

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
<b>SECTION I - Who can request a prostate mpMRI</b>										
Item no. 1A. In the current health environment, mpMRI requests can be made directly by										
1 a. Patient						x	100			0
2 b. GP						x	93	7		0
3 c. Urologist	x								100	0
4 d. Urologist with a specialist interest in prostate cancer	x								100	0
5 e. Radiologist		x					7	26	67	0
6 f. Uro-oncologist	x								100	0
7 g. Any clinical team without urological input						x	93	7		0
8 h. Specialist urology nurse	x							7	93	0
1B. mpMRI should be offered										
9 a. To all men						x	100			0
10 b. Based on PSA only							57	22	21	1
11 c. Based on PSA and other clinical criteria (PSA kinetics, previous TRUS biopsy, family history, DRE...)	x								100	1
12 d. At the urologist's discretion	x							20	80	0

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
<b>SECTION II – mpMRI Acquisition Protocol</b>										
2. The minimum field strength at which a prostate mpMRI should be conducted is										
13 a. 1.5T	x							100		0
14 b. 3T					x		87	13		0
3. The optimal field strength at which a prostate mpMRI should be conducted is										
15 a. 1.5T			x				47	33	20	0
16 b. 3T	x									0
17 4. An endo-rectal coil should be used routinely.					x		93	7		0
18 5. Anti-peristaltic agents should be use routinely.	x						13	13	74	0
19 6. A flatus tube should be used routinely.					x		87	13		0
20 7. A flatus tube should be used only if there is prominent rectal air.			x				27	46	27	0
21 8. mpMRI protocol should be tailored for detection of tumour within the prostate only.						x	53	7	40	0
22 nodal/bony staging.			x				20	33	47	0
10. DCE (Dynamic Contrast Enhanced Imaging) is an essential component of prostate mpMRI protocol										
23 a. For detection	x							7	93	0
24 b. For staging	x						20		80	0
25 c. For treatment planning eg focal therapy, surgery or radiotherapy planning	x						20		80	0

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
26 11. T2 should be acquired in all three planes.	x						7	93		1
27 12. 3D T2 can be used to replace separate T2 acquisitions for each of the three planes.					x		91	9		4
28 13. A T2 sequence (eg T2 FISP) with a large field of view is required to cover abdominal nodes.					x		92	8		2
14. Axial acquired images should be										
29 a. True axial to the patient (UK Consensus 2013)	x							100		3
30 b. Axial to the prostate gland (orthogonal to the rectum) (PI-RADS v1, 2012)					x		100			4
15. A dedicated long b-sequence should be preferred to an extrapolated/calculated long b image. (Either extrapolated or dedicated long b is recommended by PI-RADS v2; dedicated long b is recommended from past UK Consensus 2013)		x					8	25	67	3
16. The calculated long b-value should be used instead of a dedicated long b-sequence only if SNR limitations arise with the latter.			x				18	46	36	4
17. At 1.5T, the minimum acceptable value for the diffusion high b-sequence is										
33 a. 1000					x		75	17	8	3
34 b. 1200						x	59	33	8	3
35 c. 1400 (PI-RADS v2; UK Consensus 2013)	x							7	93	2
36 d. 1600						x	50	42	8	3

18. At 3T, the minimum acceptable value for the diffusion high b-sequence is
- 37 a. 1400
- 38 b. 1600
- 39 c. 2000 (PI-RADS v2; UK Consensus 2013)
- 40 d. 3000
19. The maximum voxel size in-plane resolution of T2 sequences should be
- 41 a.  $\leq 0.5\text{mm}$  (phase resolution PI-RADS v2)
- 42 b.  $\leq 0.7\text{mm}$  (frequency resolution PI-RADS v2; UK Consensus 2013)
- 43 c.  $\leq 1.0\text{ mm}$
20. The maximum voxel size in-plane resolution of DWI sequences should be
- 44 a.  $\leq 1.5\text{ mm}$
- 45 b.  $\leq 2\text{ mm}$  (UK Consensus 2013)
- 46 c.  $\leq 2.5\text{ mm}$  (PI-RADS v2)
21. The temporal resolution of DCE should be
- 47 a.  $\leq 7\text{s}$  (preferable as per PI-RADS v2)
- 48 b.  $\leq 10\text{s}$  (recommended by PI-RADS v2)
- 49 c.  $\leq 15\text{s}$  (minimum recommendations as per PI-RADS v1 2012, and UK Consensus 2013)

Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
				x		75	17	8	3
		x				42	58		3
x							7	93	2
					x	67	25	8	3
			x			17	50	33	3
x							7	93	2
					x	55	36	9	4
			x			46	36	18	4
x						8	15	77	2
	x					27	19	54	4
			x			50	33	17	4
			x			33	25	42	4
x							25	75	3

22. DCE analysis should be performed using
- 50 a. Full quantitative pharmacokinetic DCE modelling
  - 51 b. Curve shape parametric evaluation
  - 52 c. Visual evaluation of the early arterial (10-20 second) post-contrast images
  - 53 d. DCE analysis should not be performed.

**SECTION III – mpMRI Clinical Reporting**

23. mpMRI reports should be produced by
- 54 a. General Radiologists
  - 55 b. Radiologists with a special interest in prostate cancer/Uro-radiologists
  - 56 c. Urologists
  - 57 d. Urologists with a special interest in prostate cancer
  - 58 e. Oncologists
  - 59 f. Oncologists with a special interest in prostate cancer/Uro-oncologists
  - 60 g. Radiographers
  - 61 h. Radiographers with a special interest in prostate cancer

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
x					x		91			
					x		92	8		3
					x		75	8	17	3
x									100	3
					x		82	9	9	4
x					x		86	7	7	0
									100	0
					x		100			0
					x		93		7	0
					x		100			0
					x		93	7		0
					x		100			0
					x		100			0

24. In the current healthcare system, the following should be able to review a prostate mpMRI within their scope of practice

62 a. General Radiologists

63 b. Uro-radiologists

64 c. Uro-oncologists

65 d. Urologists

66 e. MR radiographers

67 f. Therapy radiographers

68 25. It is necessary for GPs to understand prostate mpMRI reports.

should report per year should be

69 a. At least 50

70 b. At least 100

71 c. At least 150

72 d. At least 200

radiologist should actively participate per year is

73 a. At least 42/yr (once a week – allowing for annual leave)

74 b. At least 24/yr (twice a month)

75 c. At least 12/yr (once a month)

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
62 a. General Radiologists	x							7	93	0
63 b. Uro-radiologists	x								100	0
64 c. Uro-oncologists	x								100	1
65 d. Urologists	x								100	0
66 e. MR radiographers	x							13	87	0
67 f. Therapy radiographers					x			80	7	13
68 25. It is necessary for GPs to understand prostate mpMRI reports.					x			93		7
69 a. At least 50						x		62	15	23
70 b. At least 100	x							16		84
71 c. At least 150		x						38	8	54
72 d. At least 200						x		69		31
73 a. At least 42/yr (once a week – allowing for annual leave)						x		100		
74 b. At least 24/yr (twice a month)	x								7	93
75 c. At least 12/yr (once a month)						x		70	15	15



histological grade and volume combination

- 90 a. Gleason 3+3, > 0.5cc
- 91 b. Gleason 3+3, > 1.0 cc
- 92 c. Gleason 3+4, of any volume
- 93 d. Gleason 3+4, > 0.2cc
- 94 e. Gleason 3+4, > 0.5cc
- 95 f. Gleason ≥4+3, of any volume
- 96 g. Gleason ≥4+3, > 0.2cc
- 97 h. PI-RADS v2 definition defined as per
  - 98 a. Gleason score only
  - 99 b. Maximum cancer core length (MCCL) only
  - 100 c. A combination of Gleason score and MCCL.
  - 101 d. Either Gleason score or MCCL.
- 33. The following Prostate mpMRI scoring systems may be used for routine reporting in the UK
  - 102 a. Subjective (Likert-scoring) system
  - 103 b. PI-RADS v2 scoring system
  - 104 c. PI-RADS v1 scoring system
- 105 34. Subjective (Likert) and PI-RADS scoring systems should be used concurrently.
- 106 the use of subjective Likert scoring once experienced.

		Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
		Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
				x				58	42	3	
x								69	8	84	3
						x		50	25	25	3
				x				16	42	42	3
x								8	8	84	3
	x							17	17	66	3
x								8	8	84	3
x									16	84	3
						x		92	8		3
						x		92	8		2
x								8	8	84	2
						x		69	8	23	2
x										100	2
	x							25	17	58	3
						x		100			2
						x		92		8	3
						x		54	10	36	4



36. It is important to distinguish between scores 1 and 2 within the negative areas of the prostate gland on mpMRI.

37. Size criteria should be the only factor to differentiate between mpMRI Likert score 4 and 5. (in PI-RADSv2, a lesion is scored 5 only if it's size is > 1.5cm)

38. The background changes within the prostate gland should be scored.

39. The image quality of the mpMRI be reported.

e.g sectors named PZpl (postero-lateral PZ), PZpm (posteromedial PZ), TZp (posterior TZ), TZa (anterior TZ), etc) as illustrated below.

41. The narrative report should refer to sectors as named in the pictorial report used in PI-RADS v1: e.g 12a, 3a, 4p

42. Scores for individual sequences should be included in the final report when using the following scoring systems

a. Subjective (Likert) scoring

b. PI-RADS v2 scoring

scoring systems

a. Subjective (Likert) scoring

b. PI-RADS v2 scoring

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
					x		91	9		4
					x		100			5
x							27		73	4
x									100	7
	x						17	17	66	3
					x		92		8	3
					x					3
						x	67	25	8	3
x									100	3
	x						8	25	67	3

44. The following should be scored on a 1-5 scale for likelihood of involvement?

- 117 a. Extracapsular extension (UK Consensus 2013, PI-RADS v2, PI-RADS v1)
- 118 b. SV involvement (UK Consensus 2013, PI-RADS v2, PI-RADS v1)
- 119 c. Bladder neck involvement (UK Consensus 2013, PI-RADS v2)
- 120 d. Neurovascular bundle involvement (UK Consensus 2013, PI-RADS v2)
- 121 e. External sphincter involvement (UK Consensus 2013, PI-RADS v2, PI-RADS v1)
- 122 f. Rectal wall involvement (UK Consensus 2013, PI-RADS v2)
- 123 g. Bladder wall involvement (UK Consensus 2013, PI-RADS v2)
- 124 h. Bone metastases

45. To ensure consistency, tumour should be measured as:

- a. Maximum single diameter (PI-RADS v2; UK Consensus 2013 only if volume estimation is not possible)
- 125
- 126 b. 2 axial orthogonal diameters
- 127 c. 3-diameters or volume estimation by the product of 3 diameters x 0.52 (UK Consensus 2013)
- d. The measured volume by planimetry (contouring of planar areas on each slice of the tumour
- 128 summated to calculate volume/software rendering, etc)

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
117 a.	x						9	91	4	
118 b.	x						9	91	4	
119 c.	x						9	91	4	
120 d.	x						18	82	4	
121 e.	x						9	91	4	
122 f.	x						9	91	4	
123 g.	x						9	91	4	
124 h.					x		64	27	9	4
125 a.						x	69	23	8	2
126 b.			x				46	46	8	2
127 c.	x						8	8	84	2
128 d.			x				8	42	50	3

46. Peripheral zone (PZ) tumour should be measured from the following sequences

- 129 a. T2 only (for TZ in PI-RADS v2)
- 130 b. ADC only (for PZ in PI-RADS v2)
- 131 c. DCE (T1) only
- 132 d. Any sequence on which it is best seen

47. Transition zone (TZ) tumour should be measured from the following sequences

- 133 a. T2 only (for TZ in PI-RADS v2)
- 134 b. ADC only (for PZ in PI-RADS v2)
- 135 c. DCE (T1) only
- 136 d. Any sequence on which it is best seen

48. Entire gland volume should be measured on T2-weighted imaging using

- 137 a. 3-diameters x 0.52
- 138 b. Optional volume measurement by planimetry (summation of gland-contoured areas)
- 139 c. Mandatory volume measurement by planimetry (summation of gland-contoured areas)

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
x					x		82	18	4	
					x		82	18	4	
					x		100		4	
	x							100	4	
				x			9	55	36	4
					x		73	18	9	4
					x		73	18	9	4
x								100	4	
x								100	3	
	x						25	8	67	3
					x		100			3

49. The following quantitative metrics should be included within an mpMRI report

140 a. Prostate gland volume (UK Consensus 2013, PI-RADS v2)

141 b. Tumour size (UK Consensus 2013, PI-RADS v2)

142 c. Tumour ADC

143 d. DCE curve shapes (PI-RADS v1, 2012)

144 e. DCE quantitative measures (Time to peak, ktrans, max enhancement, ...)

