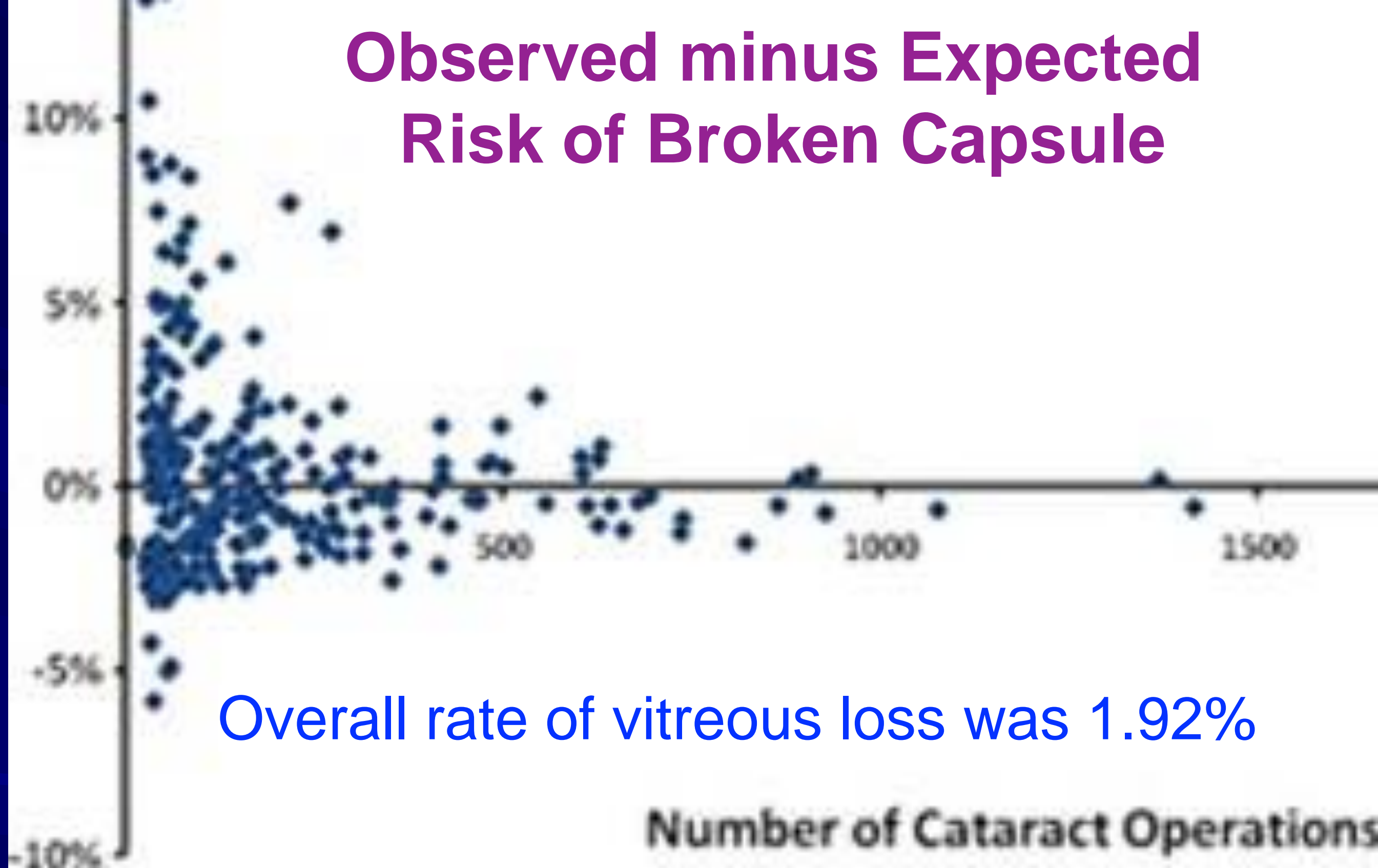


Risk of vitreous Loss

CMS Benchmark Quality Control  
Measure beginning 2020

WHEN SHOULD A PATIENT BE REFERRED FOR  
CATARACT SURGERY?

