NEXT EVOLUTION OF BIOMETRY

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Introduction

- Precise IOL power calculation is essential for optimal benefits.

IOL Power Calculation Errors can arise from

- Keratometry – 1.0D = 0.9D error in IOL power
- Axial length – 1mm = 2.5D error in IOL power
- IOL Formula

Laxmi eye institute

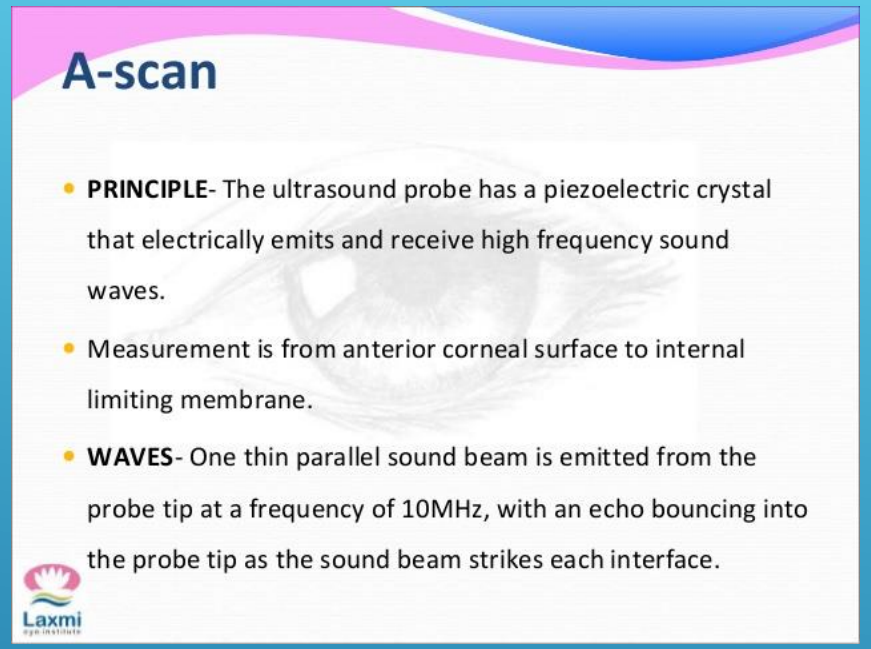
Normal Axial Length Values

Age	Axial Length (in mm)
Newborn	17.02
10-45 days	17.22
46-75 days	18.77
76-120 days	19.43
5-9 months	20.09
10-18 months	20.14
19-36 months	22.01
4-5 years	22.78
6-7 years	22.56
8-10 years	23.12

CHOOSING IOL POWER ART VS SCIENCE

Originally Used 20 D

Adjusted according to Patients refraction



Optical Biometer

- **PRINCIPLE OF IOL MASTER** – Based on 'Partial Coherence Interferometry (PCI)'. Diode laser (780nm) measures echo delay and intensity of infrared light reflected back from tissue interfaces– Cornea & RPE.

- **PRINCIPLE OF LENSTAR** – Based on 'Low coherence optical reflectometry (LCOR)'. Superluminescent diode laser of 820nm is used.

Laxmi eye institute

Optical Biometer

- **PRINCIPLE OF IOL MASTER 700** – Based on swept source OCT technology. It provides an image-based measurement, allowing to view the complete longitudinal section of eyeball.

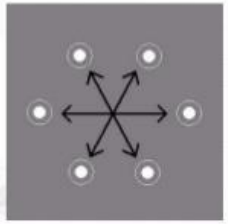
Laxmi eye institute

Akman A, Asena L. Evaluation and comparison of the new swept source OCT-based IOLMaster 700 with the IOLMaster500. Br J Ophthalmol . 2015-307779.

Keratometry of Optical Biometer

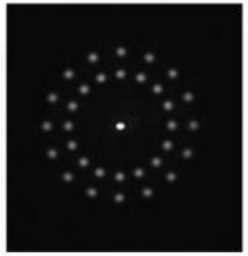
- **IOL MASTER** –

1. No of points tested – 6 points in hexagonal pattern
2. Zone of cornea tested – Diameter of 2.3mm



- **LENSTAR –**

1. No of points tested – 32 points in two circles (16 each)
2. Zone of cornea tested – Inner circle diameter – 1.65mm
   Outer circle diameter – 2.3mm



BETTER IN TERMS OF MEASURING TRUE CENTRAL CORNEAL POWER

Topography

- **Posterior corneal measurement in Oculyzer** – Selecting toric IOL based on anterior corneal measurement can lead to overcorrection in eyes with WTR astigmatism and undercorrection in eyes with ATR astigmatism.
- **Oculus Pentacam AXL** – Utilise the anterior + posterior corneal astigmatism and axial length on the same machine to calculate toric IOL power.

Koch D, Ali S et al. Contribution of posterior corneal astigmatism to total corneal astigmatism. J Cataract Refract Surg. 2013;39(12):1803-1809.

ZEISS IOLMaster 700 – Better cataract penetration to treat more patients with better technology[1]

- AL measurements with PCI biometry fail in 6% of patients[2]
- The IOLMaster® 700 with SWEPT Source Biometry® shows a cataract penetration of > 99%[2]
- That means 92% fewer ultrasound cases[1]
- Fewer ultrasound cases result in fewer refractive surprises

Figure 1. White intumescent cataract (Case 1)

Figure 2. Slit lamp image of the Cataracta rubra eye (Case 2)

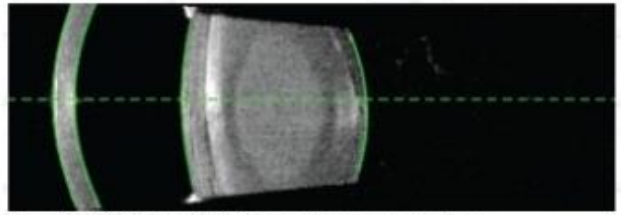


Figure 3. ZEISS IOLMaster 700 OCT image with measurement calipers

„From one or two ultrasound cases a day to one every 2-3 weeks!" (Dr. Hirnschall, Hanusch Hospital, Vienna)

[1] Clinical study of Dr. Akman, Evaluation and comparison of the new swept source OCT-based IOLMaster 700 with the IOLMaster 500
[2] Clinical data of Dr. Hirnschall, Hanusch Clinic Vienna, Austria, based on > 1.200 European eyes.

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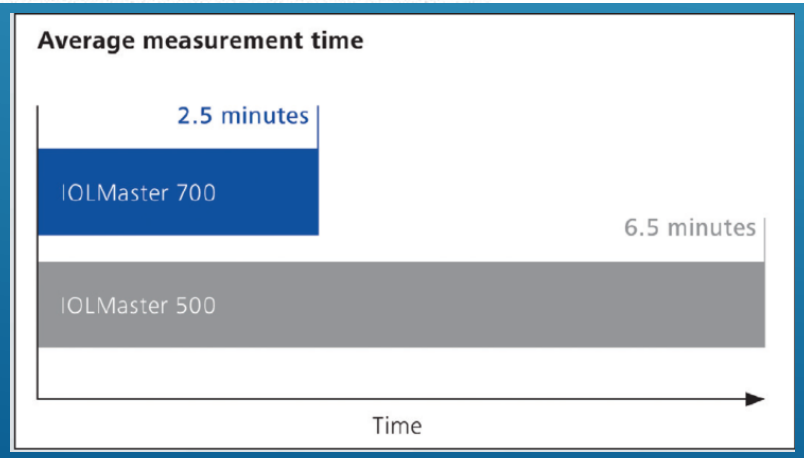

