

GID-HTE10089 Artificial intelligence (AI) technologies to help detect prostate cancer on MRI

Final Protocol

Produced by: York Health Economics Consortium

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1. Decision problem

AI technologies for prostate MRI have been identified by NICE for assessment. As described in the NICE scope, the aim of this analysis is to evaluate whether AI technologies used to help detect prostate cancer from prostate MRI studies are a clinical and cost-effective use of NHS resources and to identify evidence gaps in the evidence base. This document was prepared in response to the NICE Scope and presents the methods that the external assessment group commissioned by NICE will undertake to produce the assessment.

This assessment will consider the use of AI technologies alongside standard of care (review by a qualified radiologist) to help detect prostate cancer from multiparametric and biparametric MRI scans for the first-line investigation of people with suspected clinically localised prostate cancer.

Table 1 summarises the decision problem to be addressed in this assessment. Further detail on each element can be found in the published scope for the assessment.

Table 1. Summary table of the decision problem

Item	Description	EAG comments
Population(s)	People with suspected clinically localised prostate cancer, undergoing prostate MRI as first-line investigation for initial diagnosis (biopsy naive).	
Subgroups	Where data permits, the following subgroups may be considered: <ul style="list-style-type: none">• People who have prostate bpMRI• People who have prostate mpMRI	
Intervention(s)	AI technologies to help detect prostate cancer on prostate MRI, including: <ul style="list-style-type: none">• AI-Rad Companion Prostate MR• hProstate• mdprostate• Prostate Health (Quantib Prostate)• ProstatID• Prostate Intelligence (Pi)• QP-Prostate	

	The technologies are used alongside healthcare professionals. The healthcare professional who reviews the MR images using the software makes the final reporting decision.	
Comparators	<ul style="list-style-type: none"> • Review of prostate MRI by a qualified radiologist without the assistance of AI technologies • Reference standard for test accuracy will be determined by the outcome. 	
Setting	Specialist centres, district general hospitals and community diagnostic centres.	
Outcomes eligible for inclusion	<p>Intermediate outcomes:</p> <ul style="list-style-type: none"> • Measures of diagnostic accuracy at patient and lesion level (clinically significant and clinically insignificant prostate cancer) • Number of clinically significant prostate cancers detected or missed • Number of clinically insignificant prostate cancers detected • Cancer grade at diagnosis • MRI reading time • Radiology report turnaround time • Time to rule-out, diagnosis and initiation of treatment • Effect of radiologist's level of experience on diagnostic accuracy and reading/reporting time • Number of people having a biopsy or number of biopsy cores taken • Number of people who need repeat MRI • Impact of MRI image quality and scanner (e.g., field strength, age, vendor) • Technical failure rate • Proportion of people excluded for any reason (e.g., due to metallic implants) and reasons for exclusion <p>Clinical outcomes:</p> <ul style="list-style-type: none"> • Survival • Progression free survival • Adverse events from biopsies and managing prostate cancer <p>Patient-reported outcomes:</p> <ul style="list-style-type: none"> • Health-related quality of life • Service user and carer acceptability, views, experience and satisfaction 	

	<p>Other:</p> <ul style="list-style-type: none"> • Service provider acceptability, views, experience and satisfaction <p>Costs and resource use:</p> <ul style="list-style-type: none"> • Cost of technology, including integration to PACS (e.g., one-off purchase costs, pay per use, annual subscriptions or site licenses and any additional software required) • Cost of data storage • Cost of training • Cost of biopsies (including any adverse events) • Costs of managing cancer (including any adverse events) • Staff time and cost at different specialisms and levels of pay 	
Economic analysis	<p>A health economic model will be developed comprising a cost utility or cost-comparison analysis. Costs will be considered from an NHS and Personal Social Services perspective.</p> <p>Sensitivity and scenario analysis should be undertaken to address the relative effect of parameter or structural uncertainty on results.</p> <p>The time horizon should be long enough to reflect all important differences in costs or outcomes between the technologies being compared.</p>	
Time horizon	<p>The time horizon for estimating clinical and cost effectiveness will be sufficiently long to reflect potential for differences in costs or outcomes between the technologies being compared.</p>	

1.1 Objectives

The purpose of this assessment is to address the following key decision questions:

- What is the clinical effectiveness of AI technologies used to help detect prostate cancer from prostate MRI studies done for the first-line investigation of people with suspected clinically localised prostate cancer?
- What is the cost effectiveness of AI technologies used to help detect prostate cancer from prostate MRI studies done for the first-line investigation of people with suspected clinically localised prostate cancer?

- What evidence is available to support the value proposition of AI technologies for prostate MRI outlined in the scope, i.e.:
 - improving diagnostic accuracy?
 - reducing reporting delays in individuals most likely to require a biopsy?
 - improving the consistency, clarity and applicability of radiology reports?
 - Reducing the time required for reading and reporting MRI scans?
- What are the key gaps in the evidence base?