50. On double-reading mpMRI scans

145 a. All mpMRI should be double-read

146 b. Negative scans (scores  $\leq 2$ ) should be double-read if avoiding biopsy is being considered.

147 c. Equivocal prostate mpMRI scored 3 should be double-read, if avoiding biopsy is being considered. x

148 d. Positive Scans with a score of 4 or 5 should be double-read before biopsy.

149 e. Discordant mpMRI scores with biopsy results should be double-read (retrospectively). x

51. Double-reading of mpMRI scans should only be carried out by

150 a. A bank of tertiary-centre expert radiologists

151 b. Experienced radiologists

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
140 a.	x						8	92	2	
141 b.	x						8	92	2	
142 c.					x		77	23		2
143 d.					x		85	15		2
144 e.					x		92	8		2
145 a.					x		92	8		3
146 b.						x	58	17	25	3
147 c.	x						8		92	3
148 d.					x		92	8		3
149 e.	x							16	84	3
150 a.						x	67	33		3

52. The structure of a prostate mpMRI report should include:

- 152 a. Mandatory narrative report
- 153 b. Mandatory pictorial report
- 154 c. Mandatory scoring grid
- 155 d. Mandatory snapshots of MRI lesions

156 53. If pictorial reports are produced, all the sectors within the pictorial report should be scored.

54. The pictorial report may be represented on a

- 157 a. 12-sector diagram
- 158 b. 16-sector diagram (UK Consensus 2013 example)
- 159 c. 27-sector diagram (EU Consensus 2011 example)
- 160 d. 36-sector diagram (PI-RADS v2 example)

55. In the pictorial report, the prostate diagram should be represented in the following planes:

- 161 a. Axial only
- 162 b. Axial AND coronal/sagittal
- 163 c. All three planes (UK Consensus 2013, PI-RADS v2)

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
	x						9	27	64	4
					x		54	10	36	4
						x	82	18		4
			x				36	46	18	5
						x	58	17	25	3
			x				33	17	50	3
					x		75	8	17	3
					x		83	17		3
			x				50	17	33	3
				x			25	33	42	3
				x			42	58		3
	x						25	17	58	3

56. The following number of lesions should be individually drawn within a pictorial report

164 a. Only the index lesion

165 b. Up to 3 suspicious lesions (past UK Consensus 2013)

166 c. Up to 4 suspicious lesions (PI-RADS v2)

167 d. All visible lesions

57. JPEG images or saved key images/snapshots of suspicious lesions should be attached to pictorial reports to illustrate tumour location

168 as a mandatory requirement

58. The following number of suspicious lesions should be attached as JPEG images to the pictorial report or saved as key images in PACS:

169 a. Only the index lesion

170 b. Up to 3 suspicious lesions (past UK Consensus 2013)

171 c. Up to 4 suspicious lesions (PI-RADS v2)

172 d. All visible lesions

59. mpMRI suspicious lesions contouring should be performed

173 a. Only when targeted biopsy or focal treatment is planned.

174 b. Routinely

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
x					x		100			3
			x				41	17	42	3
					x		50	17	33	3
	x						9		91	4
					x		84	8	8	3
					x		82		18	4
						x	54	19	27	4
						x	64	18	18	4
x							27		73	4
	x						9	36	55	4
					x		91	9		4

on the following sequences

- 175 a. Anatomical T1W images only
- 176 b. Anatomical T2W images only
- 177 c. T2 and DWI/DCE
- 178 d. The sequence it is best depicted on
- 179 e. The sequence required by targeted biopsy fusion software

...  
 tumour, (i.e the "hot-spot") should be additionally indicated (e.g by contouring, via arrow-heads,  
 180 etc).

62. Pictorial reporting should be standardised on a

- 181 a. Local level
- 182 b. Regional level
- 183 c. National level

63. The format of pictorial reports should be

- 184 a. Hand-drawn on paper
- 185 b. Generated by computer-assisted tools
- 186 c. Either of the above

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
					x		100			5
	x						18	18	64	4
					x		73	18	9	4
						x	64		36	4
	x						25		75	3
	x						18		82	4
		x					14	33	53	0
				x			27	27	46	0
		x					13	27	60	0
						x	58	25	17	3
				x			50	25	25	3
	x						8		92	3