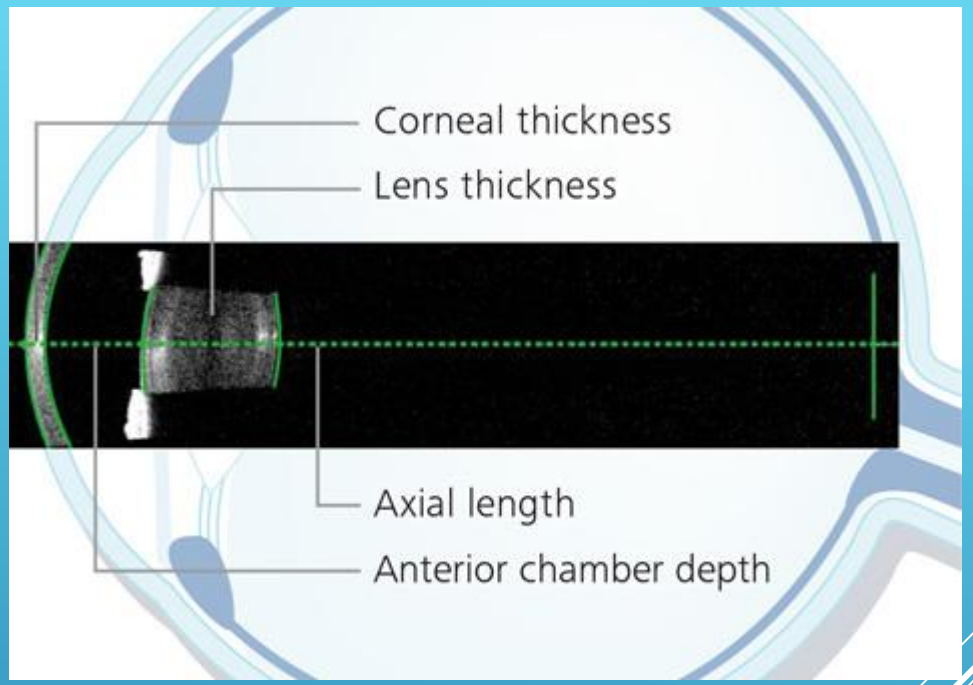

ZEISS IOLMaster 700 – Helps to visualize unusual eye structures for better patient selection

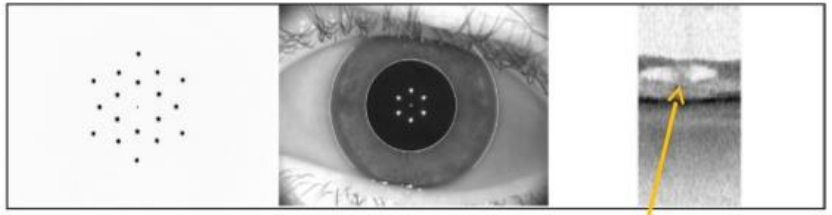

Figure 1. SWEPT Source Biometry of our patient with the IOLMaster 700 showing intraretinal fluid (Fixation Check image on the right)*

- The unique Fixation Check supports to detect poor patient fixation
- It may also help to indicate unusual eye structures for better patient selection[1]
- An incidental finding (e.g. BRVO as shown here) may prompt for a comprehensive OCT examination.

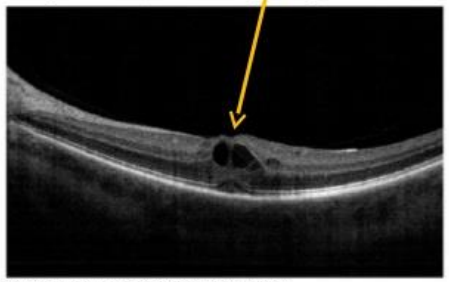

Figure 2. SD-OCT image of the left eye of our patient*

1 As the ZEISS IOLMaster 700 is clearly not intended to be used for diagnostics, findings need to be verified and pathologies diagnosed with a dedicated retina OCT
* Image courtesy of Prof. O. Findl, Hanusch Hospital Vienna, Austria

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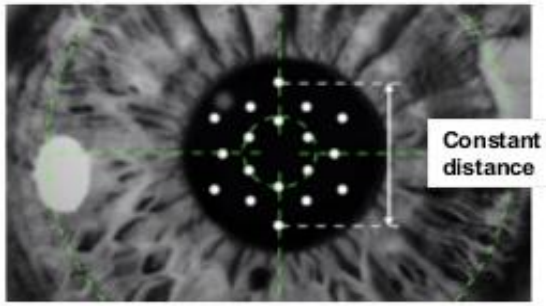
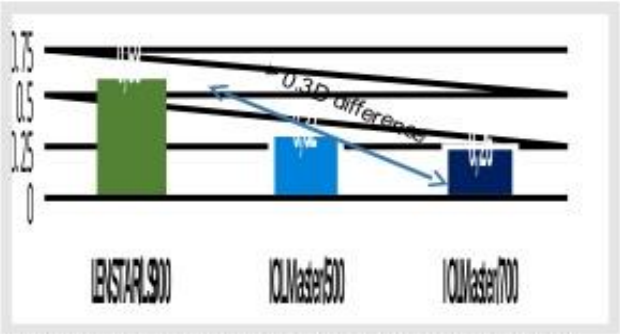
ZEISS IOLMaster 700 – Better repeatability for better outcomes



Repeatability comparison of AL measurement[1]

- Distance-independent telecentric keratometry for robust and repeatable keratometry measurements - even with unexperienced users
- Repeatability of AL measurement differs up to 26 µm between devices
- Depending on the device used the refractive outcome may differ > 0.3D

Device Comparison of in-vivo Repeatability (1 SD, Range in DPT.)*



[1] Sources: LENSTAR LS 900, HS-Art.No. 151.172.00.02.02/90, standard deviation (1,σ); IOLMaster 500, Vogel A, Dick B, Krummenauer F: Reproducibility of optical biometry using partial coherence interferometry. Intraobserver and interobserver reliability. J Cataract Refract Surg 27: 1961-1968, 2001 standard deviation (1,σ); IOLMaster 700 see technical data

* Based on technical device specifications

4

PERSONAL AUDIT
ZERO ULTRASOUNDS IN 267 CASES

J Refract Surg. 2018 Aug 1;34(8):521-526. doi: 10.3928/1081597X-20180706-01.

Comparing Total Keratometry Measurement on the IOLMaster 700 With Goggin Nomogram Adjusted Anterior Keratometry.

LaHood BR, Goggin M, Beheregaray S, Andrew NH, Esterman A.

Total Keratometry appears to measure total corneal astigmatism

J Cataract Refract Surg. 2016 Feb;42(2):217-25. doi: 10.1016/j.jcrs.2015.11.036.

Effect of posterior corneal astigmatism on power calculation and alignment of toric intraocular lenses: Comparison of methodologies.

Residual astigmatism after toric lens is in part due to errors in posterior corneal curvature effects

Pentacam measurements using anterior and posterior corneal curvature

Yields least astigmatism prediction errors in Toric Lens power calculations

BMC Ophthalmol. 2017 Aug 24;17(1):156. doi: 10.1186/s12886-017-0550-z.

Comparison of astigmatism prediction error taken with the Pentacam measurements, Baylor nomogram, and Barrett formula for toric intraocular lens implantation.

Park DY[1], Lim DH[1,2], Hwang S[1], Hyun J[1,3], Chung TY[4].

