

Prostate Multi-Parametric MRI LIKERT scoring at UCLH one-stop clinic closed loop audit

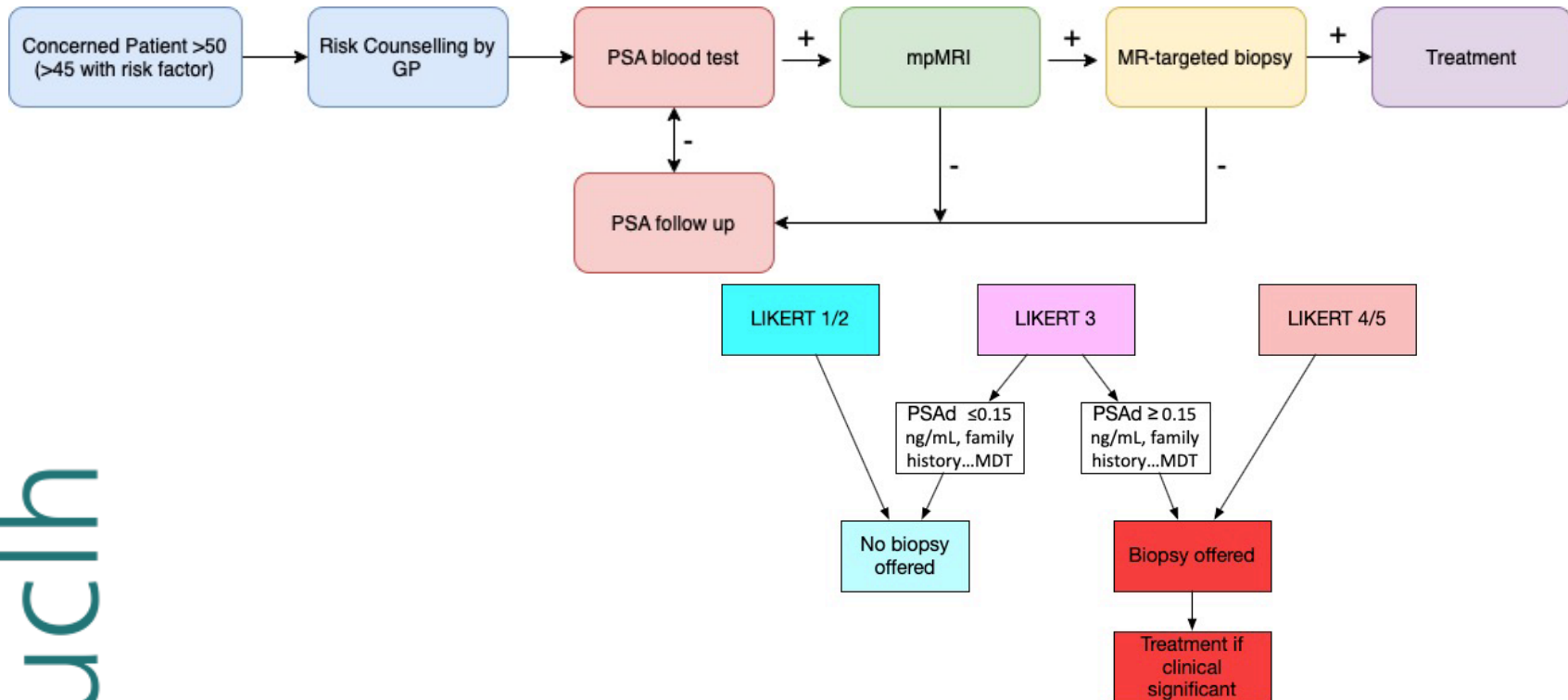
RSNA 2024

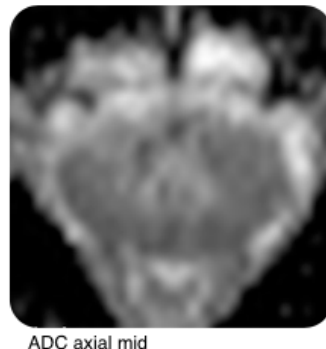
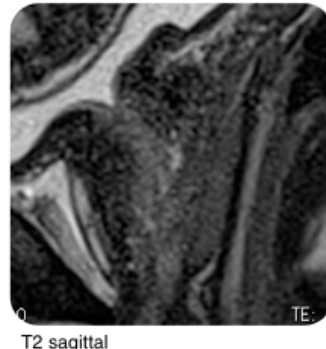
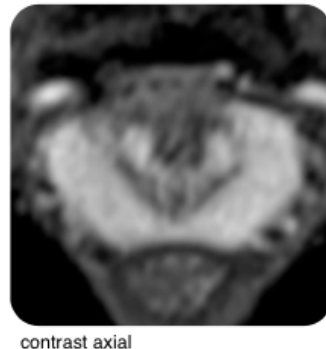
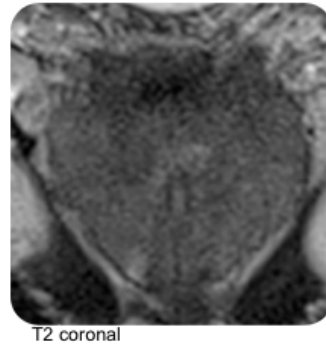
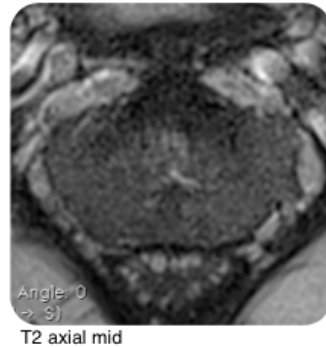
Quality Improvement

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Background

- Pre-biopsy mpMRI + targeted biopsy = ↑ sensitivity and ↑ NPV for diagnosing clinically significant cancer
- Current diagnostic pathway for prostate cancer according to NICE guidelines:





Priority Article

Positive Predictive Value of Prostate Imaging Reporting and Data System Version 2 for the Detection of Clinically Significant Prostate Cancer: A Systematic Review and Meta-analysis

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- We suspected that we were sometimes scoring not enough 2/5 and too many 3/5 because MRI prostate is difficult and entails uncertainty...

- Is this diffuse change 2/5 or 3/5... could low level tumour be masked?? Easiest just to score 3 and not be wrong in the MDT!

- Some radiologists are 'safe' - 3/5
- Others want to score 2/5 because it helps pt avoid biopsy

Aim

To assess the frequency of Likert score assignment, biopsy outcomes and subsequent positive predictive value at the UCLH one-stop clinic.

Standard

- No agreed standard of proportion of Likert scores or the PPV rates.
- But PROMIS study: 29% of patients scored 2/5 or less. Around 30% scored 3/5 or less.
- Target: >25% 2/5 or less
- Target: <30% 3/5

Methodology

- Retrospectively assessed all patient referred to one-stop clinic over a 3-month period (1st of February 2021 to 30th of April 2021).
 - EPIC clinic list
 - PACS report, histopathology report, demographics statistics
- Following intervention May 2021:
 - Retrospectively assessed all patient referred to one-stop clinic over a 3-month period
- PPV using Wilson's 95% confidence intervals used for prespecified Likert cut-off standard

Intervention

A group educational meeting for the reporting radiologists at UCLH was held regarding the proportions of Likert scores & scores fed back individually to reporters: 'you're a little below / above / the same as the others...

