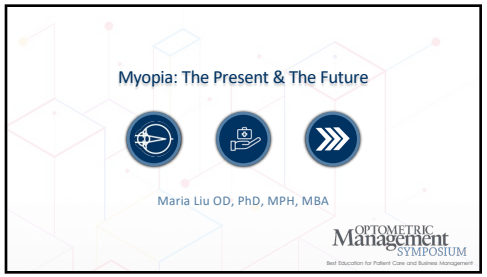
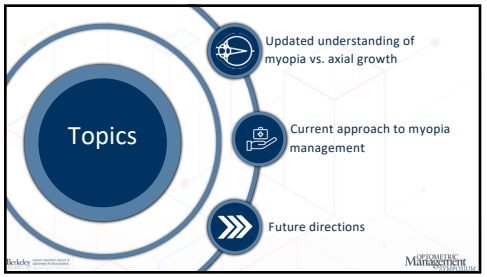

Myopia: The Present & The Future
Maria Liu OD, PhD, MPH, MBA
OPTOMETRIC Management SYMPOSIUM

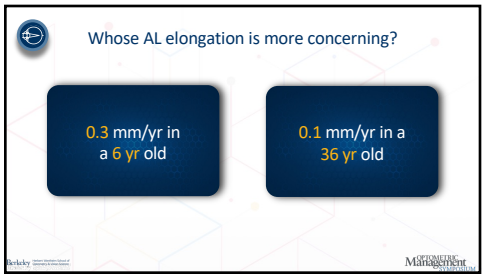
1


Topics
Updated understanding of myopia vs. axial growth
Current approach to myopia management
Future directions

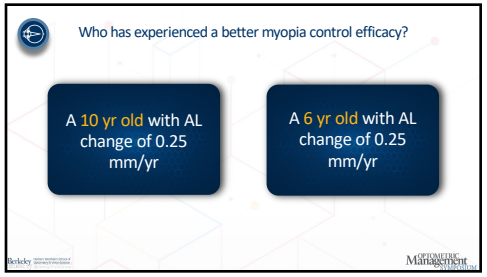
2


Updated Understanding of
Myopia Development & Axial Growth

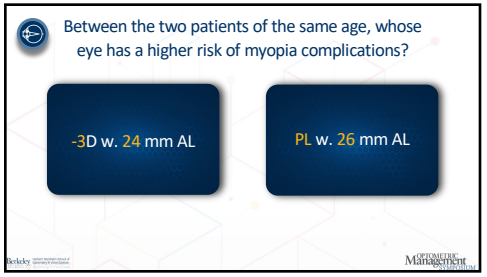
3


Whose AL elongation is more concerning?
0.3 mm/yr in a 6 yr old
0.1 mm/yr in a 36 yr old

4


Who has experienced a better myopia control efficacy?
A 10 yr old with AL change of 0.25 mm/yr
A 6 yr old with AL change of 0.25 mm/yr

5


Between the two patients of the same age, whose eye has a higher risk of myopia complications?
-3D w. 24 mm AL
PL w. 26 mm AL

6

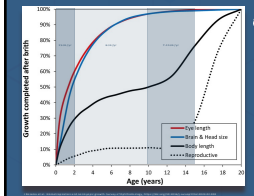
XW, 6YOAM, younger sibling of MYC pt

	OD	OS
VA$_{sc}$	20/20	20/20
K$_{AUTO}$	43.50/44.50@085	43.25/44.25@095
AR$_{cycl}$		
04/23	+0.50-0.50x175	+0.25-0.50x005
02/22	+1.25-0.75x174	+1.25-0.50x006
AL		
04/23	23.44	23.54
02/22	23.01	23.02

- FHx: Mom high myopia, SCL correction; dad low myopia, Spec correction
- Height change: 5cm in 14m

7

Scaled Growth



- Vol. increase 4x in 1st 3yrs; then another 25% next 15 yrs
- 5 mm growth from 16.5 mm in 1st 3yrs
- Growth plateaus in mid-teens
- Sig. gender-specific difference

8

Refractive Change as a Function of AL Change

OD	OS
0.75 / 0.43 = 1.74	1.00 / 0.52 = 1.92

Impact of AL change on Rx is NONLINEAR!