**SECTION IV – QA/QC of mpMRI**

**A. SITE-SPECIFIC**

64. Sites performing mpMRI should perform scans in adherence with following publications

- 187 a. Latest version of PI-RADS
- 188 b. Latest UK Consensus guidelines
- 189 c. ESUR Guidelines, PI-RADS v1 2012
- 190 d. European Consensus Recommendations 2011
- 191 65. Accreditation for sites offering mpMRI should be set up.
- 66. Accreditation should be offered by
- 192 a. A national body (e.g RCR/SCoR/ISAS/BSUR/BAUS)
- 193 b. A regional body (e.g London Cancer Group, Van guards, Cancer collaboratives)
- 194 c. The local trust
- 195 d. Private specialised firms performing mpMRI should be
- 196 a. 50-100
- 197 b. 100-150
- 198 c. 150-250
- 199 d. 250-500
- 200 e. >500
- 201 f. A minimum number is not needed

Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
					x	57	7	36	1
x							7	93	0
				x		87	13		0
				x		80	13	7	0
	x						33	67	0
x							27	73	0
					x	50	33	17	0
					x	50	33	17	0
				x		73	20	7	0
				x		72	14	14	1
				x		79	21		1
		x				43	53	43	1
					x	50	14	36	1
					x	64	15	21	1
		x				37	18	45	4



68. An accredited centre must
- 202 a. Perform mpMRI scanning with T2 and diffusion-weighted imaging (DWI)
- 203 b. Perform mpMRI scanning with T2, DWI and DCE
69. Accreditation should be reviewed/renewed/re-assessed on a
- 204 a. Every year
- 205 b. Every 2 years
- 206 c. Every 3 years
- 207 d. Every 5 years
- 208 e. Never
- B. SCANNER-SPECIFIC**
- 209 perform prostate mpMRI.
71. Quality Assurance of the scanner should be administered by
- 210 a. A national body (e.g RCR/SCoR/ISAS/BAUS)
- 211 b. A regional body (e.g London Cancer Group, Van guards, cancer collaboratives)
- 212 c. The local trust
- 213 d. Private specialised firms
72. Quality Control should be carried out by one or more of the following
- 214 a. An experienced MRI physicist/clinical scientist
- 214 b. An experienced radiographer
- 214 c. An experienced uro-radiologist

Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
x						7		93	0
x						7	7	86	0
					x	67	13	20	0
					x	53	27	20	0
		x				20	33	47	0
		x				40	27	33	0
				x		93	7		1
x								100	0
			x			43	14	43	1
				x		86	7	7	1
	x					29	7	64	1
					x	71	22	7	1
	x					21	15	64	1
x						7	7	86	1
x						7	7	86	1

214 73. As minimum scanner QC checks, the automated manufacturer's QC procedure is acceptable.

74. The following QC metrics should be subjected to assessment (e.g as part of a QC chart system)

215 a. Gradient calibration

216 b. Coil uniformity

217 c. Slice thickness

218 d. Slice position

219 e. Image resolution assessment

220 f. Image distortion assessment

221 g. Signal to Noise ratio

**C. IMAGE-SPECIFIC**

75. Image quality audits should be documented for

222 a. Every scan

223 b. Every 10 scans

224 c. Every 25 scans

225 d. Randomly selected (10%) proportion of studies

76. The level of an acceptable/diagnostic image quality scan should be assessed

226 a. Qualitatively: by visual methods (e.g assessment of artefacts)

227 b. Quantitatively (e.g Signal-to-Noise ratio and Contrast-to-Noise ratio measurements)

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
214 73. As minimum scanner QC checks, the automated manufacturer's QC procedure is acceptable.			x				10	60	30	5
74. The following QC metrics should be subjected to assessment (e.g as part of a QC chart system)										
215 a. Gradient calibration	x							22	78	6
216 b. Coil uniformity	x							11	89	6
217 c. Slice thickness	x							22	78	6
218 d. Slice position	x							22	78	6
219 e. Image resolution assessment	x							22	78	6
220 f. Image distortion assessment	x							22	78	6
221 g. Signal to Noise ratio	x							11	89	6
<b>C. IMAGE-SPECIFIC</b>										
75. Image quality audits should be documented for										
222 a. Every scan					x		91	9		4
223 b. Every 10 scans					x		73	27		4
224 c. Every 25 scans						x	54	19	27	4
225 d. Randomly selected (10%) proportion of studies	x							16	84	3
76. The level of an acceptable/diagnostic image quality scan should be assessed										
226 a. Qualitatively: by visual methods (e.g assessment of artefacts)	x							25	75	3
227 b. Quantitatively (e.g Signal-to-Noise ratio and Contrast-to-Noise ratio measurements)			x				17	33	50	3