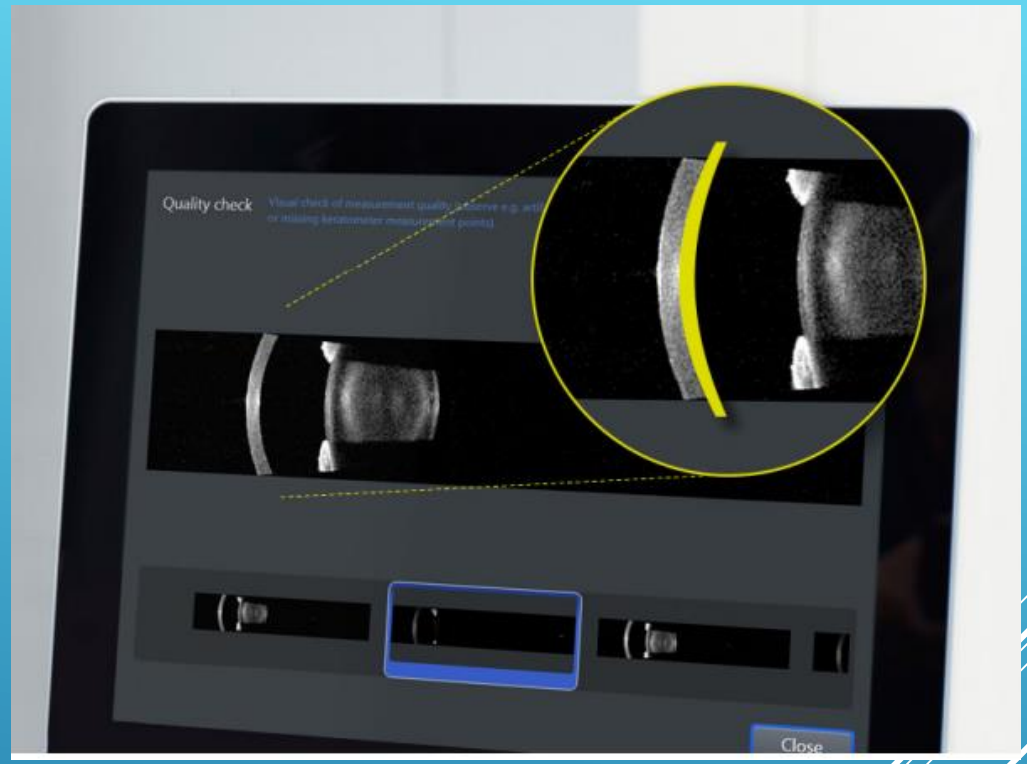
Measures Posterior curvature

Measures Corneal thickness

New Barrett TK Universal II

New Barrett TK Toric

Use in standard formulas



IOLMASTER 700, SWEPT SOURCE & TOTAL KERATOMETRY

OD right — Analyze

Eye status

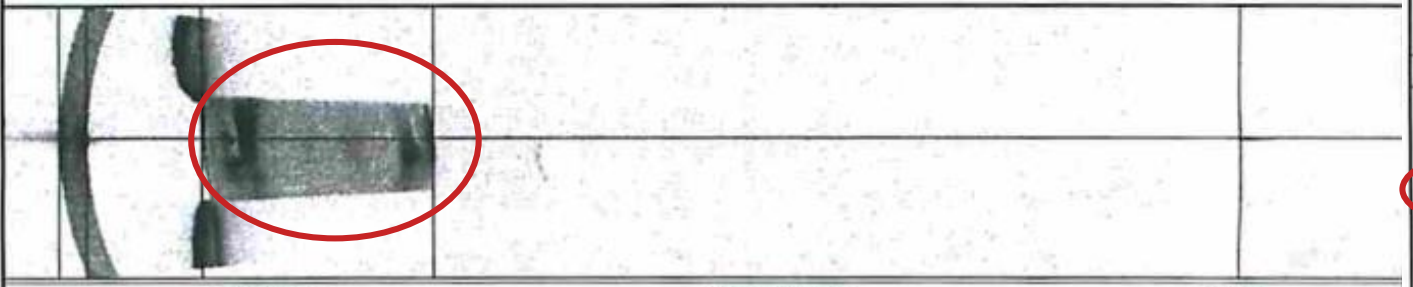
LS: Phakic
Ref: +0.50 D +1.75 D @ 177°
VS: Vitreous body
VA: ---
LVC: Untreated

Biometric values

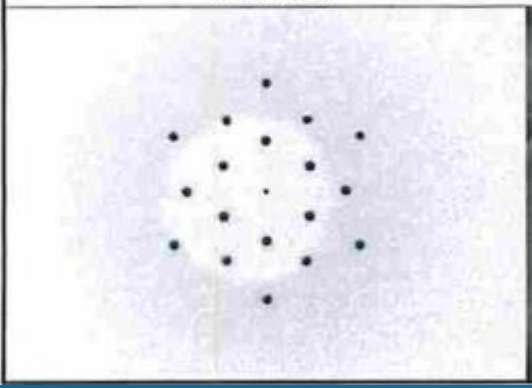
AL:	24.95 mm (!)	SD:	27 µm	WTW:	12.7 mm	Ix: +0.3 mm	Iy: +0.1 mm
CCT:	551 µm	SD:	4 µm	P:	2.4 mm	CW-Chord:	0.3 mm @ 206°
ACD:	2.94 mm	SD:	5 µm				
LT:	4.82 mm	SD:	8 µm				

R:	8.16 mm	SD:	2 µm	TR:	8.11 mm	SD:	8 µm
R1:	8.28 mm @ 84°	SD:	2 µm	TR1:	8.26 mm @ 88°	SD:	8 µm
R2:	8.03 mm @ 174°	SD:	3 µm	TR2:	7.96 mm @ 178°	SD:	14 µm
ΔK:	+1.24 D @ 174°			ΔTK:	+1.55 D @ 178°		

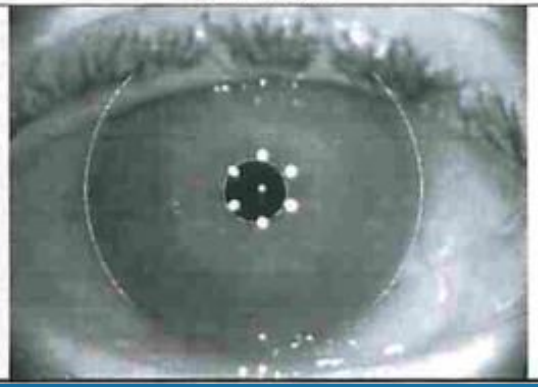
B scan



Keratometry



White-to-white



Fixation

OD right — Biometric values — OS left

Eye status

OD right	OS left
LS: Phakic	LS: Pseudophakic
Ref: +0.50 D +1.75 D @ 177°	Ref: +1.25 D +1.75 D @ 13°
VS: Vitreous body	VS: Vitreous body
VA: ---	VA: ---
LVC: Untreated	LVC: Untreated

Biometric values

AL:	24.94 mm	SD:	19 µm	AL:	24.81 mm	SD:	6 µm
CCT:	545 µm	SD:	3 µm	CCT:	549 µm	SD:	4 µm
ACD:	2.93 mm	SD:	7 µm	ACD:	4.56 mm	SD:	5 µm
LT:	4.82 mm	SD:	12 µm	LT:	0.65 mm	SD:	9 µm

