

Assessment of eye.dot for Urgent Eyecare Triage

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Current challenges in emergency eye triage

- 6% of UK ED attendances are eye-related problems and this number is **increasing**^{1,2}
- **Majority have non-urgent conditions:**
 - Only 22% warranted referral to ophthalmology clinics, 2nd casualty visit or admission³
 - 70% were suitable for outpatient clinics⁴
- Triageing is difficult and there is a **shortage of trained and experienced nurses for this role**
- **NHS Pathways is risk-averse**, recommending ED attendance within 1 hour for most visual symptoms

Need for an online triage tool

- **Triaging tools already effectively improved emergency clinical services**
- NHS Long Term Plan requires **Digital Transformation**
- Online triage system could **relieve service pressures and improve patient experience** by reducing waiting times and travel
- Clearly there is a need for an online emergency eye triage tool...

eye.dot's
printable
report

Questionnaire completed: 10/9/2022 14:18
Time taken: 1 mins 25 secs
Feedback rating: 5
Study ID:

Keratitis Example

Your date of birth:

8 May 1998 Your age: 24

	Question / Answer	Points	Urgency
1	How did you decide to come to the Emergency Department today? <i>I was told to come by NHS111</i>	1	
2	What best describes your eye problem? <i>Red or painful eye</i>	1	
3	The problem is affecting: <i>One eye</i>	1	
4	Is the affected eye bloodshot or red? <i>The eye is bright red</i>	1	D
5	How much of the eye is affected? <i>The whole eye</i>	1	C
6	How long has the eye been bloodshot or red? <i>1-2 days</i>	1	C
7	Are the eyelids of the affected eye swollen or puffy? <i>The eyelids are not swollen or puffy</i>	1	
8	Are you getting any watering or discharge from your eye? <i>Tears and watering only</i>	1	
9	Is the problem causing pain or discomfort? <i>There is a sharp or stabbing pain</i>	7	C
10	How severe is the pain from 0-5 (no pain is 0 and excruciating pain is 5)? <i>The pain is severe: 4 or 5 out of 5</i>	10	A
11	Is the level of discomfort or pain changing? <i>The discomfort or pain is getting worse</i>	2	C

Print

12	Have you become more sensitive to bright light? <i>I am more sensitive to light than usual</i>	2	D
13	How severe is your sensitivity to light? <i>It is uncomfortable when I look at bright light or direct sunshine</i>	2	D
14	Is your vision (with glasses correction if worn) worse than usual? <i>Yes, my vision is worse than usual</i>	2	D
15	Which of these best describes how your vision is affected? <i>I can only read large text or titles</i>	2	C
16	Are you seeing haloes around lights? <i>I have not noticed haloes around bright lights</i>	1	
17	How are you feeling in yourself? <i>Apart from my eye problem, I otherwise feel normal</i>	1	
18	Do you regularly wear contact lenses? <i>I don't wear contact lenses</i>	1	
19	Have you had a recent hospital eye examination or procedure on the affected eye(s)? <i>No</i>	1	
20	Have you had an eye condition before? <i>No, I have never had a problem in either eye before</i>	1	
21	Are you currently using any medication (including non-prescription medication) for your eyes? <i>I am not using any medication for my eyes</i>	1	
22	Do you suffer from any of the following? (select all that apply) <i>None of the above;</i>	1	
Total points		42	

Recommendation on urgency of review:

This patient should be seen in hospital the same day.

- P1(A) = same-day
- P2 (B) = 24 hours
- P3 (C) = 48 hours
- P4 (D)= 72 hours
- P5 (E) = 1 week

eye.dot
as a
diagnostic
tool

<u>Clinician</u>	<u>% correct diagnosis in 12 red/painful scenarios</u>	<u>% correct diagnosis in 16 visual disturbance scenarios</u>
Consultant 1	100.0	100.0
Consultant 2	91.7	92.8
Fellow	50.0	59.4
ST4	83.3	85.4
ST2	91.7	80.25
Nurse 1	83.3	69.8
Nurse 2	58.3	51.1
Optometrist 1	75.0	68.8
Optometrist 2	100.0	96.9

