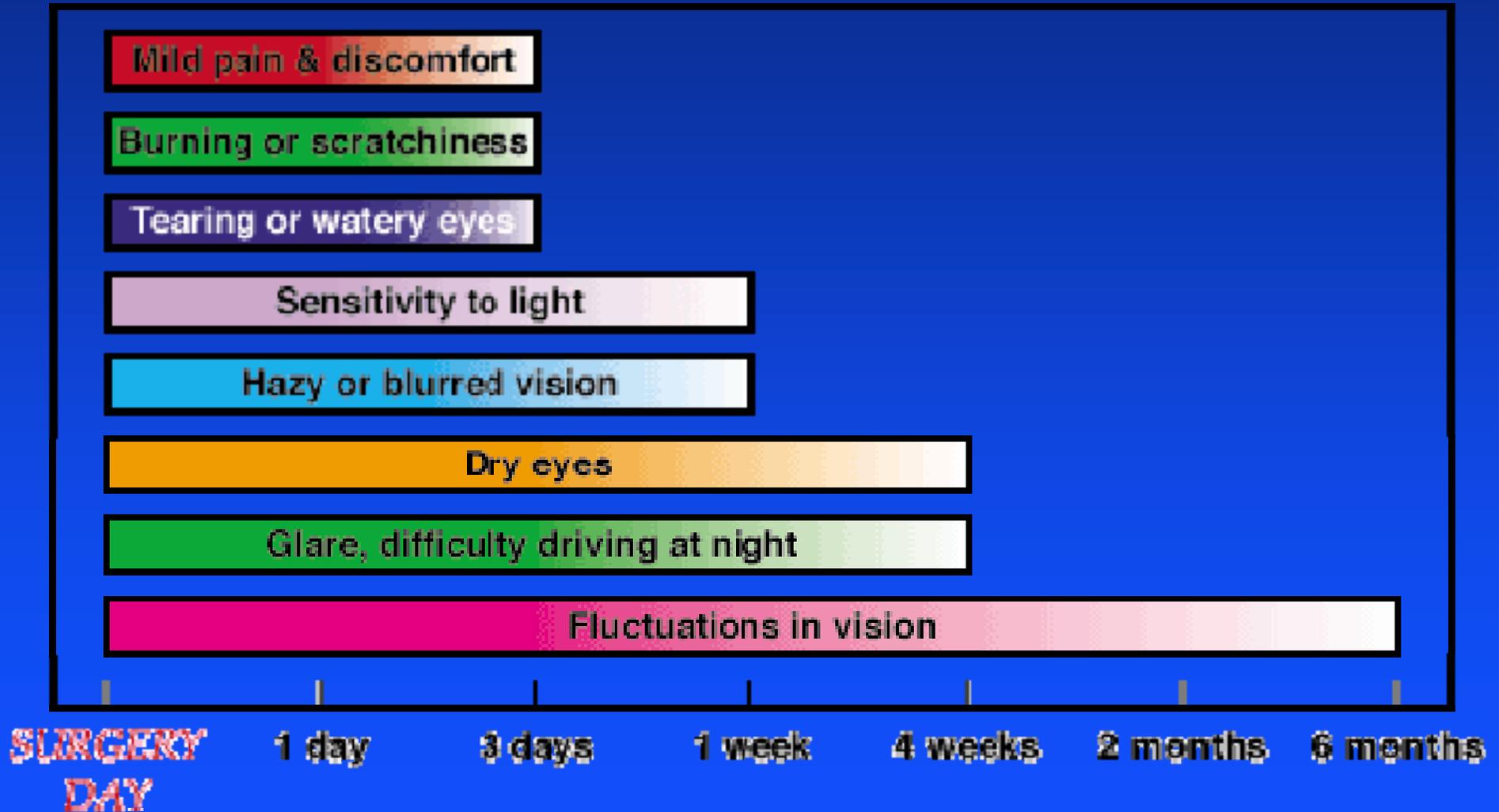
- Patients who are:
  - » In their early 20s or younger
  - » Whose hormones are fluctuating due to disease such as diabetes
  - » Who are pregnant or breastfeeding, or
  - » Who are taking medications that may cause fluctuations in vision
  - » You have a disease or are on medications that may affect wound healing
  - » You actively participate in contact sports
  - » You are not an adult

# “Other Risk Factors”

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- Blepharitis
- Large pupils
- Thin Corneas
- Previous refractive surgery  
(e.g., RK, PRK, LASIK)
- Dry Eyes

