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OPHTHALMOLOGISTS

Looking Ahead: Patient Reported Outcomes

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NOD Cataract Audit

Looking ahead

- Cataract Audit now funded to end **August 2019** by HQIP
 - 2 years remaining to complete **5 years** of HQIP support
 - Continue **roll-out of audit** inc. ISTCs
 - Assess feasibility and pilot **PROM**
- Need to investigate options for **sustainable funding**
 - **IOL Levy** similar to funding for the Joint Registry
 - Other sources of funding
- Wish to extend coverage to include **Scotland and NI**
 - Requires additional funding
- Consider funding options for **other clinical areas**
 - **AMD, Glaucoma, RD**




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NOD Cataract Audit

Cataract Patient Reported Outcome Measure (PROM)

Commissioned by HQIP in funding years 4&5 to
assess the feasibility and pilot the use of a
Cataract Patient Reported Outcome Measure
Cat-PROM5




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NOD Cataract Audit

Cataract Patient Reported Outcome Measure (PROM)

- Cataract is a **symptomatic condition**
- **Patients are the best judge** of their vision
- Cataract **surgery should improve** patients' self-reported visual difficulty



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NOD Cataract Audit

Cataract Patient Reported Outcome Measure (PROM)

- Every day **ophthalmologists informally**
 - Ask their patients **how much their vision is affected** by Cataracts
 - Ask their patients **how much better** their vision is **after Cataract Surgery**

NOD Cataract Audit

Cataract Patient Reported Outcome Measure (PROM)

- **Concept:** A few key questions can help us to better understand patient's **visual disability from cataract and its relief from surgery**
 - A cataract **PROM**
 - **Structured, repeatable and psychometrically valid** instrument which is **responsive** to surgical intervention

(DH spent a couple of £100k and could not find an NHS suitable Cataract PROM)

NOD Cataract Audit

NIHR Funded Cataract Research Programme

Aim 1

To develop a **brief** NHS suitable UK relevant cataract surgery patient reported outcome measure capable of **reliably measuring** visual **difficulty** from cataract and its **relief** from surgery.

Cataract Patient Reported Outcome Measure (Cat-PROM)

- **4 Centres**
 - Bristol (John Sparrow), Torbay (Andy Frost), Cheltenham (Rob Johnston), Brighton (Christopher Liu)
- Cycle 0: **Pilot** (21 Items, 200 patients, pre-op only)
- Cycle 1: **Development** (11 Items, 316 patients, pre- & post-op)
- Cycle 2: **Confirmation** (5 Items, 306 patients, pre- & post-op)
- Three Cycles Combined
 - **822 Patients**
 - **1266 Questionnaires** for final analysis and calibration

Questionnaire Levels are 'rank ordered'

How would you describe your vision **overall in the past month** - with both eyes open, wearing glasses or contact lenses if you usually do?

Excellent	<input type="checkbox"/>	0
Very good	<input type="checkbox"/>	1
Quite good	<input type="checkbox"/>	2
Average	<input type="checkbox"/>	3
Quite poor	<input type="checkbox"/>	4
Very poor	<input type="checkbox"/>	5
Appalling	<input type="checkbox"/>	6

Scales

- Nominal or Categorical
 - Sighted / Blind
- Rank ordered or ordinal
 - Street numbers (order & direction)
 - Questionnaire items about visual disability
- Continuous (i.e. Parametric Statistics)
 - Meters or kilometres of distance
 - Underlying latent visual disability scale

Translating Questionnaire Scales

Rank ordered or ordinal question responses

↓

Rasch

↓

Continuous underlying latent scale

How does Rasch help?

