THE BENEFITS OF USING AI IN OPHTHALMOLOGY

STU FIIT

LIVERPOOL JOHN MOORES UNIVERSITY

SESSION: HOW CAN NEW TECHNOLOGIES AND MODERN APPROACHES IMPROVE THE QUALITY OF HEALTHCARE / PRACTICAL EXAMPLES

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AmCham Slovakia

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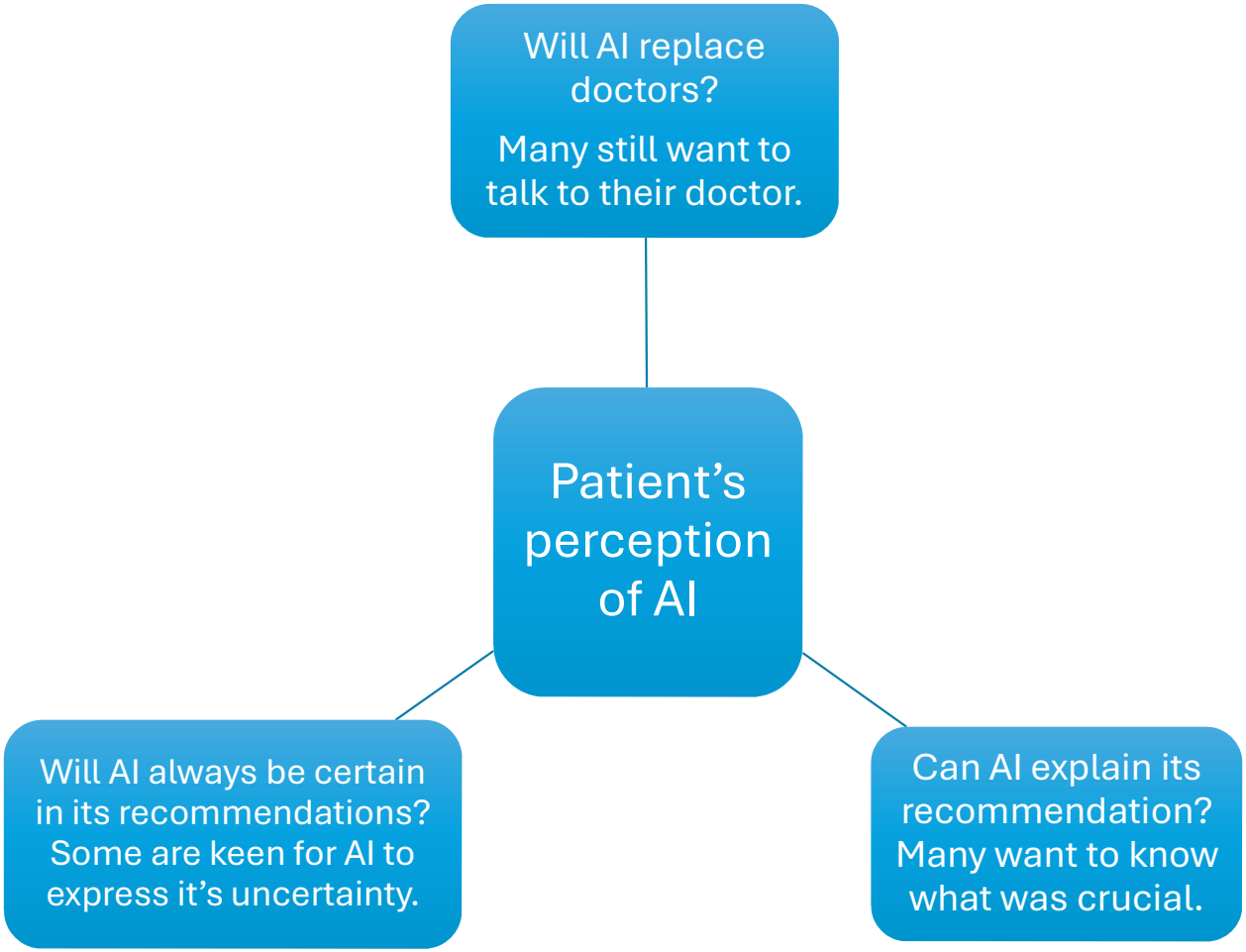
Experience 1.
Patients have varying perceptions about AI