# “What to Expect?”



# “What are the Risks?”

- Some patients lose vision
- Some patients develop debilitating visual symptoms
- You may be under treated or over treated.
- Some patients may develop severe dry eye syndrome
- Results are generally not as good in patients with very large refractive errors of any type
- For some farsighted patients, results may diminish with age
- Long-term data are not available

# “How can I find the right doctor for me?”

If you are considering refractive surgery, make sure you:

- Compare
- Don't base your decision simply on cost
- Be wary of eye centers that advertise, "20/20 vision or your money back" or "package deals"
- Read
- Even the best screened patients under the care of most skilled surgeons can experience serious complications

# “How can I find the right doctor for me?” (cont’)

- During surgery
- After surgery
- Under the care of an experienced doctor, carefully screened candidates with reasonable expectations and a clear understanding of the risks and alternatives are likely to be happy with the results of their refractive procedure
- Advertising  
Be cautious about "slick" advertising and /or deals that sound "too good to be true"

# Panel Question

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- Please discuss any recommendations you may have for modifications to FDA's LASIK website.

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Next Speaker: Gene Hilmantel, O.D., M.S.

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# REFRACTIVE LASERS AND OPHTHALMIC STANDARDS

Gene Hilmantel, O.D., M.S.  
Clinical Reviewer  
FDA/CDRH/ODE/DOED

# Categories of Standards

- Horizontal - addresses basic principles applicable to many devices across many product lines
  - » e.g. ISO 10993 - Biological evaluations of medical devices, ISO 14155 - Clinical investigation of medical devices for human subjects
- Vertical - specific to one kind of device
  - » e.g. ANSI Phakic IOLs, ANSI Laser Systems for Corneal Reshaping

# Types of information included in Standards

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- Terminology
- Test methods and acceptable levels of performance
- Examples of clinical protocols

# Standards Organizations

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For Ophthalmic Vertical Standards:

- ANSI – American National Standards Institute
- ISO – International Organization for Standardization

# American National Standards Institute (ANSI)

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- The American National Standards Institute (ANSI) is a private, non-profit organization that administers and coordinates the U.S. voluntary standardization and conformity assessment system

# ANSI

The hallmarks of the American National Standards process include:

- consensus on a proposed standard by a group or “consensus body” that includes representatives from materially affected and interested parties
- broad-based public review and comment on draft standards

# ANSI

- consideration of and response to comments submitted by voting members of the relevant consensus body and by public review commenters
- incorporation of approved changes into a draft standard; and
- right to appeal by any participant that believes that due process principles were not sufficiently respected during the standards development in accordance with the ANSI-accredited procedures of the standards developer

# International Organization for Standardization (ISO)

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- Participation by country
- ANSI is the sole U.S. representative to ISO
- Only official US delegates chosen by ANSI participate in the development of ISO standards

# Utility of Standards

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- Use of Standards:
  - » Helps assure consistency & predictability
  - » Can reduce data reporting requirements in the application
  - » Results in decreased review time

# FDA Modernization Act (FDAMA)

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- 1997 law
- FDA may recognize voluntary consensus standards
- FDA must publish a list of “Recognized Standards”

# Recognized Standard

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- A consensus standard that FDA has evaluated and recognized for use in satisfying a premarket submission requirement or other requirements under the FD&C Act
- FDA can recognize a consensus standard fully, in part, or not at all

# Recognized Ophthalmic Standards

- FDA currently recognizes 30 ophthalmic standards
- FDA Recognized Consensus Standards Database

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfStandards/search.cfm>

# ANSI Z80.11-2007

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## American National Standard for Ophthalmics – Laser Systems for Corneal Reshaping

- Published in 2007
- Currently in the FDA recognition process

# Pre-Clinical Section of the Standard

LASER Safety Requirements for:

- Protection against contaminants
- Protection against toxins and allergens
- Photobiological hazards
- Thermal hazards
- Mechanical hazards
- Electrical safety
- Radiation safety
- Light hazards
- Gas safety (for gas lasers)
- Safety in use

# Clinical Section of the Standard

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- Outlines a consensus of an adequate clinical study for new refractive lasers
- Patient enrollment to occur in stages for a new laser system for which there is no prior clinical data
- 300 eyes study to detect adverse events with an expected rate of 1% or greater