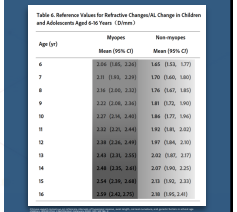


Table 4. Reference Values for Refractive Changes/AL Change in Children and Adolescents Aged 6-16 Years (D/mm)

Age (yr)	Myopes Mean (95% CI)	Non-myopes Mean (95% CI)
6	2.04 (1.85, 2.22)	1.65 (1.53, 1.77)
7	2.11 (1.93, 2.29)	1.70 (1.60, 1.80)
8	2.16 (2.00, 2.32)	1.76 (1.67, 1.85)
9	2.22 (2.08, 2.36)	1.81 (1.72, 1.90)
10	2.27 (2.14, 2.40)	1.86 (1.77, 1.96)
11	2.32 (2.21, 2.44)	1.92 (1.81, 2.02)
12	2.38 (2.26, 2.49)	1.97 (1.84, 2.10)
13	2.43 (2.31, 2.55)	2.02 (1.87, 2.17)
14	2.48 (2.35, 2.61)	2.07 (1.90, 2.25)
15	2.54 (2.39, 2.68)	2.13 (1.92, 2.33)
16	2.59 (2.43, 2.75)	2.18 (1.95, 2.41)

9

Whose AL elongation is more concerning?

- 0.3 mm/yr in a 6 yr old
- 0.1 mm/yr in a 36 yr old

Any AL change beyond expected physiological growth is concerning.

10

Who has experienced a better myopia control efficacy?

The younger the patient, the more the underestimate of the efficacy.

- A 10 yr old with AL change of 0.25 mm/yr
- A 6 yr old with AL change of 0.25 mm/yr

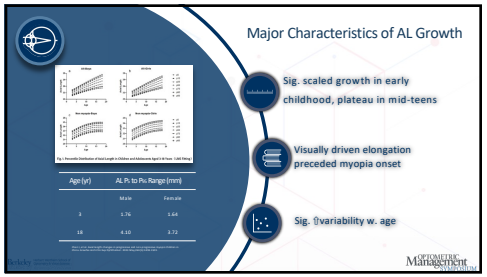
11

Between the two patients of the same age, whose eye has higher risks of myopia complications?

- -3 D w. 24 mm AL
- PL w. 26 mm AL

AL itself does not predict risks of complications, the abnormal elongation does.

12



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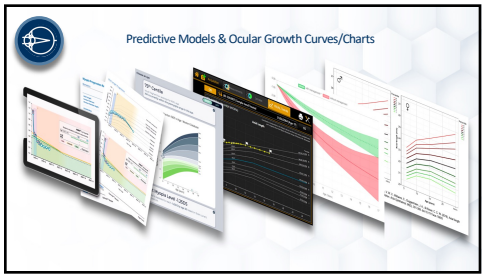

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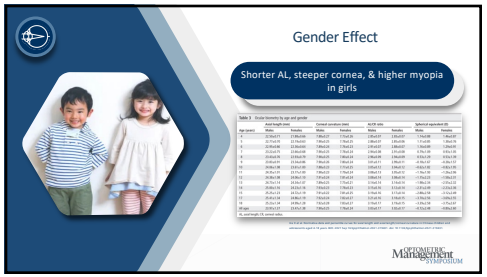

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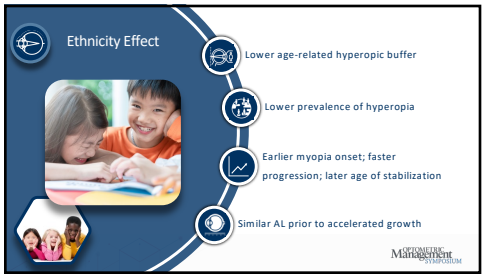

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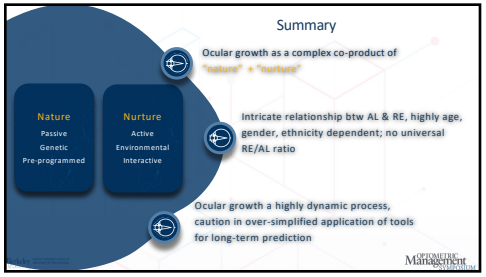

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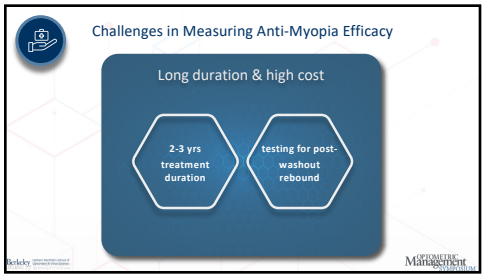