# Observed minus Expected Risk of Broken Capsule



Overall rate of vitreous loss was 1.92%

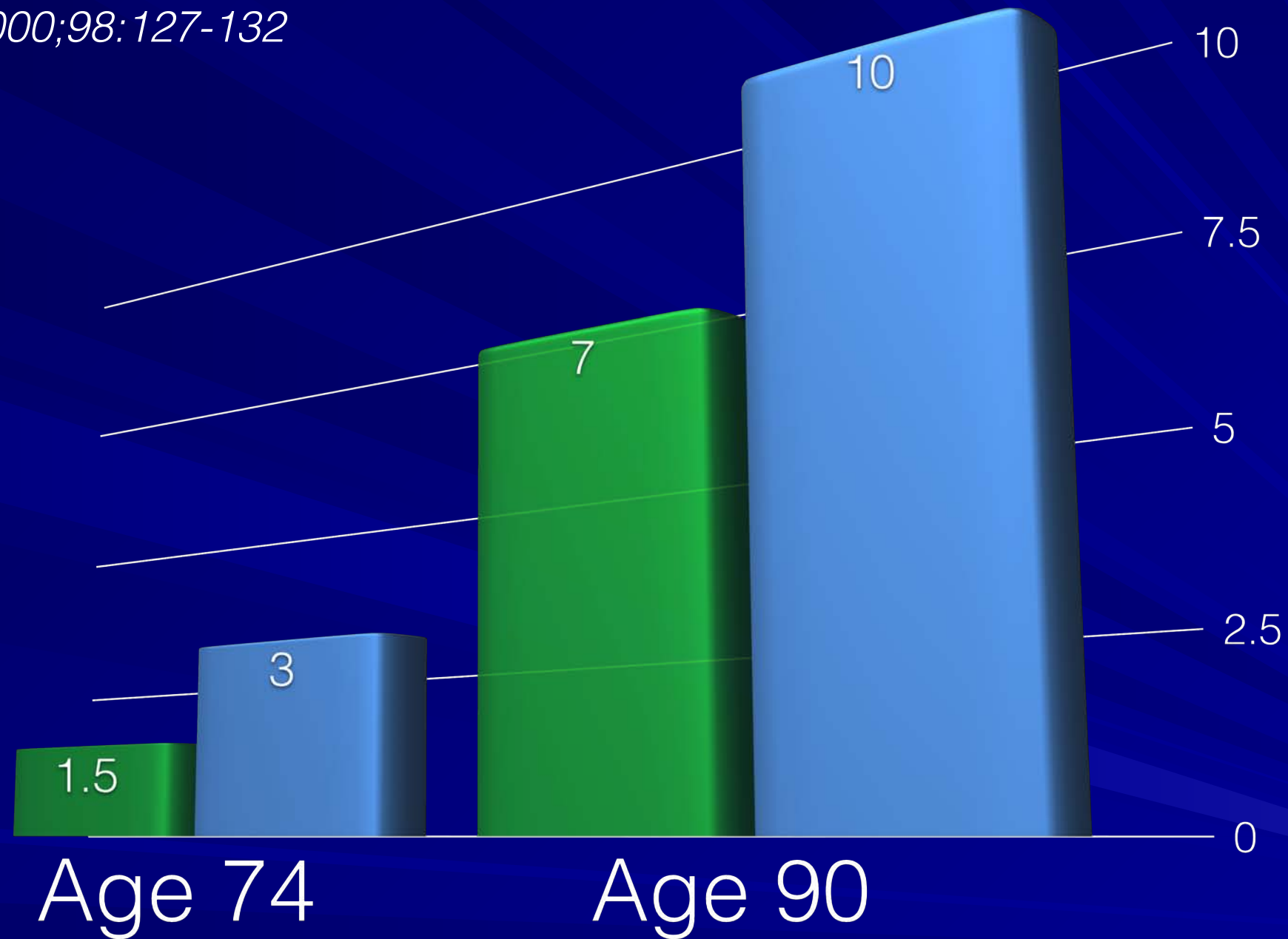
Eye (Lond). 2011 Aug; 25(8): 1010–1015. Published online 2011 May 6. doi: [10.1038/eye.2011.103](https://doi.org/10.1038/eye.2011.103) PMID: PMC3178223 The cataract national data set electronic multi-centre audit of 55 567 operations: case-mix adjusted surgeon's outcomes for posterior capsule rupture