# Refractive Stability

- 95% of eyes changing  $\leq 1D$  between visits
- Mean refraction changing at a rate of  $\leq 0.50 D$  per year
- Rate of refractive change is decreasing over time
- Refractive change not statistically different from zero
- Stability confirmed at a visit at least 3 months after the point of stability

# Effectiveness Analyses

## PREDICTABILITY (accuracy of correction)

Percentage of eyes:

- that achieve accuracy of the Manifest Refraction Spherical Equivalent within
  - »  $\pm 0.50$  D
  - »  $\pm 1.00$  D
  - »  $\pm 2.00$  D
- that are over-corrected by
  - »  $> 1.00$  D
  - »  $> 2.00$  D
- that are under-corrected by
  - »  $> 1.00$  D
  - »  $> 2.00$  D
- that achieve accuracy of Sphere (to Target) and Cylinder (to zero) components within:
  - »  $\pm 0.50$  D
  - »  $\pm 1.00$  D

## Effectiveness (continued)

### UNCORRECTED VISUAL ACUITY (UCVA)

Percentage of eyes:

- that achieve UCVA of
  - » 20/40 or better
  - » 20/20 or better
- that achieve an UCVA equal to or better than the preoperative Best Spectacle Corrected Visual Acuity (BSCVA)

# Safety Analyses

- Percentage of eyes that lose 2 lines or more of BSCVA
- Percentage of eyes with BSCVA worse than 20/40 (for eyes with BSCVA of 20/20 or better pre-op)
- Percentage of eyes that have an increase in refractive astigmatism of  $> 2.00$  D
- Rates of adverse events

# Subject Questionnaire

- A subject questionnaire should be administered to all subjects
- Validated questionnaires are recommended
- Should include questions regarding:
  - » glare
  - » halos
  - » double vision
  - » spectacle/contact lens use, and
  - » night driving
- The scaling system for subjective ratings should be specified

# Subject Questionnaire (continued)

- Subjective ratings should be utilized to:
  - » assess incidence of clinically significant symptoms and
  - » postoperative change in symptoms from preoperative status
- Postoperative subject's satisfaction with surgery and postoperative frequency of use of a distance correction (e.g., spectacles) should be incorporated into the questionnaires

# Contrast Sensitivity

- A contrast sensitivity sub-study should be performed:
  - (1) when features of the laser beam raise concerns about vision losses
  - (2) for justification of reductions in precautionary labeling concerning vision under poor lighting

# Summary

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- The ANSI Standard for Laser Systems for Corneal Reshaping has created a basic structure for pre-clinical and clinical studies to establish reasonable safety and effectiveness before marketing of the laser
- It includes comprehensive evaluations of a number of important effectiveness and safety parameters, including ratings of subjective symptoms

# Panel Question

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- FDA is currently evaluating the ANSI Z80.11 Laser Systems for Corneal Reshaping Standard for recognition. Please discuss whether you recommend that the FDA recognize the standard in its entirety, in part, or with specific additions.

Next Speaker: Quynh Hoang

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# **FDA 2006 LASIK POSTMARKET ASSESSMENT**

Quynh Hoang, M.S.  
Issues Management Staff  
Office of Surveillance and Biometrics

# FDA 2006 LASIK Postmarket Assessment

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## Overview of Presentation

1. Reasons for the assessment
2. Steps taken
3. Conclusions
4. Recommendation

# FDA 2006 LASIK Postmarket Assessment

## 1. Reasons for the assessment:

- Complaints from patients
- About 700,000 LASIK procedures annually in U.S.
- Potential significant impact on Public Health

# FDA 2006 LASIK Postmarket Assessment

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## 2. Steps Taken:

Convened an Action Team

Compared postmarket to  
premarket LASIK data

# FDA 2006 LASIK Postmarket Assessment

## Steps Taken: Comparison Parameters

- Identified questionnaires in each approved PMA for LASIK device
- Compared questionnaires
- Identified Patient Reported Outcomes (PROs) in most clinical studies

# FDA 2006 LASIK Postmarket Assessment

## Steps Taken: Comparison

Literature Search Criteria	No. of articles
“Keratomileusis, Laser In Situ“ OR “lasik“ OR “laser keratomileusis“, from 1995 to 2006	2467
Patient Satisfaction and Quality of Life Terminology from 1995 to 2006	551868
Criteria in line 1 AND criteria in line 2	130
From abstracts, limit to those studying patient satisfaction or quality of life	15

# FDA 2006 LASIK Postmarket Assessment

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## 3. Conclusions:

- Unable to compare postmarket published studies to premarket studies

# FDA 2006 LASIK Postmarket Assessment

## Conclusions (cont'):

- Postmarket and premarket satisfaction surveys showed a high level of satisfaction
- Postmarket data in literature failed to suggest widespread problems

# FDA 2006 LASIK Postmarket Assessment

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## Conclusions (cont'):

- These surveys do not adequately evaluate the effects of rare, severe events

# FDA 2006 LASIK Postmarket Assessment

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## 4. Recommendation:

Further evaluation of post-LASIK QOL in  
a clinical setting

Next Speaker: Eva Rorer, M.D.