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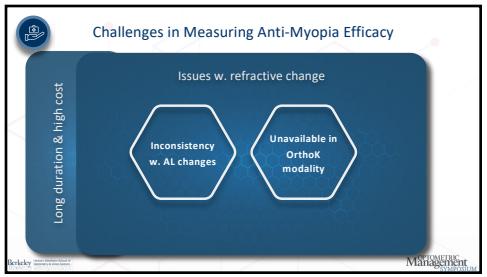

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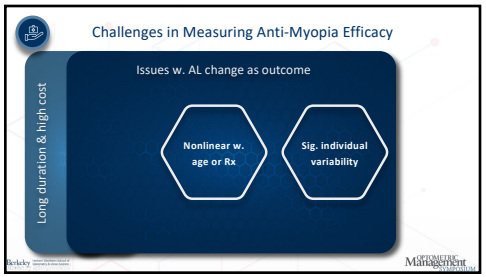

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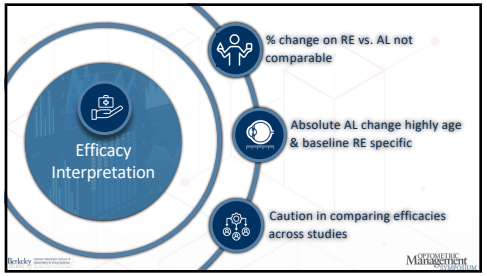

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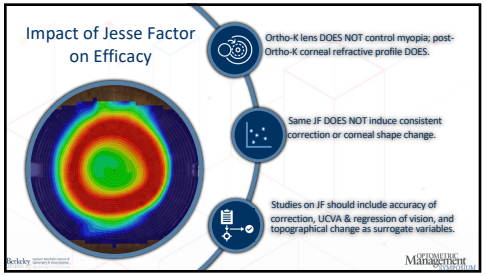

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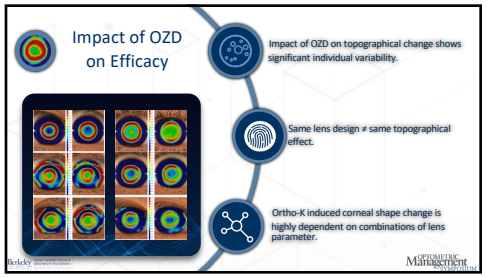

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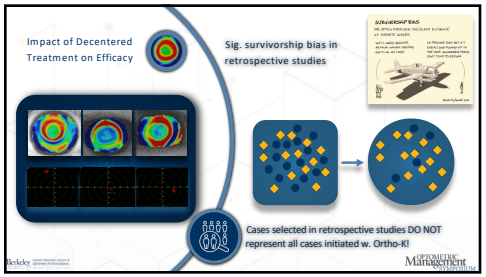

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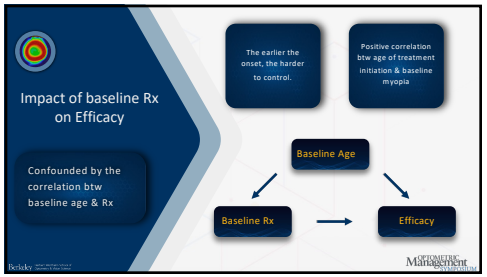

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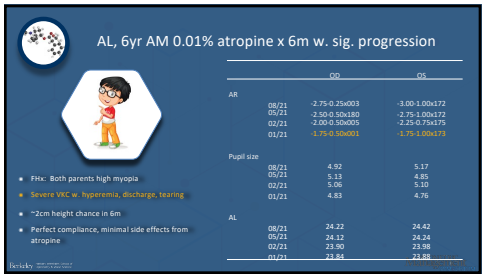

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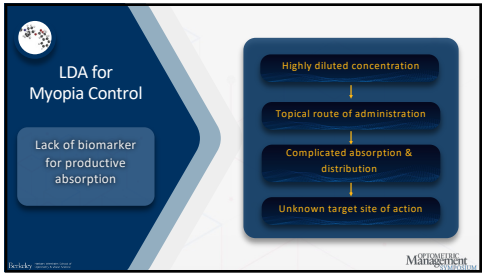

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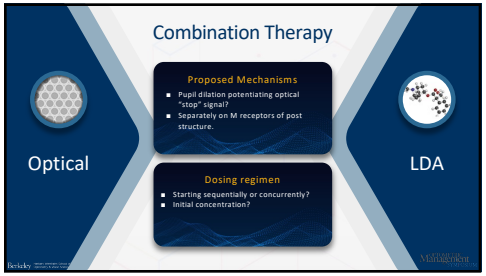

