

**CASE 1: ORIGINAL TOOL**

**Table 1: Multi society considerations and RADAR rubric**

<b>CRITERIA 1: MULTISOCIETY CONSIDERATIONS</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>
<b>Indication</b>			
Regulatory compliance			
Clinical benefit			
Clinical risk management			
Business competitive advantage			
Cost effectiveness from current practise			
Academic or research			
<b>Ethics</b>			
Doing good (Beneficence)			
Doing no harm (Nonmaleficence)			
Patient freedom to choose (Autonomy)			
Fairness (Justice)			
<b>Implementation</b>			
Superiority to current practice			
Explainability of the model			
Multi dimensionality in lesion detection			
Ease of hardware integration			
Ease of software integration			
Installation Cost			
Recommendations from peer review publication			
Regulatory approval of the AI software			
Clinical validation of the AI software by radiologists			
Ease of using the AI in the diagnostic workflow			
Willingness to use AI in actual radiology practice			
<b>CRITERIA 2: RADAR RUBRIC</b>			
<b>Technical properties</b>			
Frequency of AI detecting the lesion correctly			
Ability of AI in detecting lesions correctly			
Explainability of results from the AI software			
<b>Diagnostic accuracy/ threshold of AI in lesion detection?</b>			
Ability to detect lesions accurately			
Reliability of AI in detecting lesions accurately			
Utility of the AI in clinical decision making			
<b>Preferred capacity of AI in diagnostic thinking?</b>			
Use full ness of the AI results			
Ability to integrate AI in the radiology diagnostic workflow			
Ability to reduced diagnostic uncertainty			

**Contribution of AI in radiology to patient management?**

- Actionable insights from the AI results
- Influence on therapeutic interventions
- Impact on patient outcomes




**Rank cost effectiveness on implementation?**

- Affordability of AI implementation
- Cost effectiveness of AI implementation
- Adaptability of the AI solution to the local institution

**CASE 2: ITERATION 1 BY THE THREE DOMAIN EXPERTS**

**2a: Respondents Key**


**Key**

	Yes
	Unsure/Split vote
	No
***	Unclear question


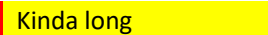

Note: Agreement was defined as consensus by all

**2b Agreement on the likert scale type**




**3 point scale**

Radiologist	CT tech/ Radiographer	HCM+Gen
		

**5 point scale**

Radiologist	CT tech/ Radiographer	HCM+Gen
 Why	 Kinda long	 Why

**7 point scale**

Radiologist	CT tech/ Radiographer	HCM+Gen
 No	 No	 No

**2c: Construct and content validity of the tools**

	Radiologist	Radiographer/CT tech	HCM+ Generalist
How long have you practised			
Predominant area of practise			
Use of AI in radiologu			
<b>ITERATION 1</b>			
<b>MULTISOCIETY CONSIDERATION</b>			
<b>INDICATION</b>			
Regulatory	1	1	1
Clinical benefit	2	2	2
Clinical risk management	3	3	3
Competitive advantage	4	4	4
Cost effectiveness	5	5	5
Academic and research	6	6	6
<b>ETHICS</b>			
Doing good (Beneficence)	7	7	7
Doing no harm (Nonmaleficence)	8	8	8
Patient freedom to choose (Autonomy)	9	9	9
Unsure fairness (Justice)	10	10	10
<b>MODEL CONSIDERATIONS</b>			
Superiority to current practice	11	11	11
Explainability	12	12	12
Multi dimensionality	13	13	13
Hardware integration	14	14	14
Software integration	15	15	15
Installation cost	16	16	16
Maintenance cost***	SAAS/HMIS??	Not Sure	
Peer review publication	17	17	17
Regulatory approval	18	18	18
Model accuracy	Developer?	Too technical	IT
Clinical validation	19	19	19
Monitoring/ update schedule	Developer?	Too technical	IT
<b>HUMAN – AI CONSIDERATIONS</b>			
Self-efficacy***	Means?	Means?	Means?
Ease of use	20	20	20
Willing ness to use in daily practice	21	21	21
Trust in the model	Needs human	22	Objectivity?
Accuracy of the model	Repeat	Repeat	Repeat
Validation of the model	Repeat	Repeat	Repeat
<b>LONG TERM STABILITY</b>			
Strategic	Unpredictable	Unpredictable	Unpredictable
What`s the problem, risk and benefit?	Unpredictable	Unpredictable	Unpredictable
Regulatory compliance	Unpredictable	Unpredictable	Unpredictable
Legal and ethical	Unpredictable	Unpredictable	Unpredictable