77. Visual image quality should be assessed by an experienced
- 228 a. Uro-radiologist giving an opinion on image quality
- 229 b. Radiographer giving an opinion on image quality
- 230 c. MRI physicist/scientist giving an opinion on image quality
- 231 d. At least two of the above together
78. Visual image quality should be assessed on
- 232 a. A 1-5 point scale based on personal appreciation of images
- 233 b. Against a standard set of images to be used as reference
79. Quantitative-based measurements of image quality require
- 234 a. Absolute measurements of signal to noise ratio
- b. Regular measurements of signal to noise ratio over time (longitudinal assessment to evaluate drifting values over time)
- 235 c. Absolute contrast to noise ratio
- 237 d. Longitudinal assessment of Contrast to noise ratio over time
80. Reference standards for optimal mpMRI protocols across different scanning platforms should be set up.
- 238
81. Reference standard images should be kept for
- 239 a. Local use
- 240 b. Regional use
- 241 c. National use

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
228 a.	x						7	93	2	
229 b.		x					8	31	61	2
230 c.			x				33	50	17	3
231 d.			x				33	17	50	3
232 a.		x					25	17	42	3
233 b.			x				41	42	17	3
234 a.			x				n/a	n/a	n/a	9
235 b.	x						n/a	n/a	n/a	9
236 c.			x				n/a	n/a	n/a	9
237 d.			x				n/a	n/a	n/a	9
238	x							100		3
239 a.		x					14	29	57	1
240 b.			x				21	36	43	1
241 c.		x					7	93		1

- 242 82. Quantitative QA assessments of ADC measurements are necessary  
 83. Significant variations in SNR from the mean over time should be reported and prompt
- 243 a. Acquisition protocol checks  
 244 b. Coil checks for defects  
 245 c. Bandwidth checks  
 246 d. More frequent QC measurements  
 84. The permissible variations in SNR over a year should be
- 247 a. 1-5%  
 248 b. 5-10%  
 249 c. 10-15%  
 250 d. 15-20%

**D. RADIOLOGIST-SPECIFIC QA**

85. As prostate cancer detection is not part of a national screening programme, minimum achievable  
 251 QA standards should not be as strict as in breast imaging.  
 86. To ensure that radiologists deliver consistently accurate results over time
- 252 a. Self-performance assessment tools should be used  
 253 b. Institution-based audits should be carried out  
 254 c. External performance assessments should be carried out  
 255 d. Combination of the above

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
					x		90	10		5
x								12	88	7
x								12	88	7
x								12	88	7
			x					50	50	7
				x			n/a	n/a	n/a	8
				x			n/a	n/a	n/a	8
				x			n/a	n/a	n/a	8
					x		n/a	n/a	n/a	8
						x	54	15	31	2
x								21	79	1
x									100	1
x								29	71	1
x								7	93	1

256 87. External performance assessments should be documented.

88. If an online tool for radiologist's performance assessment is developed, it should be able to  
 257 reporting prostate mpMRI for significant cancer.

258 b. Compare the radiologists's performance to the mean performance of specialist centres.

259 c. Compare the radiologists's performance to the minimum performance level required.

260 d. Evaluate the radiologist's cancer detection rate for each of the mpMRI score

261 e. Compare the radiologist's cancer detection rate to their local/regional/national peers

262 f. Compare the radiologist's cancer detection to expert radiologists.

263 g. Compare the cancer detection rate of radiologists to the prevalence of prostate cancer.

264 h. Combination of the above

89. The radiologist's performance should be assessed

265 a. Once

266 b. Every 6 months

267 c. Every year

268 d. Every 2 years

269 e. Every 3 years

270 f. Every 5 years

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
x							21	71	1	
x							7	93	1	
x							7	93	1	
x								100	1	
	x						14	22	64	1
		x					43	57	1	
x								100	1	
x							7	7	86	1
					x		100			1
					x		100			1
						x	64	15	21	1
			x				28	29	43	1
	x						29	14	57	1
			x				50	29	21	1

90. The minimum proportion of mpMRI reports which should be included in the Radiologist's QA audits is likely to be

- 271 a. 1%
- 272 b. 5%
- 273 c. 10%
- 274 d. 20%
- 275 e. 25%

(after excluding equipment/scanner QA faults)