AL	CCT	ACD	LT	AL	CCT	ACD	LT
24.94 mm	544 µm	2.93 mm	4.84 mm	24.81 mm	552 µm	4.56 mm	0.65 mm
24.92 mm	542 µm	2.93 mm	4.82 mm	24.81 mm	546 µm	4.55 mm	0.65 mm
24.93 mm	544 µm	2.93 mm	4.82 mm	24.81 mm	546 µm	4.55 mm	0.64 mm
24.94 mm	544 µm	2.94 mm	4.82 mm	24.81 mm	550 µm	4.56 mm	0.64 mm
---	544 µm	2.94 mm	4.82 mm	24.81 mm	550 µm	4.56 mm	0.65 mm
---	549 µm	2.94 mm	4.81 mm	24.81 mm	554 µm	4.56 mm	0.66 mm

Corneal values

R:	8.13 mm (!)	SD:	3 µm	R:	8.26 mm	SD:	2 µm
R1:	8.26 mm @ 86°	SD:	7 µm	R1:	8.37 mm @ 91°	SD:	6 µm
R2:	8.01 mm @ 176°	SD:	0 µm	R2:	8.15 mm @ 1°	SD:	7 µm
ΔK:	+1.28 D @ 176°			ΔK:	+1.08 D @ 1°		

R:	8.17 mm	ΔK:	+1.47 D @ 4°	R:	8.26 mm	ΔK:	+1.06 D @ 1°
R:	8.13 mm	ΔK:	+1.11 D @ 170°	R:	8.26 mm	ΔK:	+1.15 D @ 1°
R:	8.13 mm	ΔK:	+1.27 D @ 176°	R:	8.26 mm	ΔK:	+1.05 D @ 2°

TR:	8.10 mm (!)	SD:	19 µm	TR:	8.23 mm	SD:	4 µm
TR1:	8.23 mm @ 87°	SD:	40 µm	TR1:	8.34 mm @ 91°	SD:	10 µm
TR2:	7.94 mm @ 177°	SD:	13 µm	TR2:	8.11 mm @ 1°	SD:	10 µm
ΔTK:	+1.58 D @ 177°			ΔTK:	+1.14 D @ 1°		

TR:	8.13 mm	ΔTK:	+1.76 D @ 3°	TR:	8.23 mm	ΔTK:	+1.05 D @ 1°
TR:	8.09 mm	ΔTK:	+1.34 D @ 174°	TR:	8.23 mm	ΔTK:	+1.23 D @ 1°
TR:	8.10 mm	ΔTK:	+1.63 D @ 178°	TR:	8.22 mm	ΔTK:	+1.17 D @ 1°

White-to-white and pupil values

WTW:	12.8 mm	Ix:	+0.4 mm	Iy:	-0.2 mm	WTW:	12.5 mm
P:	2.3 mm	CW-Chord:	0.3 mm @ 199°			P:	2.6 mm

						Ix:	-0.4 mm
						CW-Chord:	0.3 mm @ 273°

--- Reference image ---

IOL calculation

OD right	OS left
Eye status	
LS: Phakic	LS: Pseudophakic
VS: Vitreous body	VS: Vitreous body
Ref: +0.50 D +1.75 D @ 177°	Ref: +1.25 D +1.75 D @ 13°
VA: ---	VA: ---
LVC: Untreated	LVC: Untreated
LVC mode: -	LVC mode: -
Target ref.: plano	Target ref.: plano
SIA: +0.00 D @ 0°	SIA: +0.00 D @ 0°
Biometric values	
AL: 24.94 mm SD: 19 µm	AL: 24.81 mm SD: 6 µm
ACD: 2.93 mm SD: 7 µm	ACD: 4.56 mm SD: 5 µm
LT: 4.82 mm SD: 12 µm	LT: 0.65 mm SD: 9 µm
WTW: 12.8 mm	WTW: 12.5 mm
R: 8.13 mm (!) SD: 3 µm R1: 8.26 mm @ 86°	R: 8.26 mm SD: 2 µm R1: 8.37 mm @ 91°
ΔK: +1.28 D @ 176° R2: 8.01 mm @ 176°	ΔK: +1.08 D @ 1° R2: 8.15 mm @ 1°
TR: 8.10 mm (!) SD: 19 µm TR1: 8.25 mm @ 87°	TR: 8.23 mm SD: 4 µm TR1: 8.34 mm @ 91°
ΔTK: +1.58 D @ 177° TR2: 7.94 mm @ 177°	ΔTK: +1.14 D @ 1° TR2: 8.11 mm @ 1°

TK Hoya 250

- SRK®/T -

A const.: 118.70

IOL (D)	Ref (D)
+19.50	-0.72
+19.00	-0.37
+18.50	**-0.02**
+18.00	+0.33
+17.50	+0.67

+18.47 Emmetropia

TK Hoya 250

- Haigis -

A0: -0.542 A1: +0.161 A2: +0.204

IOL (D)	Ref (D)
+19.50	-0.59
+19.00	-0.23
+18.50	**+0.13**
+18.00	+0.48
+17.50	+0.83

+18.68 Emmetropia

TK Hoya 250

- SRK®/T -

A const.: 118.70

IOL (D)	Ref (D)
+20.50	-0.66
+20.00	-0.30
+19.50	**+0.06**
+19.00	+0.41
+18.50	+0.76

+19.58 Emmetropia

TK Hoya 250

- Hoffer® Q -

pACD: +5.33

IOL (D)	Ref (D)
+19.50	-0.63
+19.00	-0.28
+18.50	**+0.06**
+18.00	+0.40
+17.50	+0.73

+18.59 Emmetropia

TK Hoya 250

- Barrett TK Universal II -

LF: +1.73 DF: Default

IOL (D)	Ref (D)
+19.50	-0.56
+19.00	-0.20
+18.50	**+0.16**
+18.00	+0.51
+17.50	+0.86