Results

136 patient prior and 135 post-intervention

Demographic	
Age (SD)	66.96 (\pm 9.46)
PSA, ng/mL (IQR)	6.41 (4.45, 11.40)
PSAd ng/mL ²	0.13 (0.08, 0.22)
MR scanner (%)	
Siemens Avanto 1.5T	96 (70.6)
Philips Achieva 3T	22 (16.2)
Siemens Avanto_fit 1.5T	10 (7.4)
Philips Ingenia 3T	6 (4.4)
Siemens SymphonyTim	2 (1.5)
Reporting radiologist (%)	
1	49 (36.0)
2	27 (19.9)
3	24 (17.7)
4	17 (12.5)
5	13 (9.6)
6	6 (4.4)

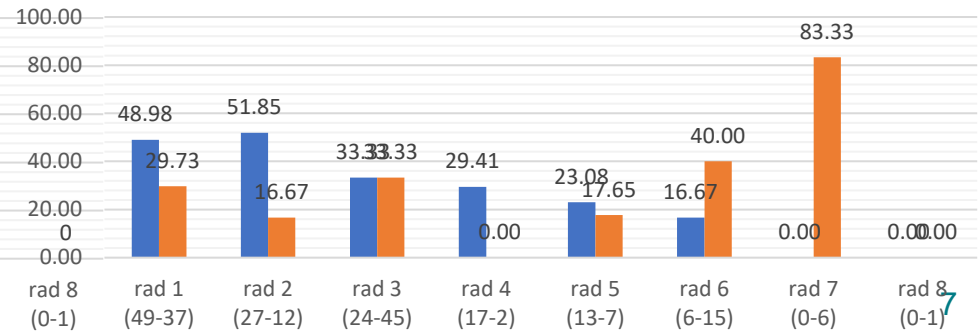
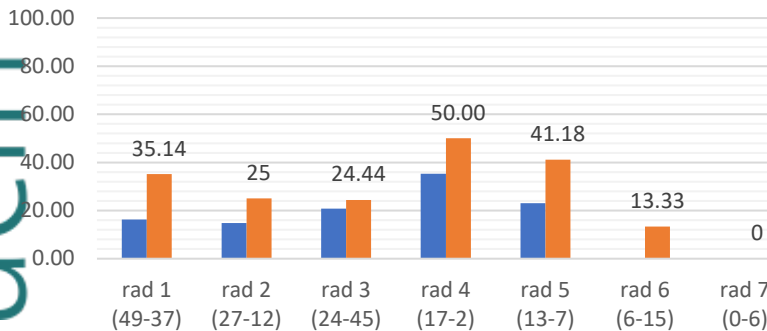
	Proportion of Likert 2s			Proportion of Likert 3s		
	pre-intervention	post-intervention	difference	pre-intervention	post-intervention	difference
All radiologists	19.1	27.4	8.30	40.4	31.1	-9.30
rad 1	16.33	35.14	18.81	48.98	29.73	-19.25
rad 2	14.81	25	10.19	51.85	16.67	-35.19
rad 3	20.83	24.44	3.61	33.33	33.33	0.00
rad 4	35.29	50.00	14.71	29.41	0.00	-29.41
rad 5	23.08	41.18	18.10	23.08	17.65	-5.43
rad 6	0.00	13.33	13.33	16.67	40.00	23.33
rad 7	na	0	na	na	83.33	na
rad 8	na	0	na	na	0.00	na

Proportion of Likert 2s

Proportion of Likert 3s

■ pre 2 proportion ■ post 2 proportion

■ pre 3 proportion ■ post 3 proportion



Results

****Insignificant changes****

Proportion of significant cancers detected

	Percentage (95% CI)		
	Pre-intervention.	Post-intervention	Difference
Total biopsied	50.0% (51.7-58.3)	43.7% (35.6-52.1)	-6.3% (-18.2/+5.6)
Significant cancer detected	32.4% (25.1-40.6)	29.6% (22.6-37.8)	-2.8% (-13.8/+8.2)
Insignificant cancer detected	2.2% (0.8-6.3)	3.0% (1.2-7.4)	+0.8% (-2.2/+4.6)