- Identifies the **Underlying Latent Trait** being measured by the questionnaire
- Assesses **Dimensionality** (questions measure the same thing)
- Establishes a **Continuous Scale** for the Latent Trait
- **Positions items and** rank ordered item **category levels** along the Continuous Latent Scale
- **Positions Respondents** on the same **Continuous Latent Scale**
 - **Very powerful feature** as this allows **parametric statistical analysis** of data collected as rank ordered data

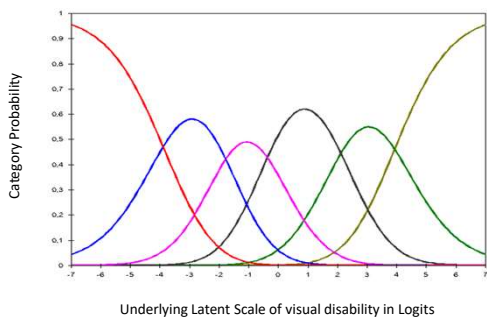
Sample Question 1 - Vision Overall

How would you describe your vision **overall in the past month** - with both eyes open, wearing glasses or contact lenses if you usually do?

- Excellent 0
- Very good 1
- Quite good 2
- Average 3
- Quite poor 4
- Very poor 5
- Appalling 6

Well functioning Sample Question Vision Overall

Threshold Probability Curve



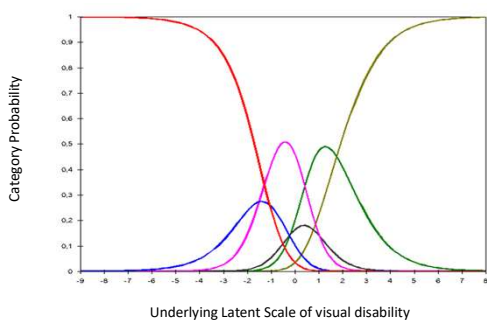
Sample Question 2 - Lonely

Have you felt **lonely or isolated because of your eyesight?**

- Not at all 0
- Very rarely 1
- A little of the time 2
- A fair amount of the time 3
- A lot of the time 4
- All the time 5

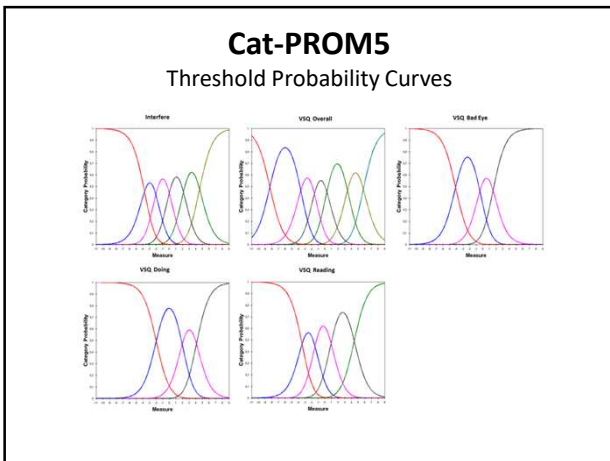
Poorly Functioning Sample Question Lonely

Threshold Probability Curve



Final Item Selection

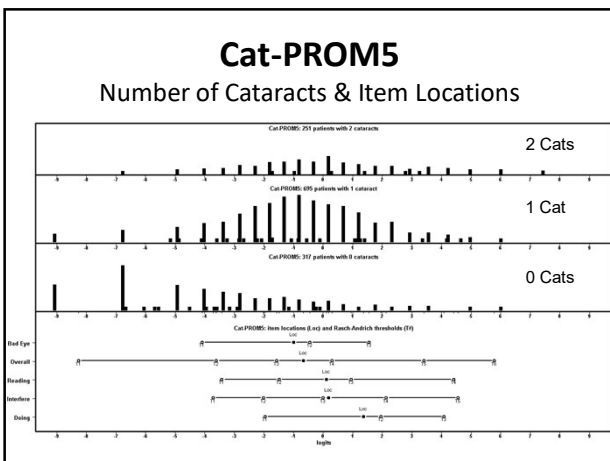
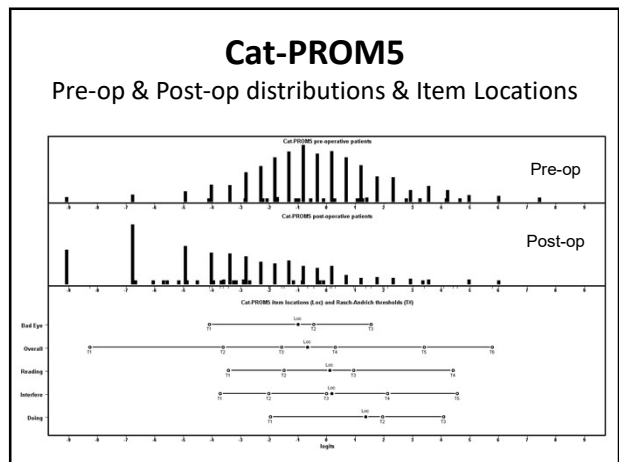
- **Choices based on**
 - Statistical considerations
 - Patient views
 - Expert opinion