+18.73 Emmetropia

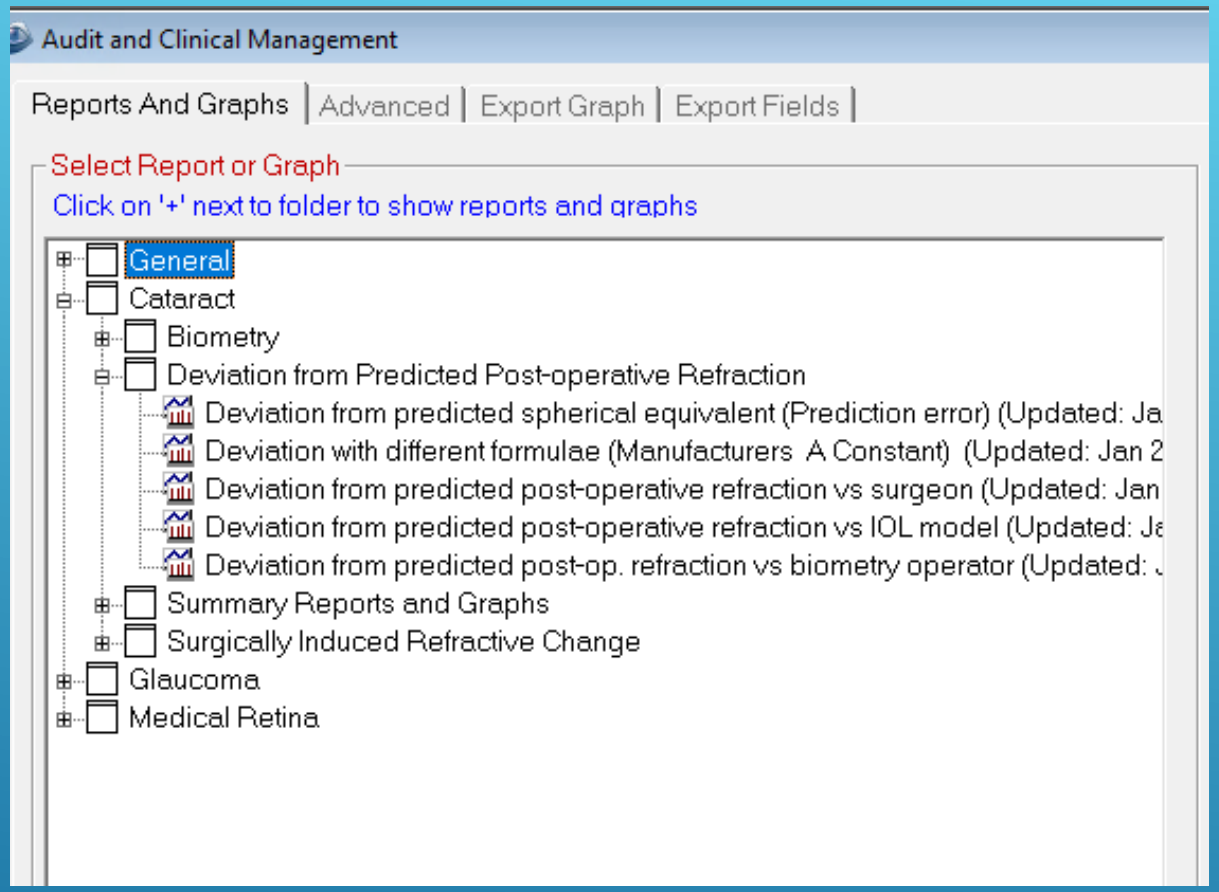
TK Hoya 250

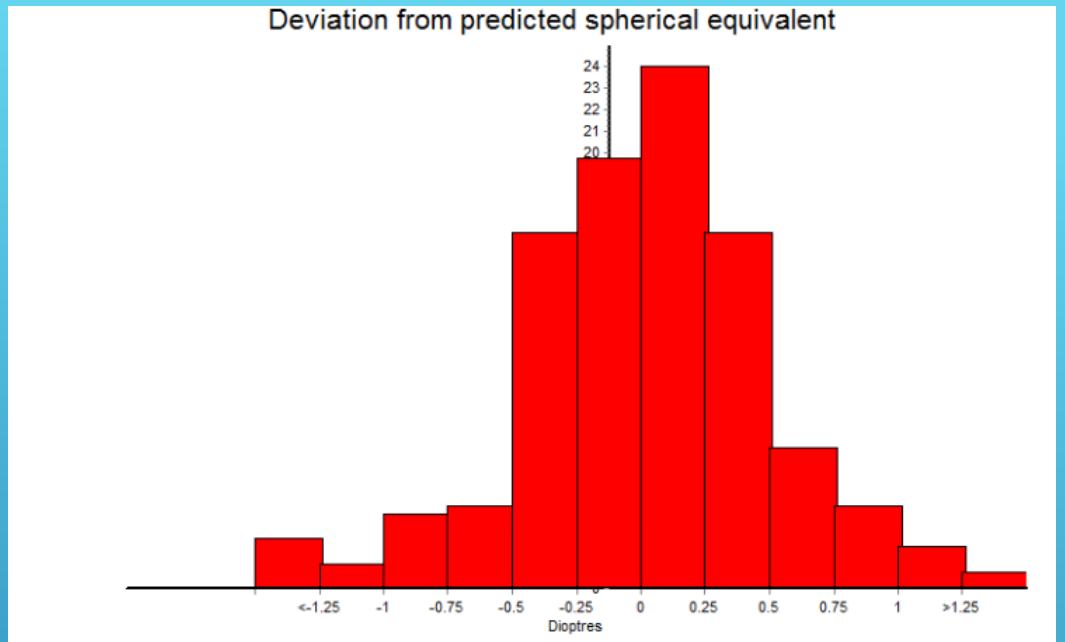
- Hoffer® Q -

pACD: +5.33

IOL (D)	Ref (D)
+21.00	-0.77
+20.50	-0.42
+20.00	**-0.07**
+19.50	+0.27
+19.00	+0.61

+19.90 Emmetropia





	Totals	
Interval	Number	%
<-1.25	6	2.28
-1.25 To -1.01	3	1.14
-1.00 To -0.76	9	3.42
-0.75 To -0.51	10	3.80
-0.50 To -0.26	43	16.35
-0.25 To 0.00	52	19.77
0.01 To 0.25	63	23.95
0.26 To 0.50	43	16.35
0.51 To 0.75	17	6.46
0.76 To 1.00	10	3.80
1.01 To 1.25	5	1.90
>1.25	2	0.76

MR. LEE PERSONAL MEDISOFT AUDIT

Hoya 250/251	• IOL Master 500 92% +/- 1.0D and 60% +/- 0.5D • IOL Master 700 94% +/- 1.0D and 76% +/- 0.5D
Hoya 351 Toric	• IOL Master 700 100% +/- 1.0D and 63% +/- 0.5D
Rayner Toric	• IOL Master 500/700 81% +/-1.0D and 38% +/-0.5D
College Target	• 2014 90% +/-1.0D and 60% +/-0.5D

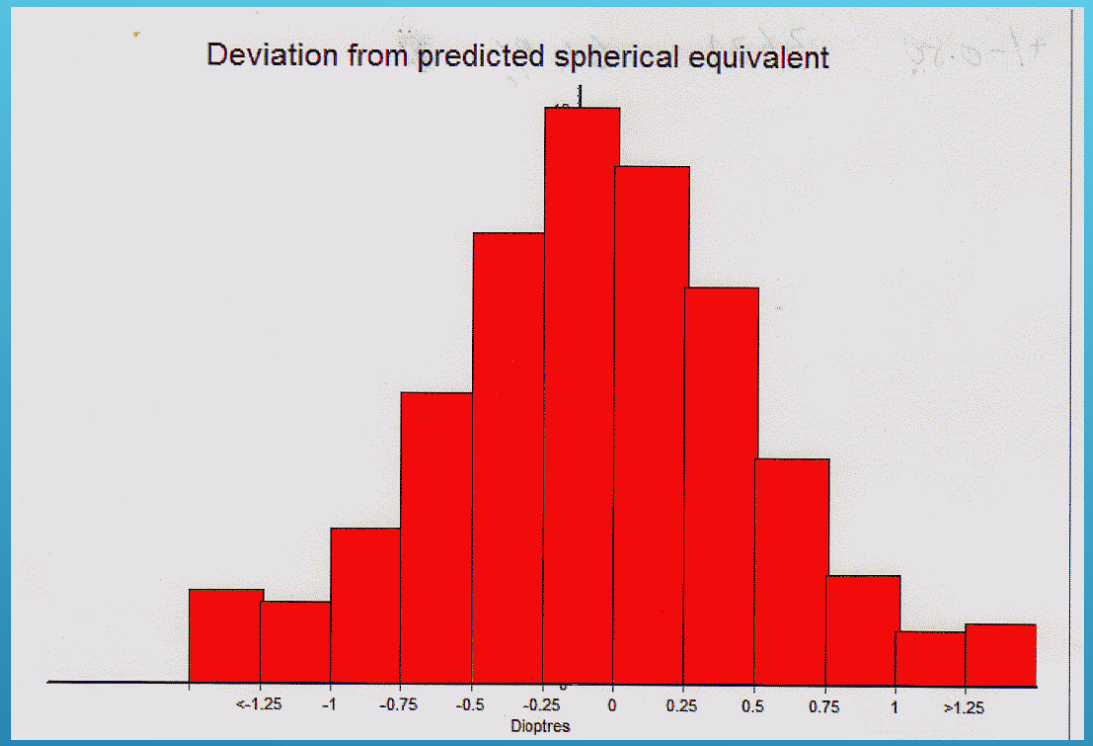
- Data Accuracy
  - Unaided
  - Pinhole
  - Refracted