J M Sparrow,<sup>1,2,\*</sup> H Taylor,<sup>3</sup> K Qureshi,<sup>4,5</sup> R Smith,<sup>6</sup> R L Johnston,<sup>7</sup> and the UK EPR user group

Each additional year of independent practice was associated with a 10% decrease in the risk of patients experiencing an adverse surgical event

# Increasing Risk of Cataract Surgery with AGE

*TrAm OphthSoc2000;98:127-132*



■ % Vitreous loss    ■ % All complications

# Elderly male diabetic, high myopia with a dense cataract and a small pupil (Risk of Vitreous loss = 14%)

## Calculated risk of Capsular rupture or vitreous loss

Patient						
DOB						
						<b>Other risk factors</b>
Age	<60	1.00				
	60-69	1.14				Flomax
	70-79	1.42				
	80-89	1.58				Shallow AC
	90-	2.37	1.58			
Gender	Female	1.00				Restlessness
	Male	1.28	1.28			
Glaucoma	No	1.00				Language
	Yes	1.30	1.00			
Diab Ret	No	1.00				Alz meds
	Yes	1.63	1.63			
Brown/white lens	No	1.00				Statin
	Yes	2.99	2.99			
No view fundus	No	1.00				SOB
	Yes	2.46	1.00			
RYE	No	1.00				Tranex



# Elderly male diabetic, high myopia with a dense cataract and a small pupil (Risk of Vitreous loss = 14%)

PXE, Loose zon	No	1.00			Trauma
	Yes	2.92	1.00		
Pupil size	Large	1.00			Rheumatoid
	Medium	1.14			
	Small	1.45	1.45		Toric
Axial Length	< 26.0	1.00			
	> 26.0	1.47	1.47		Allergy
Doxazosin	No	1.00			
	Yes	1.51	1.00		
Able to lie Flat	Yes	1.00			
	No	1.40	1.00		
<b>Odds Ratio</b>				21.01	
<b>Prob V %</b>				14.00	

Overall 'PCR or VL or both' rate was 1.92% (95% CI=1.81-2.04%)

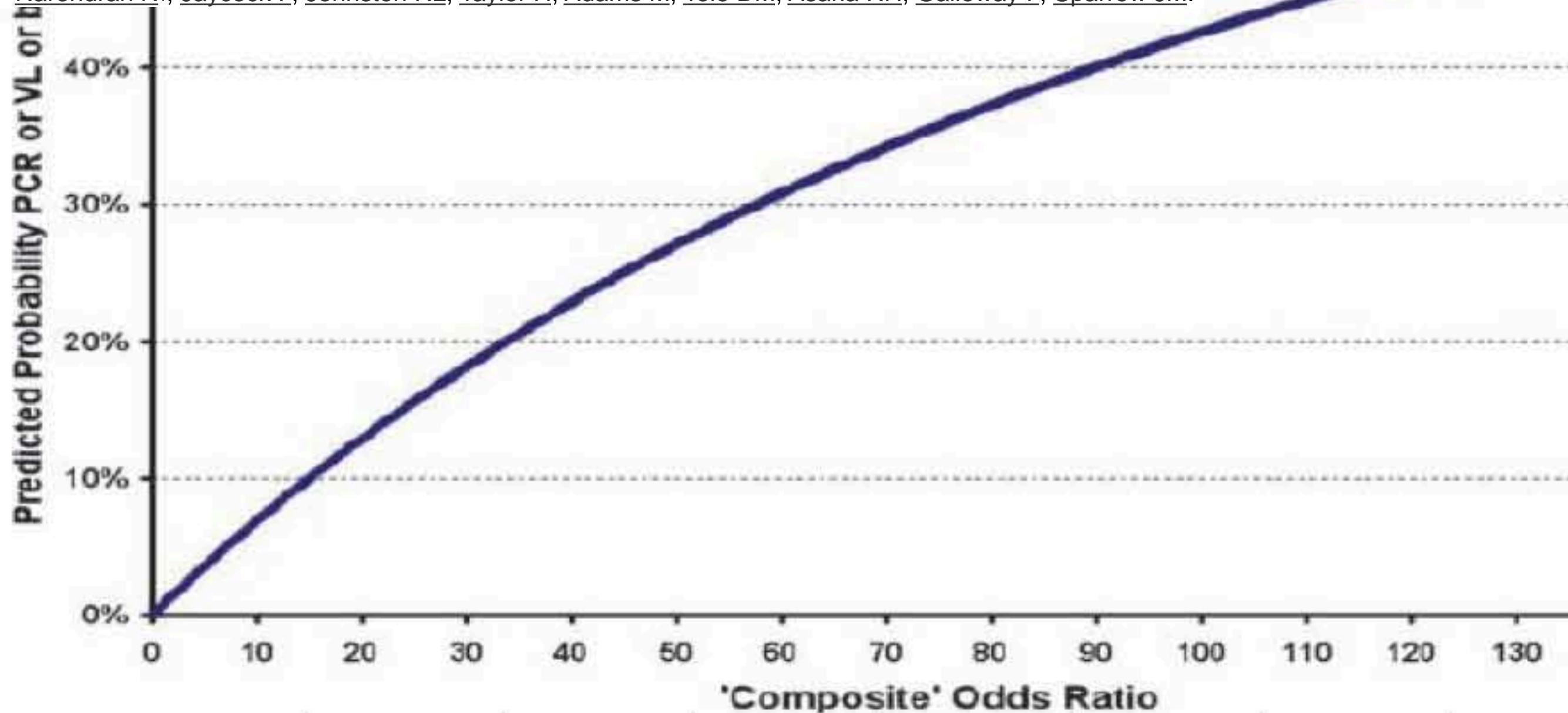
# Elderly male diabetic, high myopia with a dense cataract and a small pupil