# LASIK Quality of Life Assessment

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Eva Rorer, M.D.

Chief Ophthalmic Medical Officer  
Division of Ophthalmic & Ear, Nose & Throat Devices  
Office of Device Evaluation  
Center of Devices and Radiological Health

# Overview

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- Definitions:
  - » Patient-Reported Outcome Measure (PRO)
  - » Quality of Life (QOL)
- Current Use of PROs in Device Evaluation
- QOL Assessment

# Definitions

- Patient-Reported Outcome Measure (PRO):

A PRO is a measurement of any aspect of a patient's health status that comes directly from the patient (i.e., without the interpretation of the patient's responses by a physician or anyone else).

PROs add an important dimension to the overall patient evaluation

- » Procedure may be a clinical "success", yet patient may be unhappy.
- » Procedure may not be a clinical "success", yet patient may be happy.

# Definitions

- Patient-Reported Outcome Measure (PRO):

In clinical trials, a PRO instrument can be used to measure the impact of an intervention on one or more aspects (“concepts”) of patients’ health status, ranging from the purely symptomatic (response of a headache) to more complex concepts (e.g., ability to carry out activities of daily living), to extremely complex concepts such as *quality of life*.

# Definitions

- Quality of Life (QOL):

is “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad-ranging concept affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment.”

World Health Organization Quality of Life Group. Study protocol for the World Health Organization project to develop a quality of life assessment instrument (WHOQOL). *Qual Life Res* 2:153-159, 1993.

# Definitions

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- Health-Related Quality of Life (HR-QOL):

A multidomain concept that represents the patient's overall perception of the impact of a health condition and its treatment.

# HR-QOL Questionnaire

- Symptoms: unpleasant or troubling sensations that could be experienced by an individual
- Functioning: ability to carry out activities in daily life (physical, social)
- Perceptions: how individual perceives her or his health status (satisfaction or concern)

# Definitions

- Instrument:

refers to the actual questions or items contained in a questionnaire or interview schedule along with all the additional information and documentation that supports the use of these items in producing a PRO measure (e.g., interviewer training and instructions, scoring and interpretation manual).

# PROs

- Measurement must be standardized
- Ability of questions to make meaningful measurements must be evaluated
- Use of existing instruments desirable for comparability among studies
- As with any medical or research instrument, formal evaluation should be done to assess a questionnaire's ability to measure what it is intended to measure

# Assessing the quality of a questionnaire

A “validated” questionnaire:

- Has had its performance formally evaluated
- It should have a published description of:
  - » Its development (where items came from, population in which it was tested)
  - » Description of analyses and results pertaining to reliability and validity

# Validity

- **Content Validity** refers to whether you've measured all aspects of the thing you're trying to measure.
- **Criterion Validity** refers to how well your questionnaire measure agrees with some existing gold standard measurement.
- **Construct Validity** refers to whether your measurements are behaving in logical ways.

# Reliability

- Different questions asking about the same area (e.g., problems with glare) should yield similar responses (internal-consistency reliability)
- A question asked of the same person more than once in a short time period should yield similar responses (test-retest reliability)

# Developing a quality-of-life instrument

## General Approach

- Formulate a model for factors to be measured and how they may be related
- Develop questions using focus groups, expert opinion, existing questionnaires
- Pilot-test early version of the questionnaire, analyze, and revise
- Administer revised questionnaire to a second group of individuals
- Re-assess validity and reliability

# Validation in further studies

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Generalizability:

Because the characteristics of the population under study may influence different aspects of validity, it is important to use a questionnaire in additional studies of different populations to assess its utility

# Validated Questionnaires

- Questionnaire validation is a complex, lengthy, and expensive process
- Few validated ophthalmic HR-QOL questionnaires
- First LASIK approval was in 1998
- First validated refractive questionnaire published in 2000
- Only LASIK clinical studies initiated after 2000 would have had the opportunity to use a validated HR-QOL questionnaire

# Current Use of PROs in Device Evaluation

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- PROs are assessed during device clinical trials.
- In general, PROs are not currently used as primary endpoints in clinical trials to support marketing of ophthalmic devices (may be used as primary endpoints for post-market studies).
- Considered during review of marketing applications and when making recommendations regarding approval/clearance.
- PRO data are incorporated into the labeling.