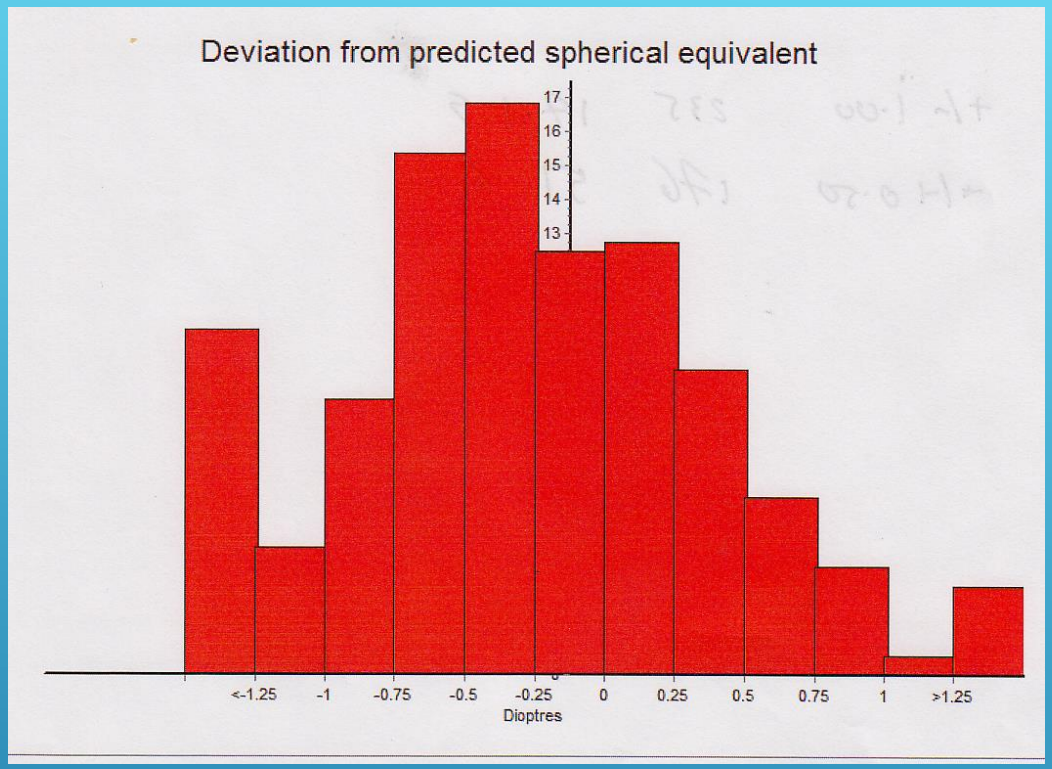
VISUAL ACUITY CHANGES

Total operations: 296

Pre-operative any visual acuity VA (y-axis) verses post-operative any VA (x-axis) *Snellen metres

VA*	Total	6/3	6/4	6/5	6/6	6/7.5	6/9	6/12	6/15	6/18	6/24	6/30	6/36	6/48	6/60	5/60	4/60	3/60	2.5/60	2/60	1/60	CF	HM	PL	NPL
6/3	0																								
%	0.0																								
6/4	0																								
%	0.0																								
6/5	0																								
%	0.0																								
6/6	2				1	1																			
%	0.7				50.0	50.0																			
6/7.5	6			1	4	1																			
%	2.0			16.7	66.7	16.7																			
6/9	18			5	7	3	1	1							1										
%	6.1			27.8	38.9	16.7	5.6	5.6							5.6										
6/12	104	1		18	41	20	14	5		3		1													
%	35.1	1.0		17.3	39.4	19.2	13.5	5.8		2.9		1.0													
6/15	45			9	19	10	4	1			1		1												
%	15.2			20.0	42.2	22.2	8.9	2.2			2.2		2.2												
6/18	39	1		5	15	7	6	5																	
%	13.2	2.6		12.8	38.5	17.9	15.4	12.8																	
6/24	29			3	16	3	3	4																	
%	9.8			10.3	55.2	10.3	10.3	13.8																	
6/30	12			1	4	2	1	2			1	1													
%	4.1			8.3	33.3	16.7	8.3	16.7			8.3	8.3													
6/36	8			1	3	2	1	1																	
%	2.7			12.5	37.5	25.0	12.5	12.5																	
6/48	10			2	2	2	2	1							1										
%	3.4			20.0	20.0	20.0	20.0	10.0							10.0										
6/60	12			1	5	2	1	2			1														
%	4.1			8.3	41.7	16.7	8.3	16.7			8.3														
5/60	0																								
%	0.0																								
4/60	1			1																					
%	0.3			100.0																					
3/60	1				1																				
%	0.3				100.0																				
2.5/60	0																								
%	0.0																								
2/60	0																								
%	0.0																								
1/60	2						2																		
%	0.7						100.0																		
CF	2				1	1																			
%	0.7				50.0	50.0																			
HM	4				2		1								1										
%	1.4				50.0		25.0								25.0										
PL	1																					1			
%	0.3																					100.0			
NPL	0																								
%	0.0																								

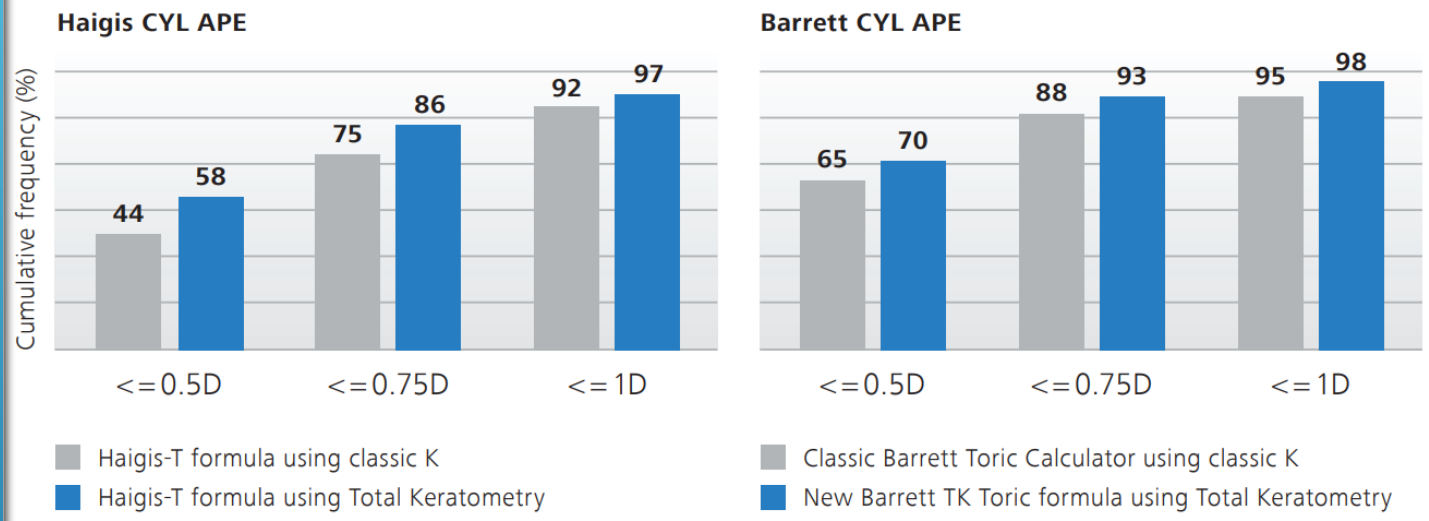




Hoya 250 +/- 1.00 = 90% +/- 0.50 = 64%

Rayner Toric +/- 1.00 83% & 51%

HILLINGDON HOSPITAL AUDIT 10,710 CASES 61 RAYNER TORICS



Outcomes of toric IOL calculations with the Haigis-T formula. CYL APE: Absolute prediction error for cylinder; frequency of eyes in respective CYL APE diopter ranges; N=145 eyes.*