Performance  
 Efficacy, monitoring, fairness  
 Workflow integration  
 Ease of use  
 Technical  
 Infrastructure and skill  
 Economic costs  
 Can return on investment be monitored

Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable
Unpredictable	Unpredictable	Unpredictable

**ITERATION 1  
 RADAR RUBRIC**

**TECHNICAL EFFICACY**

Description

Disease frequency

Identification

Diagnostic / prognostic

Explanation

causality of AI \*\*\*

IT	IT	IT	IT
	1	1	1
	2	2	2
		3	
	3	4	3

**DIAGNOSTIC ACCURACY EFFICACY**

Lesion detection

Model accuracy

Model precision

Model clinical decision making

	4	5	4
	5	6	5
	6	7	6
	7	8	7

**DIAGNOSTIC THINKING EFFICACY**

Usefulness of the output

Ease of use

Workflow integration

Enhanced diagnostic accuracy

Reduced diagnostic uncertainty in decision making

	8	9	8
	9	10	9
	10	11	10

**THERAPEUTIC EFFICACY**

Actionable insights

Influence on therapeutic interventions

	11	12	11
	12	13	12

**PATIENT OUTCOME EFFICACY**

Impact on patient health outcomes

	13	14	13
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**COST EFFECTIVENESS EFFICACY**

Improved health

Affordability

Cost effectiveness

	14	15	14
	15	16	15

**LOCAL EFFICACY**

Adaptability of the software to the local institution

	16	17	16
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**CASE 3: ITERATION 2 BY THE THREE DOMAIN EXPERTS**

	Radiologist	Radiographer/CT tech	HCM+ Generalist
How long have you practised			
Predominant area of practise			
Use of AI in radiology			

**Pilot: Content validity**

**PILOT 1: MSC**

INDICATION	Radiologist	Radiographer/CT tech	HCM+ Generalist
Regulatory	1	1	1
Clinical benefit	2	2	2
Clinical risk management	3	3	3
Competitive advantage	4	4	4
Cost effectiveness	5	5	5
Academic and research	6	6	6
<b>ETHICS</b>			
Doing good (Beneficence)	7	7	7
Doing no harm (Nonmaleficence)	8	8	8
Patient freedom to choose (Autonomy)	9	9	9
Unsure fairness (Justice)	10	10	10
<b>MODEL CONSIDERATIONS</b>			
Superiority to current practice	11	11	11
Explainability	12	12	12
Multi dimensionality	13	13	13
Hardware integration	14	14	14
Software integration	15	15	15
Installation cost	16	16	16
Maintenance cost***	SAAS/HMIS??	Not Sure	
Peer review publication	17	17	17
Regulatory approval	18	18	18
Model accuracy ***	Developer?	Too technical	IT
Clinical validation	19	19	19
Monitoring/ update schedule	Developer?	Too technical	IT
<b>HUMAN – AI CONSIDERATIONS</b>			
Ease of use	20	20	20
Willing ness to use in daily practice	21	21	21
Trust in the model ***	Needs human		22 Objectivity?

**LONG TERM STABILITY**

**FRAMEWORK 2: RADAR RUBRIC**

**TECHNICAL EFFICACY**

Disease frequency	1	1	1
Identification	2	2	2
Diagnostic / prognostic		3	
Explanation	3	4	3

**DIAGNOSTIC ACCURACY EFFICACY**

Lesion detection	4	5	4
Model accuracy	5	6	5
Model precision	6	7	6
Model clinical decision making	7	8	7

**DIAGNOSTIC THINKING EFFICACY**

Usefulness of the output	8	9	8
Workflow integration	9	10	9
Reduced diagnostic uncertainty in decision making	10	11	10

**THERAPEUTIC EFFICACY**

Actionable insights	11	12	11
Influence on therapeutic interventions	12	13	12

**PATIENT OUTCOME EFFICACY**

Impact on patient health outcomes	13	14	13
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**COST EFFECTIVENESS EFFICACY**