- ### Cat-PROM5 Psychometric Performance
- Rasch Reliability = 0.90
 - Person separation = 2.98
 - Cronbach's alpha = 0.89
 - Unidimensional
 - 1st Residual eigenvalue = 1.5
 - Item invariance
 - Minor Differential Item Functioning (DIF) only
 - Good Targeting, Spread & no significant ceiling / floor
 - Pre-op cataract patient mean = 0.01 Logits
 - Repeatable
 - Intra-class Correlation Coefficient = 0.89
 - Standardised Effect Size
 - Cohen's d: = -1.45

Final Item Set of 5 Questions

Short
Reliable
Repeatable
Unidimensional
Responsive to Surgery



- ### Qualitative Elements
- Both original **Parent Questionnaires** involved extensive patient and eye health professional input
 - VSQ (40 interviews)
 - VCM1 (38 + 58 interviews in 2 rounds)
 - Cataract Surgery **Patients assessing Cat-PROM5**
 - Co-researcher patient advisory group input
 - Pre-operative interviews with patients
 - Post-operative interviews with patients
 - Patients with and without ocular co-morbidities
 - Comparison against existing longer 'best of class' questionnaire
 - Cat-PROM5 **favourably received** by interviewees

Cat-PROM5

Patient Reported Benefits from Surgery

Small or better (0.2SD or more)	Medium or better (0.5SD or more)	Large or very Large (0.8SD or more)
83%	72%	68%

NOD Cataract Audit

Cataract Patient Reported Outcome Measure (Cat-PROM5)

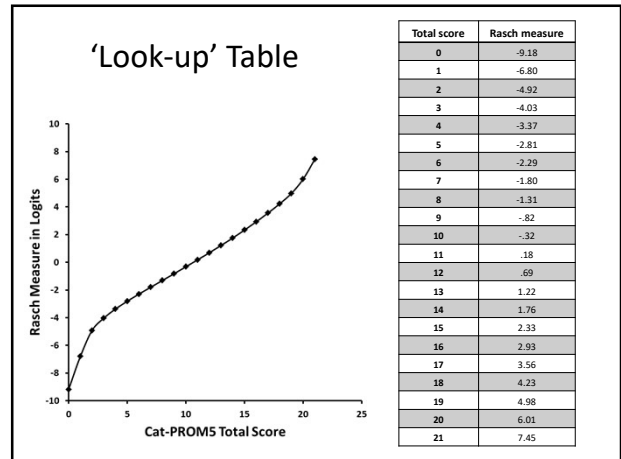
How to use it?

Translating Questionnaire Scales

Rank ordered or ordinal question responses

↓ 'Look up' Table ↓

Continuous underlying latent scale



Cat-PROM5 Implementation

- **Specialty Specific Ophthalmology EMRs**
 - **Medisoft EMR** in over half NHS cataract services
 - **OpenEyes EMR** gaining ground and used in one very large flagship eye hospital
- Both EMRs wish to **implement Cat-PROM5** for use in **NHS Cataract Surgery Services**

Cat-PROM5

- **Psychometrically robust** questions which work well and are highly responsive to cataract surgery
- Has the potential to **empower patients** to express their visual difficulty in a structured format
- Responses can be **calibrated to a continuous underlying visual difficulty latent scale**
- Provides opportunity for **patients to express their benefit** from surgery
- **Avoids limitations** of relying only on **monocular visual acuity** to assess surgery