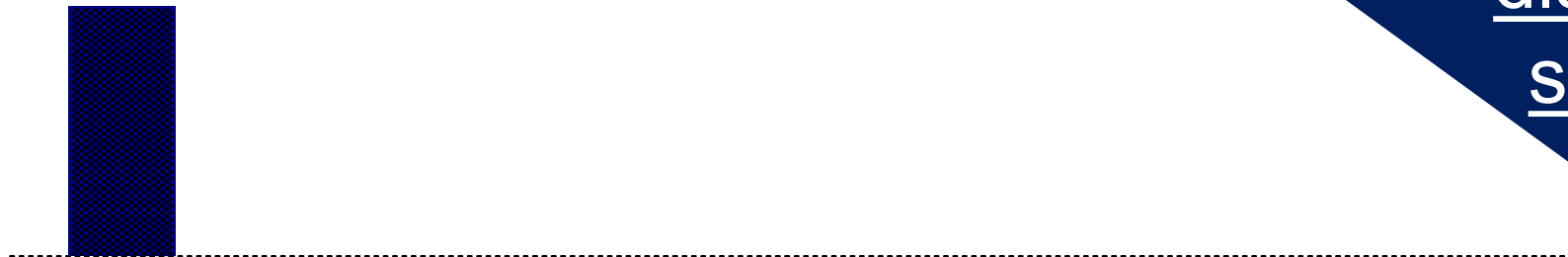
Performance in
fabricated
red/painful eye
scenarios



ore agreement
with Consultant 1's
prioritisations



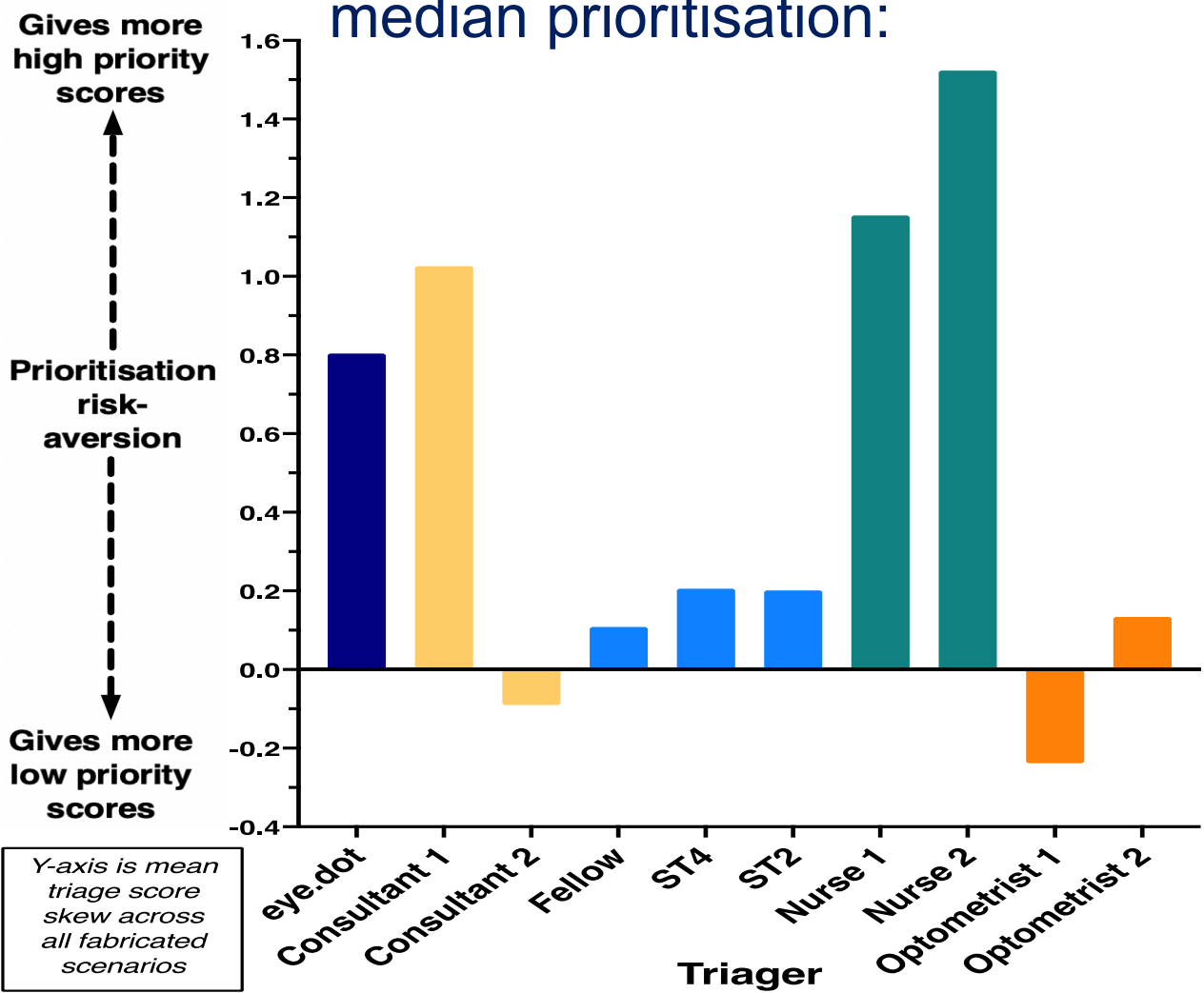
Less agreement
with Consultant 1's
prioritisations