Affordability	14	15	14
Cost effectiveness	15	16	15

**LOCAL EFFICACY**

Adaptability of the software to the local institution	16	17	16
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## CASE 4: ITERATION 3 BY THE 54 DECISION MAKERS

### CRITERIA 1: MULTISOCIETY CONSIDERATIONS

#### Indication

Regulatory compliance  
 Clinical benefit  
 Clinical risk management  
 Business competitive advantage  
 Cost effectiveness from current practise  
 Academic or research

High	Moderate	Low
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7

#### Ethics

Doing good (Beneficence)  
 Doing no harm (Nonmaleficence)  
 Patient freedom to choose (Autonomy)  
 Fairness (Justice)

8	8	8
9	9	9
10	10	10
11	11	11
12	12	12

#### Implementation

Superiority to current practice  
 Explainability of the model  
 Multi dimensionality in lesion detection  
 Ease of hardware integration  
 Ease of software integration  
 Installation Cost  
 Recommendations from peer review publication  
 Regulatory approval of the AI software  
 Clinical validation of the AI software by radiologists  
 Ease of using the AI in the diagnostic workflow  
 Willingness to use AI in actual radiology practice

13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24

### CRITERIA 2: RADAR RUBRIC

#### Technical properties

Frequency of AI detecting the lesion correctly  
 Ability of AI in detecting lesions correctly  
 Explainability of results from the AI software

25	25	25
25	25	25
27	27	27
28	28	28
29	29	29

#### Diagnostic accuracy/ threshold of AI in lesion detection?

Ability to detect lesions accurately  
 Reliability of AI in detecting lesions accurately  
 Utility of the AI in clinical decision making

30	30	30
31	31	31
32	32	32
33	33	33

#### Preferred capacity of AI in diagnostic thinking?

Use full ness of the AI results  
 Ability to integrate AI in the radiology diagnostic workflow  
 Ability to reduced diagnostic uncertainty

34	34	34
35	35	35
36	36	36
37	37	37

#### Contribution of AI in radiology to patient management?

Actionable insights from the AI results  
 Influence on therapeutic interventions  
 Impact on patient outcomes

38	38	38
39	39	39
40	40	40
41	41	41

#### Rank cost effectiveness on implementation?

Affordability of AI implementation  
 Cost effectiveness of AI implementation  
 Adaptability of the AI solution to the local institution

42	42	42
43	43	43
44	44	44
45	45	45

**CASE 5: FINAL HEALTH TECHNOLOGY ASSESSMENT TOOL**

<b>HTA core domains</b>	<b>HTA tool for AI in radiology</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>
<b>Health problem &amp; current use of technology</b>	Clinical benefit			
	Clinical risk management			
	Superiority to current practice			
<b>Description &amp; technical characteristics</b>	Adaptability of the AI solution to the local institution			
	Frequency of AI detecting the lesion correctly			
	Ability of AI in detecting lesions correctly			
	Explainability of results from the AI software			
	Multi dimensionality in lesion detection			
	Ease of using the AI in the diagnostic workflow			
	Willingness to use AI in actual radiology practice			
	Recommendations from peer review publication			
<b>Safety</b>	Ability to reduced diagnostic uncertainty			
	Clinical validation of the AI software by radiologists			
<b>Clinical effectiveness</b>	Ability to detect lesions accurately			
	Reliability of AI in detecting lesions accurately			
	Utility of the AI in clinical decision making			
	Affordability of AI implementation			
<b>Cost &amp; economic analysis</b>	Cost effectiveness of AI implementation			
	Adaptability of the AI solution to the local institution			
	Installation Cost			
<b>Ethical analysis</b>	Doing good (Beneficence)			
	Doing no harm (Nonmaleficence)			
	Patient freedom to choose (Autonomy)			
	Fairness (Justice)			
<b>Organizational aspects</b>	Ease of hardware integration			
	Ease of software integration			
	Ease of using the AI in the diagnostic workflow			
	Willingness to use AI in actual radiology practice			
	Use full ness of the AI results			
	Ability to integrate AI in the radiology diagnostic workflow			
<b>Patient &amp; social aspects</b>	Actionable insights from the AI results			
	Influence on therapeutic interventions			
	Impact on patient outcomes			
<b>Legal aspects</b>	Regulatory approval of the AI software			
<b>New aspects</b>	Academic and research			