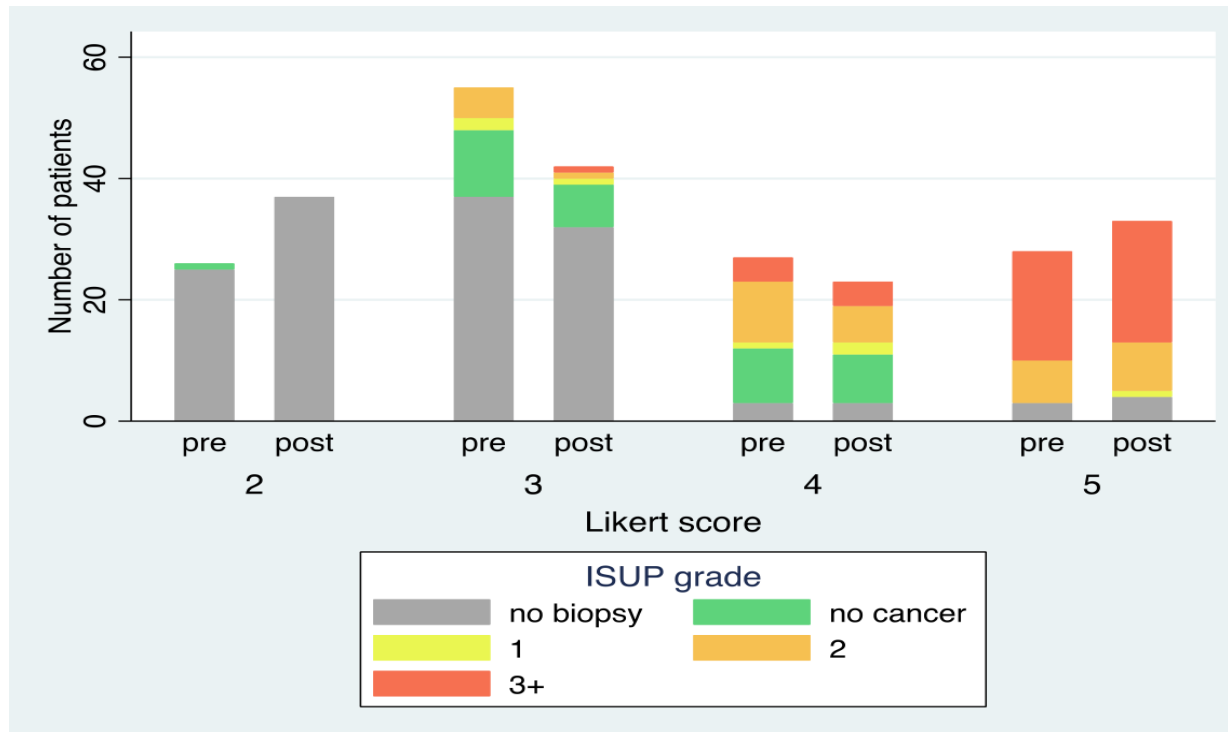
Positive predictive value for pre-specified Likert score cut-offs for all patients undergoing biopsy

Likert score	PPV (95% CI)		
	Pre-intervention	Post-intervention	Difference
≥3	65.7% (53.7-75.9)	67.8% (55.1-78.3)	+2.1% (-14.4/+18.6)
≥4	79.6% (66.4-88.5)	77.6% (64.1-87.0)	-2.0% (-18.2/+14.2)
3	33.3% (16.3-56.3)	20.0% (5.7-51.0)	-13.3% (-33.3/+19.7)
4	58.3% (38.9-75.5)	50.0% (11.1-29.9)	-8.3% (-37.8/+21.2)
5	100.0% (86.7-100.0)	96.6% (82.8-99.4)	-3.4% (-10.0/0.0)

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No marked change...



Discussion

- Likert 3 \leq 30% not met pre-intervention
- Likert 3 proportion reduced by 9.3% post-intervention, and by a lot more for some reporters. Not significant different to target of 30%
- Likert 2 increased (overall) and more for some reporters and met PROMIS based criteria
- Reduction in biopsies, little change in cancer detection (all statistically insignificant)
- Overall: simple feedback can be highly effective in getting radiologists on the same page and meeting standards...