### Was it Successful?

# Risk Adjustment for Glaucoma Surgery

Never tell Steve Mansberger you're thinking about doing a study

G.A. Cioffi, M.D.

Harkness Eye Institute
Columbia University
New York, New York



#### **Editorial**

#### Choosing Wisely: Five Ideas that Physicians and Patients Can Discuss

David W. Parke II, MD - San Francisco, California Anne L. Coleman, MD, PhD - Los Angeles, California William L. Rich, III, MD - Washington, D.C. Flora Lum, MD - San Francisco, California

- Ophthalmology 120(3), March 2013
- 5 Ideas
  - Don't routinely perform preoperative medical tests
  - Don't routinely order imaging tests w/out S&S disease
  - Don't order antibiotics for adenoviral conjunctivitis
  - Don't routinely use antibiotics before/after intravit injecs
  - Don't place punctal plugs for mild dry eye before lube
- Why are we being asked to consider these?



#### **Editorial**

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- Why are we being asked to consider these?
  - Good scientific data supports these clinical directives
  - Large Populations have been examined
  - Risk/Benefit ratios have been established
  - Common sense has been applied
  - We can save money without sacrificing patient care

 Can we make similar statements about the glaucoma filtration surgery?



### **Aphorism**

 A pithy, scientifically-based observation that contains a general truth and is typically by an ancient classical author

### Monitoring your success (and failures)

- "Count something"
  - (Atul Gwande)
- "What you measure improves."
  - (Donald Rumsfeld paraphrasing Peter Drucker)
- "If you can't measure it, you can't manage it."
  - (Peter Drucker)



### **Devers Trabeculectomy Series**

- Retrospective Study
- 194 of 230 Consecutive Trabeculectomies (Early 1990's)
  - Exclusions for less than 3 months follow-up
  - Exclusions for combined surgery
- Followup 3 months to 8 years (Avg 61 months)
- Two Surgeons (GAC & EMVB)
- All Diagnoses
- Surgical Description:
  - Limbus based conjunctival flap
  - +/- Antimetabolite
  - Horizontal mattress running closure



### 194 Trabeculectomies

- Antimetabolite
  - 15% Nothing
  - 25% MMC
  - 60% 5-FU
- 50% Previous Surgery
- 25% Prev Failed Trab
- 59% POAG
- 40% Pseudophakic
- 30% 2<sup>nd</sup> Glaucoma

		_
POAG	115 (59%)	
Angle Closure	24 (12%)	
Inflammatory	9 (5%)	
Uveitis	7 (4%)	
Pigmentary	5 (3%)	
<b>Elevated EVP</b>	5 (3%)	
<b>Fuch's Iridocyclitis</b>	4 (2%)	
Congenital	4 (2%)	
Traumatic	4 (2%)	
Pseudoexfoliation	4 (3%)	
Neovascular	3 (2%)	
ICE	2 (1%)	
Low Tension	2 (1%)	
Pseudophakic	2 (1%)	
Juvenile	1 (1%)	
Aniridia	1 (1%)	



### **Devers Trabeculectomy Results**

- K-M Life Table Analysis
- IOP ≤ 18 mmHg
- 93% at 1 year
- 92% at 2 years
- 89% at 3 years
- Failures
  - Tend to be Early
  - 2<sup>nd</sup>ary Event



# This table and these results prompted the discussion with Steve and others

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	- Corre	T T



### **Topics**

- Answering Steve's question:
  - Was it Successful? Risk Adjustment for Glaucoma Surgery
  - No, because we haven't started it yet

### Topics

- Cataract Surgery Risk Adjustment
  - Literature Review
  - Harkness Eye Institute Project
- Glaucoma Surgery Risk Adjustment
- Data Registries (AAO/AGS Initiatives)

Climate Change
Changes in health care, neuro-ophthalmology, glaucoma, cornea and uveitis

#### **Afternoon session** Jim Rosenbaum, M.D., Moderator

1–1:25 p.m. Was it Successful? Risk Adjustment for Glaucoma Surgery
George (Jack) Cioffi, M.D.