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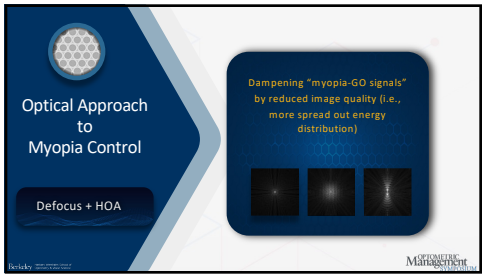

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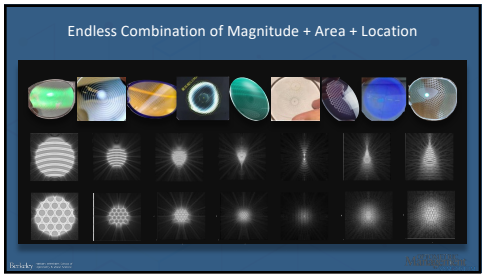

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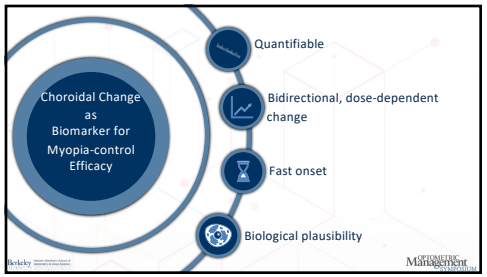

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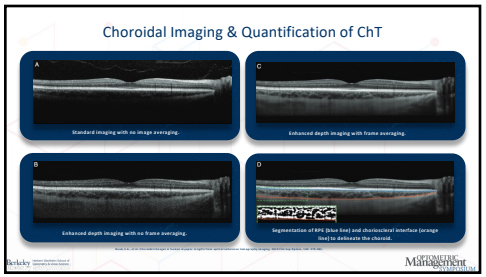

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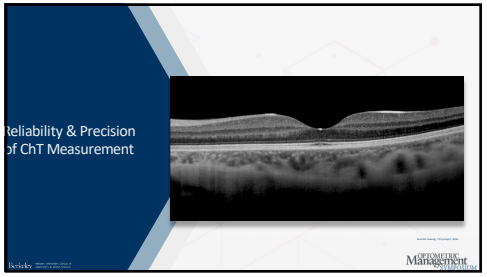

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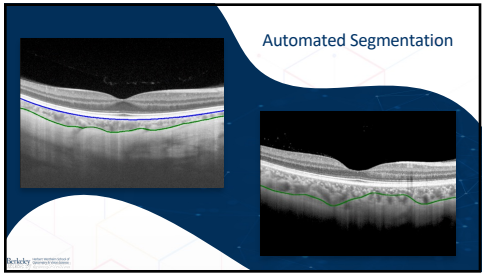

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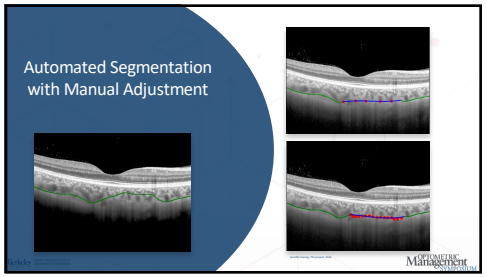
Automated Segmentation
with Manual Adjustment

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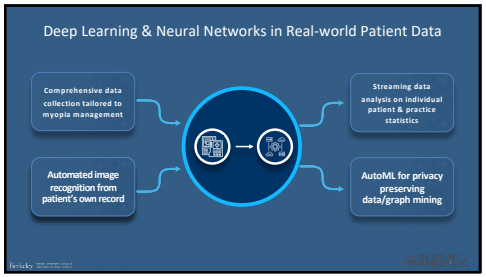
Deep Learning & Neural Networks in Real-world Patient Data
Comprehensive data collection tailored to myopia management
Automated image recognition from patient's own record
Streaming data analysis on individual patient & practice statistics
AutoML for privacy preserving data/graph mining

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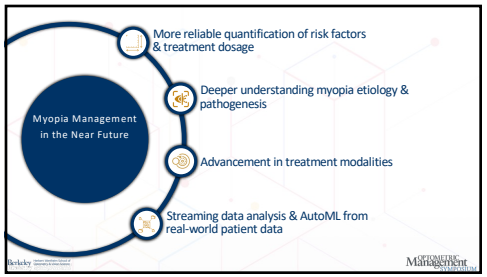
Myopia Management
in the Near Future
More reliable quantification of risk factors
& treatment dosage
Deeper understanding myopia etiology &
pathogenesis
Advancement in treatment modalities
Streaming data analysis & AutoML from
real-world patient data

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