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Experience 2.
Glaucoma is one specialty that would benefit from AI

Currently in UK:

Individuals

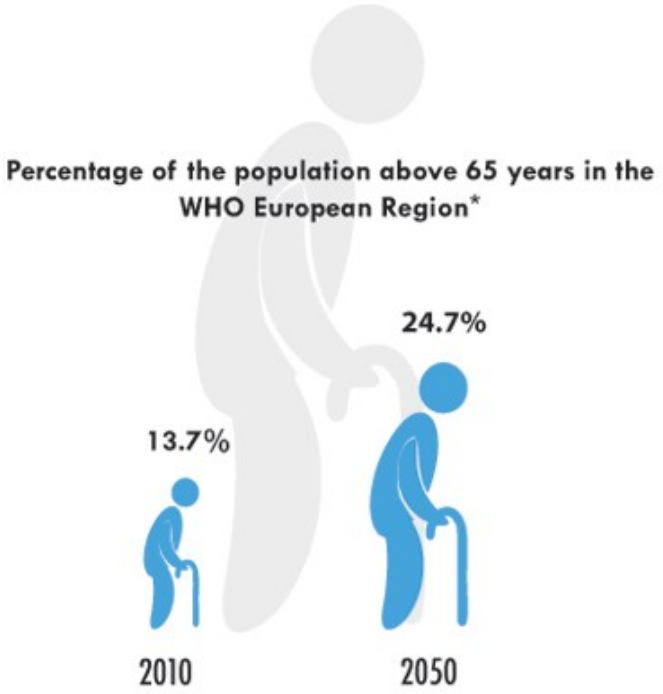
- **Second leading cause** of blindness in the UK
- 4000 people registered with **vision loss** per year
- Leading cause of **irreversible blindness** worldwide

Society

- Prevalence of glaucoma **increases with age**
- **50%** undiagnosed

National Health Service

- Responsible for **>1m** outpatient visits/year in NHS England
- Ophthalmology is responsible for **10%** of all NHS outpatient activity
- **25%** of outpatient activity of hospital eye services



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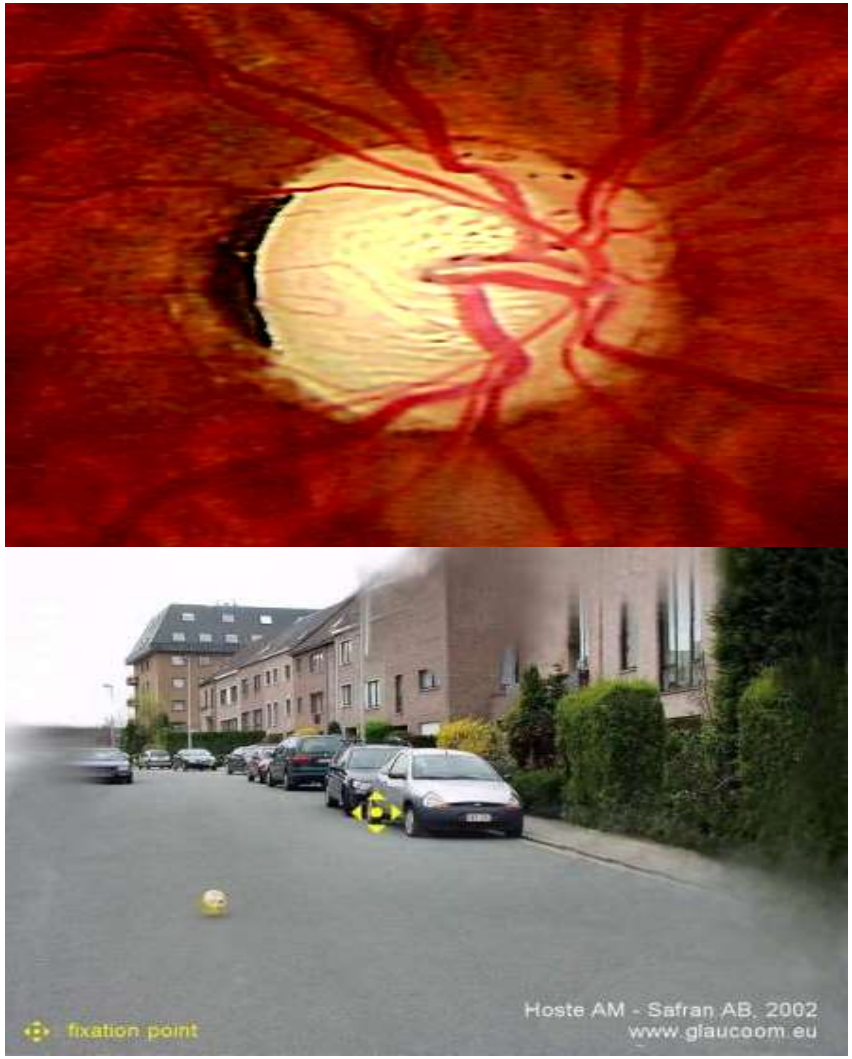
Glaucoma: A Chronic Disease of the Optic Nerve