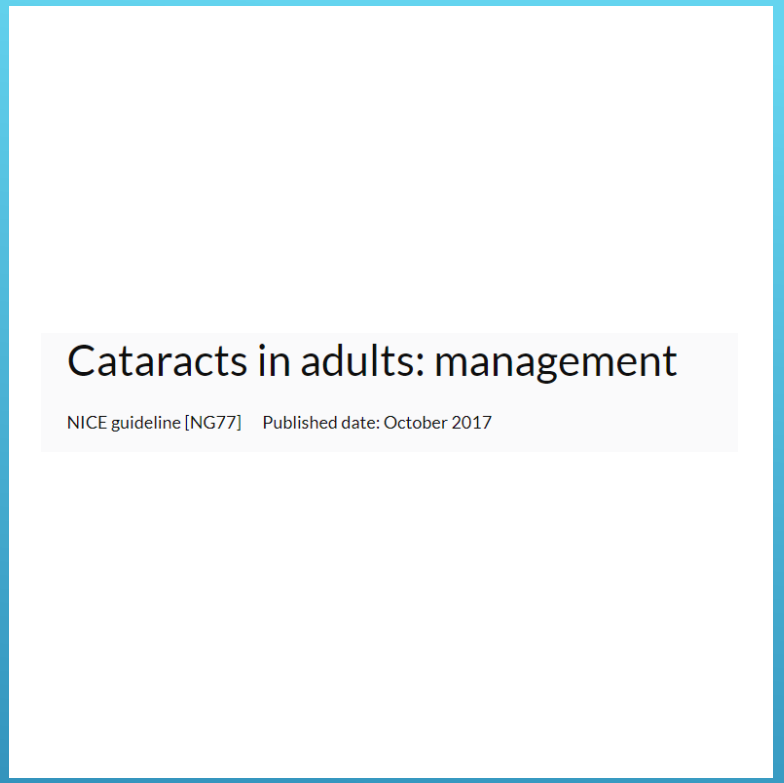
Outcomes of toric IOL calculations with classic Barrett Toric Calculator and the new Barrett TK Toric formula; CYL APE: Absolute prediction error for cylinder; frequency of eyes in respective CYL APE diopter ranges; N=145 eyes.*

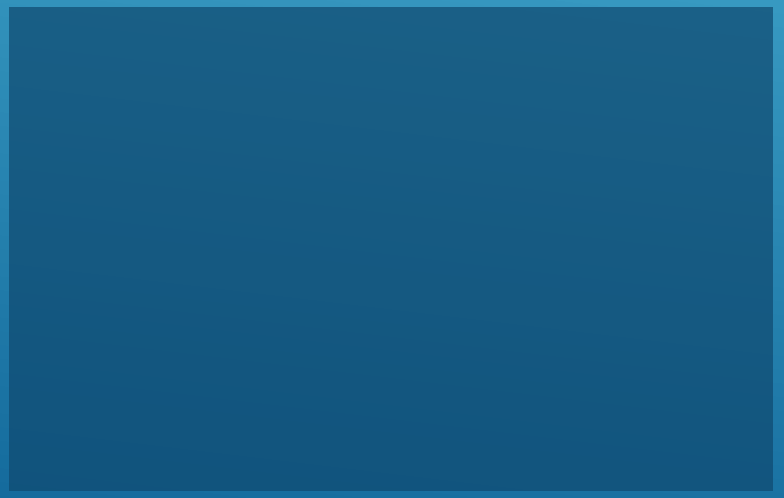
- Aim is to limit Refractive error
- Limit Refractive Surprises
- Improve toric Outcomes
- Audit your own Unit/Individual results
- Medisoft Makes easy to do
- Customize Constants
  - Remains Difficult
  - Judgment based on Audit
  - No regression ability in IOL machines

NEARING FORMULA PERFECTION?

RECOMMENDED READING

- Wrong IOL - Never event
  - Still happens Sadly
  - Distractions
  - Confusion
  - Poor Team work
  - Poor Atmosphere
  - Rushing
  - Lack of Paranoia, not following procedure
  - New members or staff, Junior staff





The ROYAL COLLEGE of OPHTHALMOLOGISTS

National Ophthalmology Database Audit

Key Findings Summary 2018

The NOD audit illustrates 30% reduction in PCR complications in cataract surgery since 2010. This equates to around 2,500 less complications annually.

In 2010, the overall unadjusted PCR rate was 2.0% (unchanged from pre-2006) and in the most recent year this has reduced to 1.4%.

Cataract surgery is the most frequently undertaken NHS surgical procedure with approximately 400,000 cataract operations undertaken in England and 20,000 in Wales in the 2016 - 2017 NHS year. This report is a snapshot of cataract surgery quality from 83 NHS funded centres in England and Wales.

Two primary indicators of surgical quality are audited.

1. The term **Posterior Capsular Rupture or Vitreous Loss or Both (PCR)** refers to a breach of the normal barrier between the front and back parts of the eye. PCR can arise as a complication of cataract surgery and may allow vitreous (a transparent substance with the consistency of egg-white which occupies the space inside the eye behind the lens) to move forward into the front part of the eye. When PCR occurs, it increases the risk of loss of vision after surgery.
2. **Visual Acuity (VA)** Loss (visual harm related to surgery): for cataract surgery, the most important outcome is vision; this is what matters most to patients. Vision which is worse after the operation than before is identified as an adverse outcome.

This is the second prospective national annual report and includes data on 183,812 eligible cataract operations for the period 01 September 2016 to 31 August 2017, from 148,785 patients.