## Composite ODDS Ratio derived by MULTIPLYING all risk factors

[Eye \(Lond\).](#) 2009 Jan;23(1):31-7. doi: 10.1038/sj.eye.6703049. Epub 2008 Mar 7.

[The Cataract National Dataset electronic multicentre audit of 55,567 operations: risk stratification for posterior capsule rupture and vitreous loss.](#)

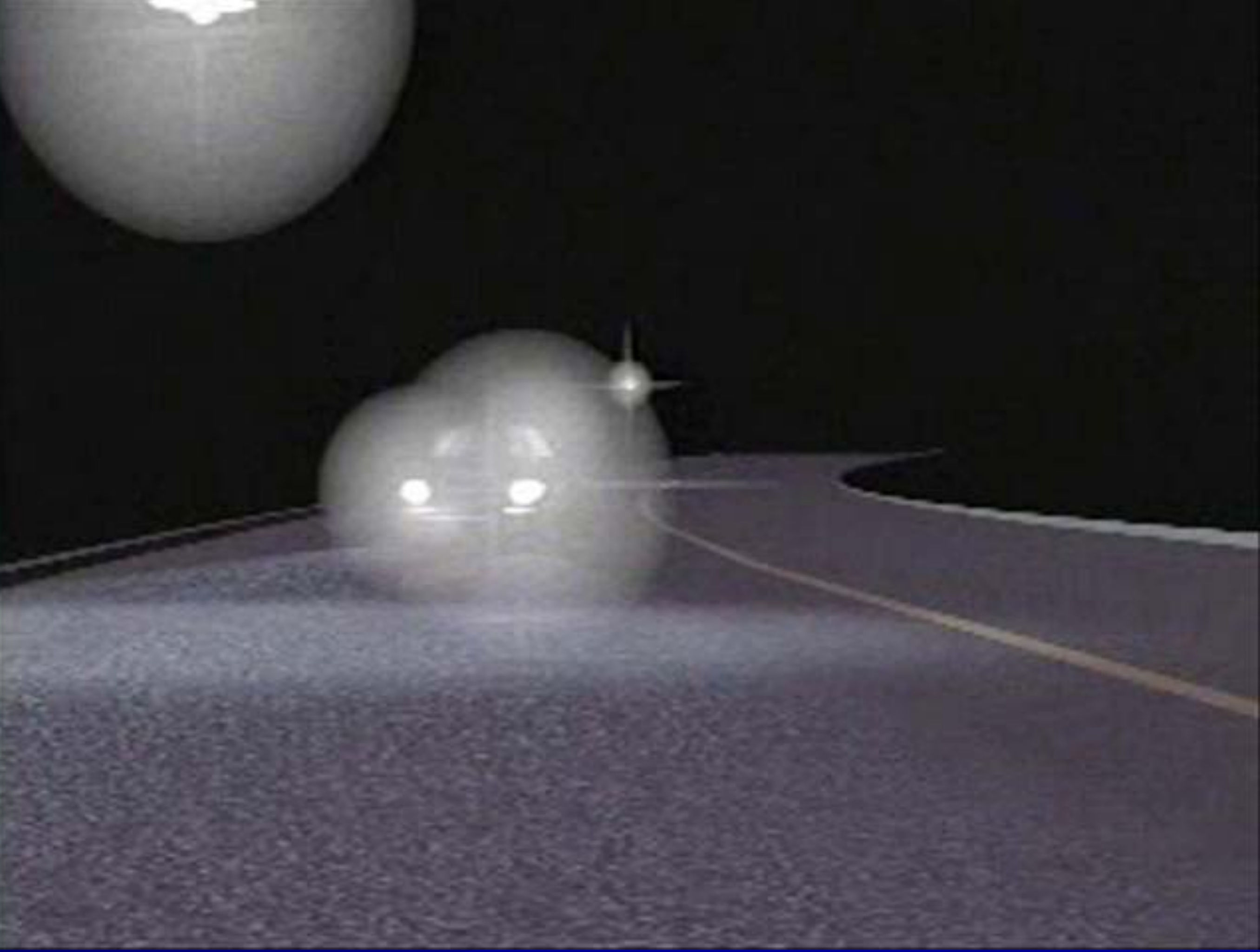
[Narendran N<sub>1</sub>](#), [Jaycock P](#), [Johnston RL](#), [Taylor H](#), [Adams M](#), [Tole DM](#), [Asaria RH](#), [Galloway P](#), [Sparrow JM](#).