# HR-QOL Assessment

- Based upon recommendations of the PMI Action Team, FDA considered a large, national, prospective study to more fully evaluate LASIK outcomes.
- Solicited the cooperation of NEI, the American Society of Cataract and Refractive Surgeons (ASCRS), and American Academy of Ophthalmology (AAO) forming the joint LASIK Study Task Force.
- Committed resources toward a multicenter clinical trial to investigate HR-QOL after LASIK.

# HR-QOL Assessment

- Objectives:
  - » Level of satisfaction after LASIK
  - » Changes in HR-QOL after LASIK
  - » Factors associated with the level of satisfaction after LASIK
- Protocol has not been finalized for the prospective, multicenter, clinical trial
- Assessing appropriate instrument for patients to report their HR-QOL after LASIK

# HR-QOL Instrument

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- Validated instrument
- Ease of use to promote utilization:
  - » During premarket and postmarket trials
  - » In clinical practice

# HR-QOL Assessment

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- FDA has an integral role in the design and execution of this study
- Study will be executed in accordance with the rules governing FDA and NEI clinical trials
- Consumer representation will be included
- FDA will objectively evaluate the information collected

# FDA/NEI Collaborative Study

- To decrease the resources (time, \$) associated with administration of HR-QOL instruments in order to facilitate their use in device trials, FDA initiated a collaborative study with NEI.
- Validate computer administration of ophthalmic HR-QOL instruments.
- Add to the body of knowledge in the field of PROs, and will be the first to compare the computerized, web-based and paper-based versions of previously validated questionnaires used to assess ophthalmic HR-QOL.

# HR-QOL Assessment

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- Outcomes of all studies will be made public
- Could lead to:
  - » Modification of FDA's LASIK website
  - » Revised patient and physician labeling
  - » Educational outreach

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Next Speaker: Bernard Lepri, O.D.

# Adverse Event Reporting in CDRH

Bernard P. Lepri, OD, MS, MEd

CDRH/ODE/DOED

April 25, 2008

# MedWatch

- FDA's safety information and adverse event reporting program
- monitors medical product experience after FDA approval or clearance
  - » medical products (drugs, biologics, and medical devices)
- adverse event reports from manufacturers, user facilities, health professionals, and patients/consumers

# Types of Medical Device Reporting

- Mandatory Reporting to FDA:
  - » *Medical device manufacturers:* adverse events such as deaths and serious injuries, and some malfunctions
  - » *User Facility:* (hospitals; ambulatory surgical centers; nursing homes; outpatient treatment centers; outpatient diagnostic centers; emergency services; and home health care services): deaths to FDA and manufacturer and serious injuries to manufacturer
- Voluntary Reporting to FDA:
  - » Reporting of any medical device adverse event by health care professionals and consumers

# MedSun

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- A *subset* of the mandatory User Facility reporting universe of MedWatch; since 2002
- 350 health care facilities nationwide (mostly hospitals) who voluntarily agree to fulfill their mandatory reporting requirements through this Network
- An interactive two-way collaboration between FDA and the MedSun participants

# MedSun

- A Network of highly trained reporters to recognize and report medical device problems comprised of individuals from Risk Management, Patient Safety, Quality Improvement, Biomedical/Clinical Engineering, Physicians and Nurses, Materials Management, and Surgical Services
- Has several subnetworks

# MedSun's Design

- Identify, understand, and solve problems via an Internet-based reporting system
- Voluntary and mandatory reports to FDA – close-calls, potential for harm, poor device interface design, as well as what is required by user facilities under mandatory reporting
- Provides regular feedback via newsletters, conferences, and Webcasts
- Provides alerts on major actions regarding recalls, changes to instructions
- Disseminates safety tips, educational programs

# SightNet

- MedSun's newest subnetwork as of 2007
- Provides a 'real-world' view of Ophthalmic medical device use in a variety of clinical settings.
  - » Hospitals
  - » Ambulatory Surgical Centers
  - » VA
  - » NEI
  - » Private Practices