Healthy

Glaucoma



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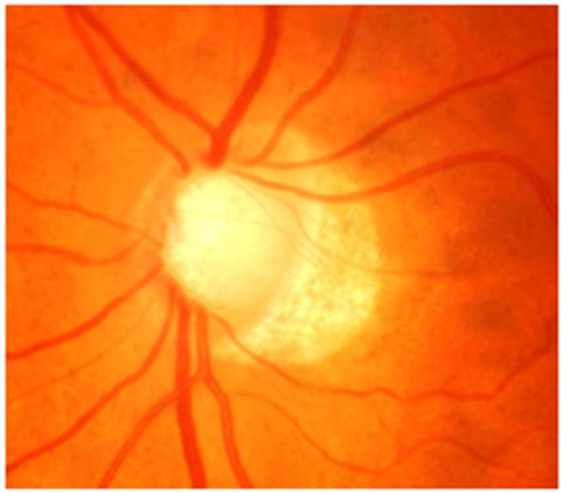
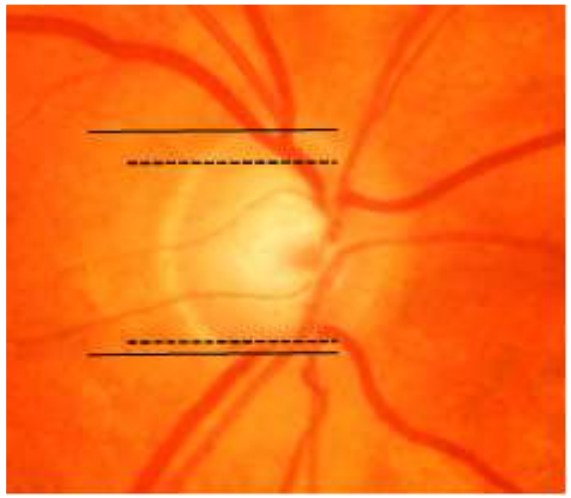
Glaucoma: Diagnosis is Difficult

Variability in optic disc size and shape

Difficult to interpret damage





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Current pathway

Routine sight test at optometrist

Referred with possible Glaucoma

Hospital appointment with clinician

20%

30%

50%

Glaucoma

At risk of glaucoma

Test normal - discharged

Unnecessary and costly over-referral

Possible new pathway

Routine sight test at optometrist

AI test

50%

30%

Test normal - discharged

Referred with Glaucoma

At risk of glaucoma

Monitoring in the community

Hospital appointment with clinician

20%

Glaucoma

Removal of over-referral

Experience 3. Now, only a few AIs are in routine use – for diagnosis/case detection

- In the UK, one AI is used routinely in ophthalmology: Scottish National Screening. Many trials are going on, including HERMES and work relating to the OCTANE algorithm from Moorfields-DeepMind.
- Royal College of Ophthalmology: Position Statement on AI in Ophthalmology
- 80% of AI use is in radiology: The Royal College of Radiologists created AI Registry

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  - Ulster University, UK
  - Queen University of Belfast, UK
  - Brescia University, Italy

MRC Medical Research Council

BCPB British Council for Prevention of Blindness

EPSRC Engineering and Physical Sciences Research Council

St Paul's Eye Unit

MISTI MIT Global Experiences

wellcome trust

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Question?