# Published Medicare guideline for cataract surgery

Best-corrected visual acuity, based on the results of a careful manifest refraction, is 20/40 or worse in the proposed operative eye. The **20/40** threshold applies to standard testing conditions or to **glare** testing with a low or medium setting.





# Flood Glare



Normal



Cataract



Sun Low in the Sky or foggy windshield





Humprey  
Autorefractor  
with Glare  
Testing

**Glare** cutoff  
for surgery is  
20/50 or 20/60





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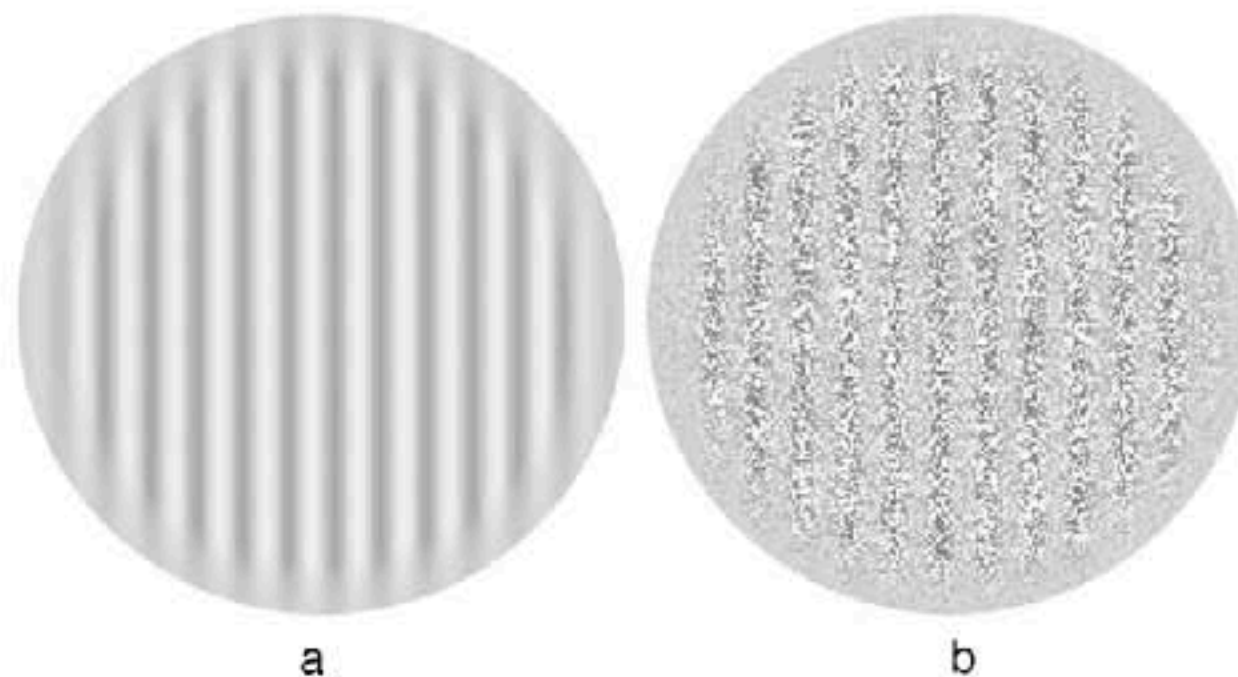
0.8