### Literature Review on Cataract Surgical Complications

- Prevalence and predictors of ocular complications associated with cataract surgery in US veterans
  - Greenberg PB, Tseng VL, Wen-Chih Wu, Liu J, Jiang L, Chen CK, Scott IU, Friedmann PD
- Risk factors for intraoperative complications in resident-performed phacoemulsification surgery
  - Rutar T, Porco TC, Naseri A
- Risk factors for vitreous complications in resident performed phacoemulsification surgery
  - Blomquist PH, Morales ME, Tong L, Ahn C
- Complication rate and risk factors for intraoperative complications in resident performed phacoemulsification surgery
  - Briszi A, Prahs P, Hillenkamp J, Helbig H, Herrmann W
- Capsule complication during cataract surgery: Case-control study of preoperative and intraoperative risk factors
  - Artzen D, Lundstrom M, Behnidig A, Stenevi U, Lydahl E, Montan P
- The cataract national dataset electronic multicentre audit of 55,567 operations, risk stratification for posterior capsule rupture and vitreous loss
  - Narendran N, Jaycock P, Johnston RL, Taylor H, Adams M, Tole DM, Asaria RH, Galloway P,
     Sparrow JM
- Decreasing rate of capsule complications in cataract surgery
  - Lundstrom M, Behndig A, Kugelberg M, Montan P, Stenevi U, Thorburn W
- Other studies (less important; no odds ratio or relative risk)



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### Prevalence and predictors of ocular complications associated with cataract surgery in US veterans

Greenberg PB, Tseng VL, Wen-Chih Wu, Liu J, Jiang L, Chen CK, Scott IU, Friedmann PD

- 45,082 Veterans, Retrospective
- Based on codes for outpatient surgery over a 2 year period
- DM (40.6%), COPD (21.2%), AMD (14.4%), diabetes w/ disease (14%)
- age, gender, race, marital status, zip code, preoperative ocular and systemic disease

#### Odds Ratios

 black race (OR 1.38), divorced (OR 1.10), never married (OR 1.26), diabetes with ocular manifestations (OR 1.33), traumatic cataract (OR 1.80), previous ocular surgery (OR 1.29), age >60......

#### Most common ocular complications

- posterior capsular tear, anterior vitrectomy, or both during surgery (3.5%)
- posterior capsular opacification after surgery (4.2%)
- Also, those with intraop PCT, vitreous loss or both were at greater risk for postop complications

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# The cataract national dataset electronic multicentre audit of 55,567 operations, risk stratification for posterior capsule rupture and vitreous loss

Narendran N, Jaycock P, Johnston RL, Taylor H, Adams M, Tole DM, Asaria RH, Galloway P, Sparrow JM

- 55,567 consecutive patient, Prospective, Cross-Sectional
- Cataract national dataset from 11/2001-7/2006
- Age, gender, presence of glaucoma, diabetic retinopathy, brunescent/white cataract, no fundal view/vitreous opacities, pseudoexfoliation/ phacodonesis, reducing pupil size, axial length >26mm, use of alpha blockers, inability to lie flat, surgeon grade, corneal pathology, amblyopia, AMD, previous retinal detachment surgery or previous vitrectomy, high myopia
- rate of post capsule rupture, vitreous loss or both was 1.92%
- Eye 2009 Jan;23(1):31-7



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Narendran N, Jaycock P, Johnston RL, Taylor H, Adams M, Tole DM, Asaria RH, Galloway P, Sparrow JM

Odds Ratios and Complications

Very Powerful Data Set **Prospective Data Collection** Data Elements Identified in Advance Many additional studies -Anesthesia Risks -Phaco vs. ECCE -Hemorrhage with anticoagulation -Institutional Comparisons -Number of cases needed to maintain competence Quality Metrics going forward Perhaps a good use for EHRs?

Columbia University
Medical Center

for

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## Cataract Surgery Risk Adjustment Harkness Eye Institute Project

Columbia University Human Subjects Study Description Data Sheet

Protocol: IRB-AAAK4504(Y1M01)

Modification

Originating Department: OPH Ophthalmology (753000X)

Submitting To: Medical Center

Title: Case Mix Adjusted Study of Cataract Surgery

**Sponsor Protocol Version#:** 

Abbreviated title: Case Mix Adjusted Study of Cataract Surgery

IRB of record: Columbia University Medical Center

IRB number used by the

IRB of record:

Affiliated Institutions: New York Presbyterian Hospital

Protocol Begin Date: 12/05/2012 Protocol End Date: 08/31/2014

Principal Investigator: George Cioffi (753000X)