- 276 a. Double-reading of his reports by expert radiologists with sent feedback
- 277 b. Increase frequency of peer-reviewed cases
- 278 c. Increase frequency of MDT attendance
- 279 evaluate
- 280 e. Retraining in expert centres over 3-6 months
- 281 f. Stop reporting

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
							67	33		3
			x				33	42	25	3
	x						8	25	67	3
					x		67	25	8	3
					x		84	8	8	3
		x						38	62	2
		x						38	62	2
x								16	84	3
x								23	77	2
			x					54	46	2
					x		70	15	15	2

**SECTION V – Management of patients**

management options:

- 282 a. Age
- 283 b. Family history
- 284 c. DRE
- 285 d. 5a-reductase inhibitors (finasteride) use
- 286 e. Comorbidities
- 287 f. PSA
- 288 g. PSA history/kinetics
- 289 h. PSA density
- 290 Health Index (phi), Stockholm3)
- 291 j. Urine test to rule out infection
- 292 k. Risk calculator results (PCPT/European calculator/Sherbrook canadian calculator)
- 293 l. Any previous biopsy results
- 294 m. Patient’s preference
- 295 n. None of the above (management decisions may be taken on prebiopsy mpMRI scores only)
- 93. When calculating PSA density,
  - 296 a. MR-based volume calculated by 3 diameters x 0.52 could be used.
  - 297 b. MR-based volume generated by volumetric software analysis - could be used.
  - 298 c. TRUS-based volume could be used.

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
282 a. Age	x							100		2
283 b. Family history	x							100		2
284 c. DRE					x		69	16	15	2
285 d. 5a-reductase inhibitors (finasteride) use	x						8	15	77	2
286 e. Comorbidities	x								100	2
287 f. PSA	x								100	2
288 g. PSA history/kinetics	x							7	93	2
289 h. PSA density	x								100	2
290 Health Index (phi), Stockholm3)			x				46	46	8	2
291 j. Urine test to rule out infection	x						8	8	84	2
292 k. Risk calculator results (PCPT/European calculator/Sherbrook canadian calculator)					x		70	15	15	2
293 l. Any previous biopsy results	x						7		93	2
294 m. Patient’s preference	x							8	92	3
295 n. None of the above (management decisions may be taken on prebiopsy mpMRI scores only)					x		92	8		2
93. When calculating PSA density,										
296 a. MR-based volume calculated by 3 diameters x 0.52 could be used.	x								100	3
297 b. MR-based volume generated by volumetric software analysis - could be used.	x						8	17	75	3
298 c. TRUS-based volume could be used.					x		85	15		2

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
94. The following management options would be recommended in men with negative mpMRI (scores 1-2)										
299 a. Discharge					x		92	8		3
300 b. Discharge based on PSA density below an agreed threshold	x						17	8	75	3
301 c. Discharge with PSA follow-up to GP if PSA density is below an agreed threshold	x						8		92	3
d. Discharge with PSA follow-up to urologists if PSA density is below an agreed threshold						x	67		33	3
302										
303 e. Repeat mpMRI if PSA density is above an agreed threshold after a given time interval						x	67		33	3
304 f. Repeat mpMRI if the man has a family history						x	64	18	18	4
305 g. Repeat mpMRI if the patient is of an age below an agreed threshold						x	67		33	3
306 h. Biopsy if PSA density is above an agreed level	x						8	8	84	3
307 i. Biopsy if there is positive family history			x				33	33	33	3
308 j. Biopsy if the patient is of an age below an agreed threshold			x				41	42	17	3
k. Biopsy depending on other factors (e.g 5-kallikrein, Prostate Cancer Gene 3 (pca3) (urinary), Prostate Health Index (phi), Stockholm3...)				x			50	33	17	3
309										
310 l. Biopsy with any biopsy technique						x	50	33	17	3
311 m. Biopsy with standard transrectal biopsy technique						x	50	42	8	3
312 n. Biopsy with Transperineal template mapping biopsy technique			x				67	25	42	3
313 o. Biopsy with any transperineal systematic biopsy technique	x							16	84	3