# Contrast Sensitivity

**From: Age-related decline of contrast sensitivity for second-order stimuli: Earlier onset, but slower progression, than for first-order stimuli**

**Journal of Vision. 2009;9(7):18. doi:10.1167/9.7.18**



a

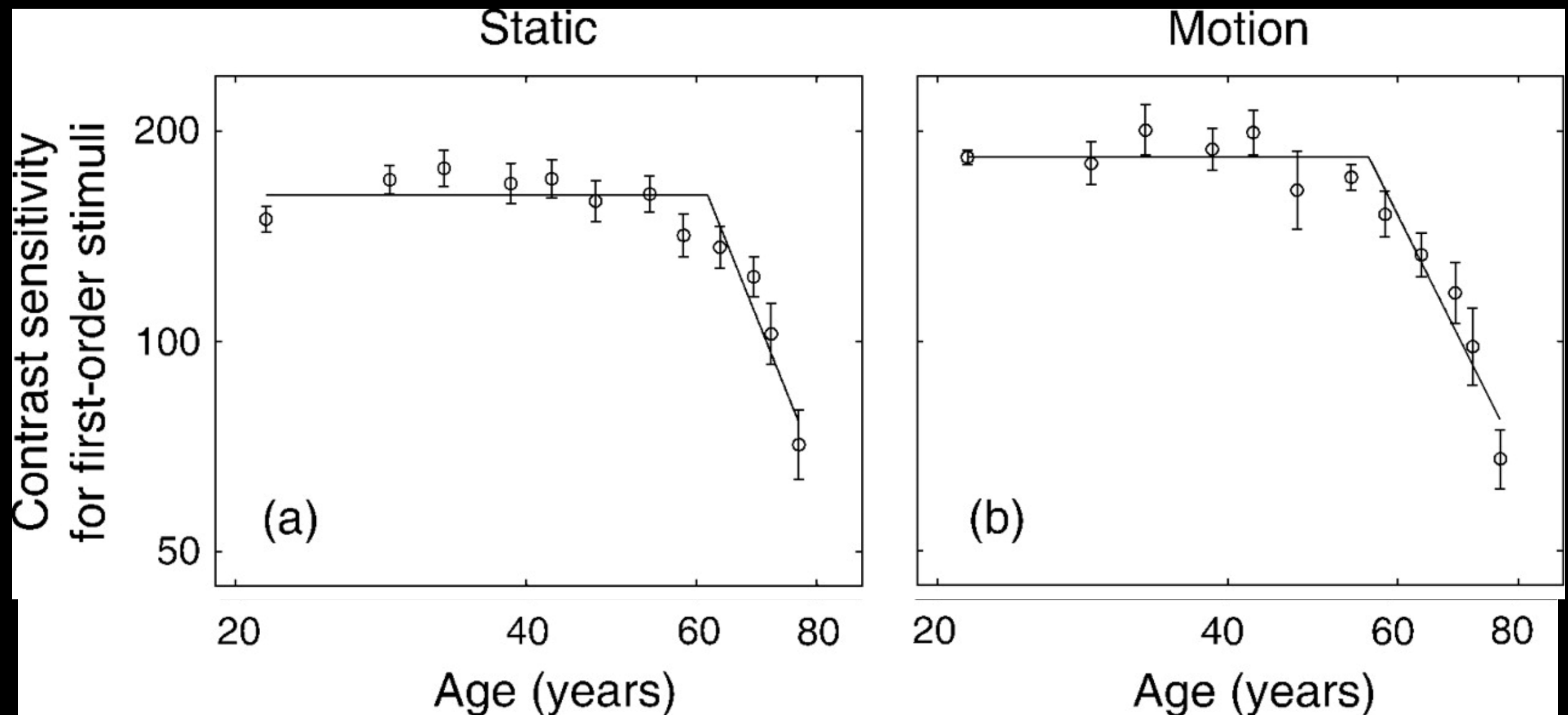
b

**Figure Legend:**

Stimuli, (a) first-order grating and (b) second-order grating, used in these experiments.



# Effect of Age on Contrast Sensitivity



First- and second-order stimuli as a function of age. Data were fit with the piecewise linear model (Equation 4), with  $r^2$  of 0.916, 0.853, 0.938 and 0.902 for (a) static first-order stimuli, (b) first-order motion, (c) static second-order stimuli and (d) second-order motion, respectively. In all cases,  $p < 0.001$ . Error bars indicate standard error of the mean.

Age-related decline of contrast sensitivity for second-order stimuli: Earlier onset, but slower progression, than for first-order stimuli

Journal of Vision. 2009;9(7):18. doi:10.1167/9.7.18

# Visual function assessment

<u>Activity</u>	<u>N/A</u>	<u>None</u>	<u>A Little</u>	<u>Moderate</u>	<u>Great Deal</u>	<u>Unable To Do</u>
1. Reading small prints, such as medicine bottle labels, a telephone book, or food labels.						
2. Reading a newspaper or book.						
3. Reading a large-print book or large-print newspaper or numbers on the telephone.						
4. Recognizing people when they are close to you.						
5. Seeing steps, stairs, or curbs.						
6. Reading traffic signs, street signs, or store signs.						
7. Doing fine handwork like sewing, knitting, crocheting, or carpentry.						



8. Writing checks or filling out forms.						
9. Playing games such as bingo, dominos, card games, or mahjong.						