## Cataract Surgery Risk Adjustment Harkness Eye Institute Project

- Cataract Surgery is the most common ocular surgery
  - Highly standardized technique
  - High Variability in reported complications (< 1% to >7% vit loss or capsular tear)
- Retrospective
  - July 2012 to June 2013
  - 500 consecutive cataracts
- Prospective
- Externally Validated
  - Apply the UK National database regression formulas
  - Compare ourselves to their survey results
  - Develop our own risk profiles and formulas
- Apply the same rationale to Glaucoma Surgery
  - Not the same amount or quality of data available
  - Less standardization of techniques among surgeons



# National Registries Should you get involved?

#### • IRISTM Registry (Intelligent Research in Sight)

- EHR-based eye disease clinical database
- Centralized data repository and reporting tool
- Uses observational study methods to collect and perform statistical analysis of patient data to produce easy-to-interpret, national and inter-practice benchmark reports. The reports can validate the quality of care ophthalmologists provide and pinpoint opportunities for improvement.
- Approved as a Physician Quality Reporting System (PQRS) electronic health record

#### Why should ophthalmologists participate in the IRIS<sup>TM</sup> Registry?

- Improve Patient Care
- Manage Patient Populations
- Benchmark Their Individual Performance and That of Their Practice
- Enhance Quality and Practice Efficiency
- Participate in Quality Reporting and Incentive Programs
- Join a Community of Quality



# National Registries Should you get involved?

- Is the AAO capable of delivering a quality technology solution?
  - AAO is partnering with FIGMD, Inc.
  - a company that specializes in integrating EHRs with registries
  - FIGMD has developed registries for both the American College of Cardiology and the American Gastroenterological Association
- How does the IRIS<sup>TM</sup> Registry work?
  - Data relevant to the registry will be extracted automatically from the office EHR and transmitted on a scheduled basis directly to the IRIS<sup>TM</sup> Registry
  - Participating ophthalmologists then can access the data and run queries on their own patient population, to benchmark practice performance and uncover potential areas for quality improvement.
- 67 Practices representing 350 providers



## National Registries If we don't do it, who will?

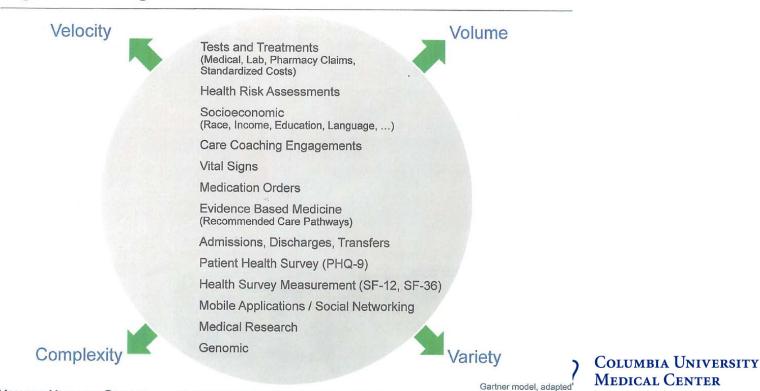
Insurers have a lot of the data already

### Introducing Optum Labs





#### Big Data for Big Science



## National Registries If we don't do it, who will?

Insurers have a lot of the data already

Very Powerful Data Set
Predominantly Claims Based Data
Moving toward EHR data by working with systems
Insurers will select their partners using the data
Insurers will direct patients to high performing physicians





# National Registries If we don't do it, who will?

Health Systems have large databases

Again, a Very Powerful Data Set
Claims Based Data within a military hospital system
Nationally highlighted article whose conclusions may be misleading
Cataracts by diagnosis code not by visual significance or exam
Patients will make decisions based on these findings

Might EHR exam data be better?

conclusions and relevance. The risk for cataract is increased among statin users as compared with nonusers. The risk-benefit ratio of statin use, specifically for primary prevention, should be carefully weighed, and further studies are warranted.

# Summary for Risk Adjustment & Ocular Surgery

- Monitoring your success (and failures)
  - "Count something" (Atul Gwande)
  - "What you measure improves." (Donald Rumsfeld)
  - "If you can't measure it, you can't manage it." (Peter Drucker)

### Going Forward

- At a minimum track your own results
- Consider getting involved in a larger registry
- National databases will happen with us or despite us
- Compare yourself to other benchmarks
- Will allow you to risk adjust your patient discussions