	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
95. The following management options should be considered in men with equivocal mpMRI (score 3)										
314 a. Discharge					x		100			4
315 b. Discharge if PSA density is below an agreed threshold			x				50	10	40	5
316 c. Discharge with PSA follow-up to GP if PSA density is below an agreed threshold					x					3
317 d. Discharge with PSA follow-up to urologists if PSA density is below an agreed threshold						x	50	25	25	3
318 e. Repeat mpMRI if PSA density is above an agreed threshold						x	58		42	3
319 f. Repeat mpMRI if positive family history						x	58	9	33	3
320 g. Repeat mpMRI if age of patient is below a certain level			x				41	17	42	3
321 h. Biopsy if PSA density is above an agreed threshold	x								100	3
322 i. Biopsy if positive family history		x						33	67	3
323 j. Biopsy if age is below a certain threshold		x					17	25	58	3
324 k. Biopsy depending on other factors (e.g pca 3, ...)			x				42	25	33	3
325 l. Biopsy with any biopsy technique						x	50	25	25	3
326 m. Biopsy with standard transrectal biopsy technique						x	50	33	17	3
327 n. Biopsy with any MR-guided targeted biopsy technique		x					17	17	66	3
328 o. Biopsy using transperineal template mapping biopsy technique			x				33	33	33	3
329 p. Biopsy with any transperineal systematic biopsy technique		x					8	33	59	3

96. In men with positive mpMRI (scores 4-5) and negative MR-guided targeted biopsy  
 330 Discussion at MDT meeting should be considered

97. When performing a targeted biopsy for a lesion scored 3 demonstrated on mpMRI, sampling  
 331 (systematic biopsy) of the entire gland is recommended.

98. When performing a targeted biopsy for a lesion scored 4-5 demonstrated on mpMRI, sampling  
 332 (systematic biopsy) of the entire gland is recommended.

99. When the mpMRI scores  $\geq 3$  and biopsy is negative for significant cancer but shows  
 alternative explanations for the score (eg evidence of atrophy/inflammation/high grade prostatic  
 intraepithelial neoplasia,...), the following should be recommended

333 a. Discharged

334 b. Followed-up clinically

335 c. Followed-up with repeat mpMRI

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
330	x							100		2
331		x					25	17	58	3
332			x				33	33	33	3
333				x			25	42	33	3
334				x				42	58	3
335			x				17	75	8	3

**SECTION VI – Training**

336 100. Prostate mpMRI reporting can be self-taught.

337 101. There should be a competency exam in prostate mpMRI prior to start independent reporting.

102. The attendance to a training course should be made mandatory prior to start independent reporting.

339 103. There should be a national accreditation for prostate mpMRI reporting

340 breast reporting.

341 105. There should be evidence of self-directed learning.

106. Prostate mpMRI training course for non-reporters should be different from the reporters' course and adapted to their specialty field.

107. Certified, standardised Training for Prostate mpMRI should be provided by

343 a. A national recognised training body (Royal Colleges)

344 b. A national society (BSUR, BIR...)

345 c. Regional trusts (London Cancer Group, Van guards, Cancer Collaboratives)

346 d. Local trusts

	Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
	Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	
							85	15		2
x							7	21	72	1
x								14	86	1
x								21	79	1
						x	50	36	14	1
x								7	93	1
x								7	93	1
x								7	93	1
x								7	93	1
x								7	93	1
						x	72	21	7	1
						x	93	7		1

108. Prior to commencing independent mpMRI reporting, reporters should attend at a minimum:

347 a. A core theoretical mpMRI course

348 b. Hands-on practice at workstations

c. Supervised reporting of

349 i. 50

350 ii. 100

351 iii. 150

352 iv. 200

number of

353 i. 25

354 ii. 50

355 iii. 100

356 iv. 150

357 v. 200

358 e. Combination of the above

109. Hands-on training may be given by centres carrying out a minimum number of

359 a. 50-100 cases/year

360 b. 100-150 cases/year

361 c. 150-250 cases/year

362 d. ≥ 250 cases/year

Agreement		Uncertainty		Disagreement		% Score Distribution of panelists			Abstention
Consensus	No consensus	Consensus	No consensus	Consensus	No consensus	Score range of 1-3	Score range 4-6	Score range 7-9	n out of 15
x							7	93	1
x							7	93	1
		x				39	38	23	2
	x					23	23	54	2
		x				46	8	46	2
		x				46	23	31	2
	x					25	8	67	3
		x				41	17	42	3
				x		58	25	17	3
				x		83	17		3
				x		92	8		3
x								100	3
				x		85	15		2
				x		69	31		2
		x				39	15	46	2
x							7	93	2