10. Taking part in sports like bowling, handball, tennis, or golf.						
11. Cooking.						
12. Watching television.						
13. Driving during the day time on bright days.						
14. Driving at night time with oncoming headlights.						

If you answered “A Little, Moderate, Great Deal or Unable To Do” to any of these questions above, then you may benefit from the cataract surgery your doctor has proposed. However, if in thinking about these questions you realize that you are not bothered by your vision, then you may not need cataract surgery at this time. Because cataract surgery almost always is elective, postponing it usually does not present a risk to the health of your eyes. Discuss your options with your doctor.

Although considered safe and effective procedure, occasional complications related to cataract surgery occur and should be weighed against the potential benefit you can expect from cataract removal.

**Please read the two statements below, check the box that most closely describes the impact your vision is having on your daily living, and then sign the space below.**

\_\_\_\_\_ I have read the questions above. My vision is affecting my daily living activities enough that I would like to have cataract surgery at this time.

\_\_\_\_\_ After considering the questions above, I do not think my vision is bothering my daily living activities; I would like to postpone surgery for now.

Times worse than young

- Vision in glare
- Glare recovery time
- Attentional area
- Coarse stereopsis
- Acuity at low contrast & light
- Contrast sensitivity
- Color discrimination
- Low contrast acuity
- High contrast acuity
- Flicker