Performance in
fabricated visual
disturbance
scenarios

Clinical safety in these fabricated scenarios

eye.dot more risk-averse than clinicians' median prioritisation:



6 scenarios assigned lower priority by eye.dot than gold-standard, unlikely to cause harmful delay:

Scenario	Eye.dot	Consultant 1
Chalazion	Working week	48 hours
Dry eyes	48 hours	24 hours
Amaurosis fugax	24 hours	Same day
Uncomplicated PVD	72 hours	48 hours
CN VI palsy	48 hours	24 hours
CMO	48 hours	24 hours

Real-world validation of eye.dot

Service Evaluation, n = 46

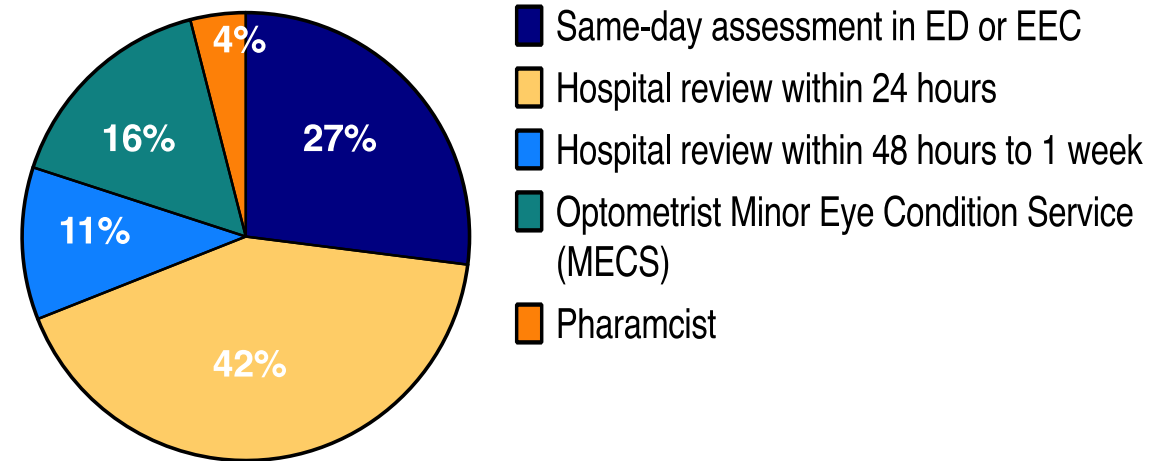
13-100 year-olds seen in Addenbrooke's EEC over 1 month, using earlier prototype:

- **Accurate diagnosis** – 96% correct from eye.dot report
- **Moderate correlation** (Cohen's kappa 0.54) with consultant's real prioritisation
- **No harmful delays** to patient care
- Positive feedback from patients:
 - Mean **5.5 minutes** to complete
 - **93% rated as good or excellent and would use again**

Pilot Study, n = 93

All attendees >16 years to ED & EEC will complete eye.dot

Was ED/EEC attendance actually appropriate?



- **97% rated as good or excellent**
- Aim: compare eye.dot prioritisations with actual patient outcomes

Conclusions

- Eye.dot is a **quick, accessible and easy-to-use** online emergency eye triage tool
- Provides **comprehensive summary for diagnosis**
- Triage patient urgency with **good gold-standard agreement** in fabricated and real scenarios
- Performs triaging assessments **safely**
- It is **very well received** by patients
- Following further validation, eye.dot may be suitable for automated triage to reduce pressures on ED/EEC and direct patients to more appropriate alternative services

Questions?