# SightNet Goals

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- Improving the recognition, reporting, and understanding of ophthalmic device-related adverse events
- Developing a clinical community to amplify signals of actual or potential medical device problems thereby facilitating timely interventions to mitigate risk

# Benefits of Participating in SightNet

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- Collaboration with FDA, and under anonymity, with other facilities to clarify and understand potential patient safety issues
- Receives reports and lessons learned from other facilities in the network

# Basic Expectations of Participation

- Designate at least 1 Reporter from each member site
  - » technicians, nurses, ophthalmologists, optometrists, risk managers, patient safety directors, quality improvement staff, biomedical/clinical engineering staff
- Agree to *actively* participate for 12 months

# How Reports Are Submitted

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- Online
- Phone
- Fax
- Mail

# Types of Medical Device Problems to Report

- Instructions/labeling
- Packaging
- Manufacturing defects
- Software problems
- Failure to work as intended/malfunction
- Interactions with other devices
- Problems encountered with off-label use
- Human factors issues

# SightNet-Specific Information

- Time elapsed since implantation of the device?
- O.D. (right eye), O.S. (left eye), OU (both eyes)?
- Pre-existing ocular conditions?
- Baseline, post-treatment; post adverse event best corrected visual acuity (BCVA)?
- Intraocular pressure (IOP): baseline, post-treatment, post-adverse event?

# Refractive Lasers / LASIK

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- Infectious Keratitis
- Endemic Cases of DLK
- Abnormal trends in postop topography
- Significant losses of BCVA
- Glare, halos, starbursts, distortions

# Data Security

- All electronic data are stored in a secure location behind the FDA's firewall, on a dedicated server, which can only be reached in very carefully controlled ways
- Transmission of MedSun reports over the Internet is encrypted so that it is secure
- Only FDA and SSS staff with government security clearances have access to the MedSun electronic database
- Printed versions used for the initial review process are kept for only a limited period of time

# Safety Links

- Patient Safety News [www.fda.gov/psn](http://www.fda.gov/psn)
- MedSun [www.fda.gov/cdrh/medsun](http://www.fda.gov/cdrh/medsun)
- Public Health Notifications  
[www.fda.gov/cdrh/safety.html](http://www.fda.gov/cdrh/safety.html)
- One Pagers - New Device Approvals  
[www.accessdata.fda.gov/scripts/cdrh/cfdocs/cftopic/mda/mda-list.cfm?list+1](http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cftopic/mda/mda-list.cfm?list+1)
- Websites:
  - Contact lenses [www.fda.gov/cdrh/contactlenses/](http://www.fda.gov/cdrh/contactlenses/)
  - LASIK - [www.fda.gov/cdrh/lasik/](http://www.fda.gov/cdrh/lasik/)
  - Phakic IOLs - [www.fda.gov/cdrh/phakic/](http://www.fda.gov/cdrh/phakic/)

# Contact Info for SightNet

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# Panel Question

The training packet for SightNet participants currently emphasizes evaluation for and reporting of the following LASIK-related adverse events and complications:

- Infectious keratitis
- Endemic cases of diffuse lamellar keratitis (DLK)
- Abnormal trends in postoperative topography
- Significant losses of best corrected visual acuity (BCVA)
- Glare, halos, starbursts, distortions
- Device failures

Please discuss any recommendations you may have for revision of this list of adverse events and complications for which reporting is emphasized

# Invited Speaker Presentation

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# Panel Questions

# Panel Question #1

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Please discuss any recommendations you may have for modifications to patient labeling of excimer lasers for LASIK

## Panel Question #2

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Please discuss any recommendations you may have for modifications to FDA's LASIK website.

## Panel Question # 3

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FDA is currently evaluating the ANSI Z80.11 Laser Systems for Corneal Reshaping Standard for recognition. Please discuss whether you recommend that the FDA recognize the standard in its entirety, in part, or with specific additions.

## Panel Question #4

The training packet for SightNet participants currently emphasizes evaluation for and reporting of the following LASIK-related adverse events and complications:

- Infectious keratitis
- Endemic cases of diffuse lamellar keratitis (DLK)
- Abnormal trends in postoperative topography
- Significant losses of best corrected visual acuity (BCVA)
- Glare, halos, starbursts, distortions
- Device failures.

Please discuss any recommendations you may have for revision of this list of adverse events and complications for which reporting is emphasized.