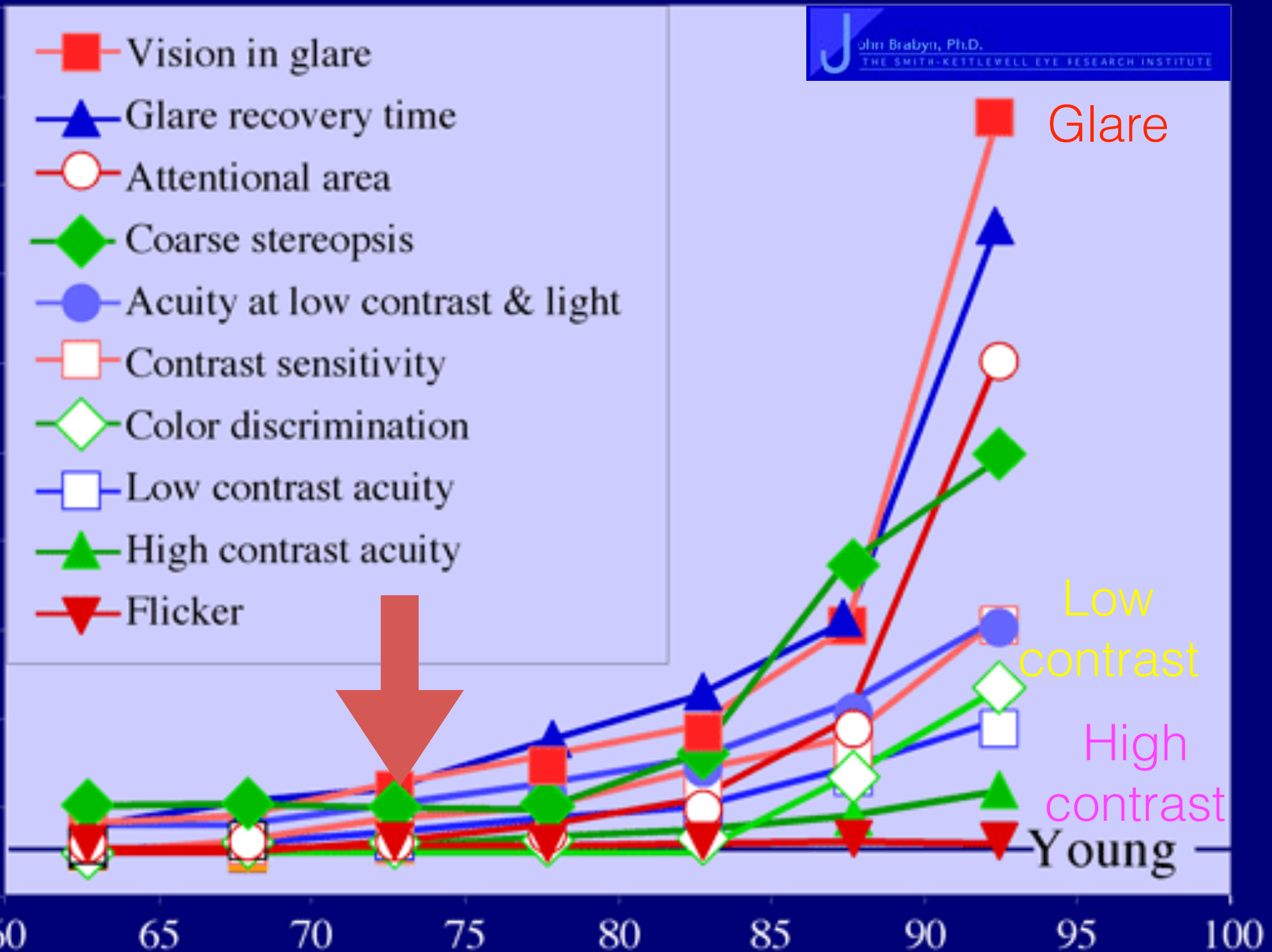
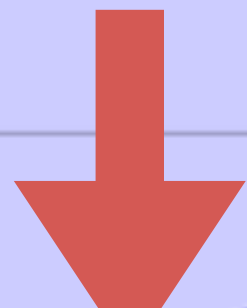
Glare

Low contrast

High contrast

Young

Age





# Indications for Cataract Surgery

- Visual significant (function / glare) lens changes
  - especially with one or more risk factors (age/ risk factors)
- Average patient meets Medicare indications for cataract surgery by age 72

# Small pupil in Cataract surgery

- Pupil size less than 4 mm
- Average age 83 years

- Iris-dilating rings may be needed in certain cases to enlarge pupil, ease cataract surgery, Ophthalmology times June 15, 2015, Matthew D Paul MD



# Amlodipine

- Calcium channel blocker
- 4 fold increase in small pupil size