The ROYAL COLLEGE of OPHTHALMOLOGISTS

NOD NATIONAL OPHTHALMOLOGY DATABASE AUDIT

HQIP Healthcare Quality Improvement Partnership

Key findings

63%
of the 122 eligible traditional NHS trusts in England and Wales are included in this report and data from one large Independent Sector Treatment Centre

183,812
eligible operations performed in 83 participating centres have been analysed

1.4%
of operations overall were affected by Posterior Capsular Rupture (PCR).
To more closely reflect the observed average for consultant surgeons the rate for adjustment revised to 1.1% (previously 2.0%)

0.7%
Visual Acuity (VA) loss rate, lower than last year's overall observed rate of 0.81%
To more closely reflect the average VA loss rate, the rate for adjustment revised to 0.9% (previously 1.5%)

The operations were performed by **1,908** surgeons

VA data returns are improving – 64% operations had both pre-operative and post-operative VA data recorded

201
patients had simultaneous bilateral cataract surgery

First treated eye cataract surgery

110,228 (60%)
operations performed for first eye cataract surgery

76 years
median age at the time of first eye cataract surgery (range; 18.1 – 107.7)

27,610 (25%)
patients were recorded as having diabetes mellitus at the time of their first cataract operation

1,073 (1%)
patients were recorded to be unable to lie flat

1,335 (1.2%)
patients were recorded to be unable to cooperate during the operation

Second treated eye cataract surgery

73,182 (40%)
operations performed second eye cataract surgery

77 years
median age at the time of second eye cataract surgery. (range; 18.4 – 104.9)

19,718 (27%)
patients were recorded as having diabetes mellitus at the time of their second treated eye surgery

516 (0.7%)
patients were recorded as being unable to lie flat

651 (0.9%)
patients were recorded as being unable to cooperate during the operation

84,920 (57%)
patients were women;

63,449 (43%)
patients were men;
gender was not recorded for 416 (0.3%) patients

Recommendations

1. Recommendations for Patients

1.1 Information has been made easily accessible to the general public

1.1.1 Patients, carers and those with an interest in cataract surgery are encouraged to access and view data regarding their local services. Information about the quality of cataract surgery can be viewed online on the National Ophthalmology Audit Database website and the HQIP website. In addition, data can be accessed on the NHS Choices website

1.1.2 Patients should ensure they discuss and understand the risks and outcomes of any eye surgery with their consultant

1.1.3 Information on cataract surgery is available from hospital trusts and Health Boards. Further information about cataracts can also be obtained from the charity organisations such as RNIB (Royal National Institute of Blind)

2. Recommendations for Providers of cataract surgery

2.1 Publicly promote your commitment to fostering good professional practice by involvement in the audit

2.2 Support the improved use of electronic data collection and data completeness in your organisation, enable staff to implement change. Complete data helps ensure all relevant factors such as case complexity are submitted to the audit and can be included in the NOD analysis

2.3 Identify specific areas that need improvement by comparing your results against past performance

2.4 Promote use of the audit information in medical revalidation and appraisal

2.5 Encourage use of the EMR audit tools for continuous monitoring of results for early detection and correction of possible increases in adverse event rates

2.6 Care providers should review their patient pathways to maximise the recording of both preoperative and postoperative VA data for every operation

3. Recommendations for Surgeons

3.1 Use your audit outcomes report in appraisal discussions

3.2 Identify specific opportunities for improvement by comparing your results against peers and your own past performance

3.3 Use the EMR audit tools for continuous monitoring of your results for early detection and correction of possible increases in adverse event rates

Recommendations

4. Recommendations for Commissioners

4.1 An increase of around 50% in cataract operations is predicted over the next 20 years (25% increase over the next 10 years - RCOphth Way Forward), plan services appropriately using NOD and other data

4.2 Check the 2017 NICE guidelines on cataract surgery (recommendations for commissioners 1.9)

4.3 Include submission of data to the NOD as a lever of quality in supplier contracts

4.4 Establish quality focused contracts with providers which include requirements for reporting of National Audit based outcomes

4.5 Establish contracts with community services which require return of postoperative VA and refractive data back to the surgical provider through use of the audit tools

5. Recommendations for the Regulator

5.1 When inspecting NHS organisations, information regarding national audit commissioning, participation and performance should be routinely requested from commissioners and providers of cataract care

5.1.1 Regulators should expect participation in national audits with audit results made available to them when inspecting NHS organisations

5.1.2 All providers of care should be expected to be in a position to provide quality assurance regardless of whether they are traditional NHS centres or independent providers

Next Steps

- The audit will extend coverage to include more centres in the next audit period, 01 September 2017 - 31 August 2018. Currently 111 of 122 traditional NHS cataract providers and two independent sector providers have indicated that they wish to participate in the audit going forward
- The audit is piloting the feasibility of collection of PROM (patient reported outcome) data to improve understanding of the impact of cataract surgery on patients

The full annual report is available on the NOD audit website **www.nodaudit.org.uk/resources/publications-annual-report**

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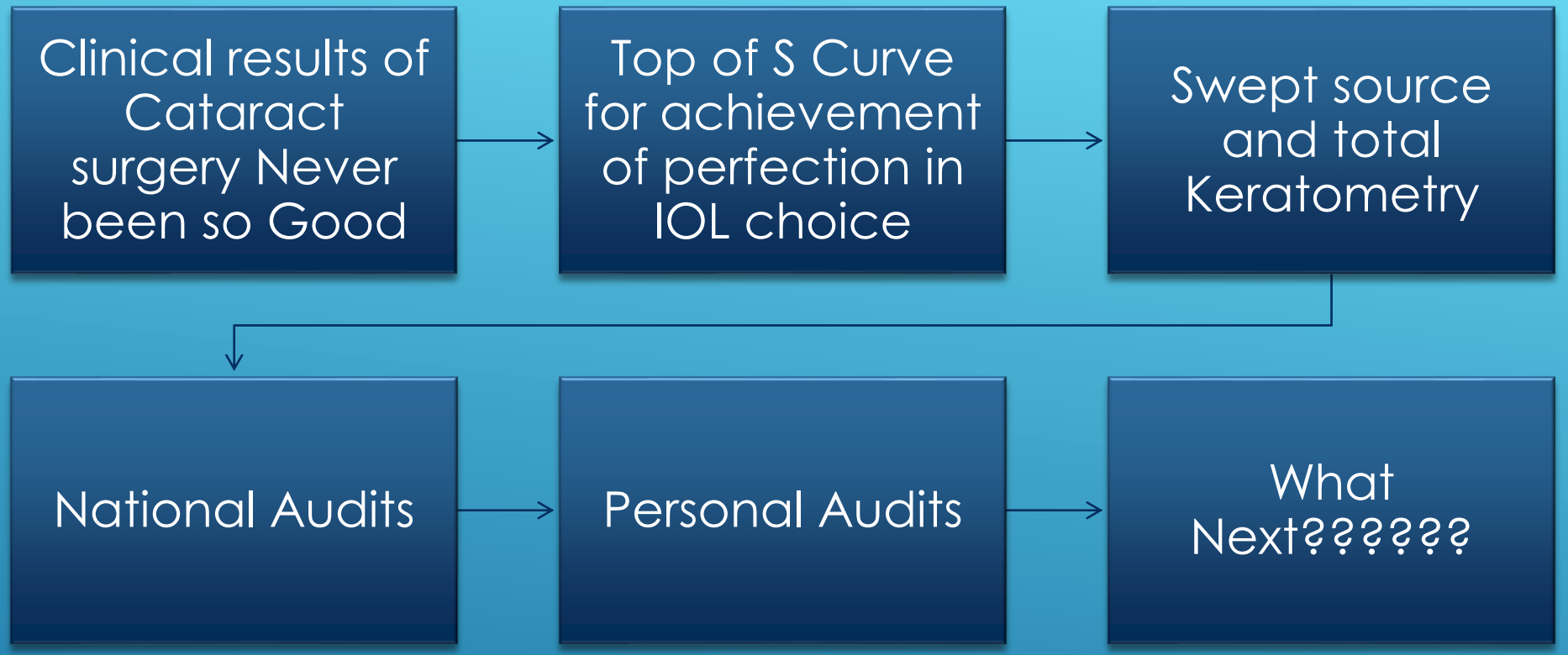
Clinical results of Cataract surgery Never been so Good
Top of S Curve for achievement of perfection in IOL choice
Swept source and total Keratometry
National Audits
Personal Audits
What Next??????

CONCLUSION