2. Evidence review methods

We will conduct an evidence review to identify the clinical and economic evidence that is available on the selected technologies and explore if the technology addresses the unmet need, using methods that conform to the NICE HealthTech programme manual (NICE 2025) and with reference to guidance from the NICE Decision Support Unit (NICE Decision Support Unit 2025). The review methods, search approach, and synthesis will be conducted in a transparent manner. We will conduct a systematic search for relevant published evidence and incorporate any relevant evidence submitted by manufacturers through the NICE request for company evidence. Retrieved evidence will be screened according to the eligibility criteria described in Section 2.1. We will extract and synthesise relevant data from the eligible documents. Relevant clinical and health-related quality of life (HRQoL) data will inform the parameters of an Excel-based economic model.

2.1 Inclusion criteria

Table 2. Inclusion and exclusion criteria

	Inclusion Criteria	Exclusion Criteria
Population	People with suspected clinically localised prostate cancer, undergoing prostate MRI as first-line investigation for initial diagnosis (biopsy naive).	People entering a prostate cancer screening programme. People under investigation for recurrence or metastatic disease.

	<p>Where data permits, the following subgroups may be considered:</p> <ul style="list-style-type: none"> • People who have prostate bpMRI • People who have prostate mpMRI 	
Intervention	<p>AI technologies to help detect prostate cancer on prostate MRI:</p> <ul style="list-style-type: none"> • AI-Rad Companion Prostate MR • hProstate • mdprostate • Prostate Health (Quantib Prostate) • ProstatID • Prostate Intelligence (Pi) • QP-Prostate <p>The technologies are used alongside healthcare professionals. The healthcare professional who reviews the MR images using the software makes the final reporting decision.</p>	<p>AI technologies other than those listed as eligible.</p> <p>AI technologies used without healthcare professional involvement.¹</p>
Comparators	<p>Review of prostate MRI by a qualified radiologist without the assistance of AI technologies.</p> <p>Reference standard for test accuracy will be determined by the outcome.</p>	Any comparator not listed.
Setting	Specialist centres, district general hospitals and community diagnostic centres.	
Outcomes	<p>Intermediate outcomes:</p> <ul style="list-style-type: none"> • Measures of diagnostic accuracy at patient and lesion level: <ul style="list-style-type: none"> ○ Accuracy for both clinically significant and clinically insignificant prostate cancer ○ Accuracy for clinically significant prostate cancer (including number of cancers detected or missed) 	Studies not reporting outcomes relevant to the NICE final scope.

	<ul style="list-style-type: none"> ○ Accuracy for clinically insignificant prostate cancer (including number of cancers detected or missed) ○ Accuracy for staging/ risk stratifying prostate cancer <ul style="list-style-type: none"> ● Cancer grade at diagnosis ● MRI reading time ● Radiology report turnaround time ● Time to rule-out, diagnosis and initiation of treatment ● Effect of radiologist's level of experience and technical expertise on diagnostic accuracy and reading/reporting time ● Number of people having a biopsy or number of biopsy cores taken ● Number of people who need repeat MRI ● Impact of MRI image quality and scanner (e.g., field strength, age, vendor) ● Technical failure rate ● Proportion of people excluded for any reason (e.g., due to metallic implants) and reasons for exclusion <p>Clinical outcomes:</p> <ul style="list-style-type: none"> ● Survival ● Progression free survival ● Adverse events from biopsies and managing prostate cancer <p>Patient-reported outcomes:</p> <ul style="list-style-type: none"> ● Health-related quality of life ● Service user and carer acceptability, views, experience and satisfaction <p>Other</p> <ul style="list-style-type: none"> ● Service provider acceptability, views, experience and satisfaction 	
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	<p>For the economic review:</p> <ul style="list-style-type: none"> • Total costs • Effectiveness outcomes (e.g. quality adjusted life-years (QALYs)) • Incremental analyses or other economic evaluation outcomes (e.g. incremental cost-effectiveness ratios (ICERs)) 	
Study design	<p>For the clinical review:</p> <ul style="list-style-type: none"> • Randomised controlled trials (RCTs) • Diagnostic test accuracy studies (DTAs): <ul style="list-style-type: none"> • Diagnostic cohort studies • Diagnostic case-control studies • Non-randomised comparative studies: <ul style="list-style-type: none"> • Non-randomised controlled trials • Cohort studies • Case-control studies <p>For the economic review:</p> <ul style="list-style-type: none"> • Cost-effectiveness analyses (including cost-utility analyses) • Cost-benefit analyses • Cost-consequence analyses • Cost-comparison analyses • HTA reports investigating the cost-effectiveness of treatments 	<ul style="list-style-type: none"> • Case reports • Case series and single arm studies • Reviews, both systematic² and non-systematic
Limits	<ul style="list-style-type: none"> • Studies in English language only • Studies published from 2020 onwards • Conference abstracts published from 2023 onwards 	<ul style="list-style-type: none"> • Studies not in the English language • Studies published in 2019 or earlier • News items, opinion pieces and editorials

Key: AI, artificial intelligence; DTA, diagnostic test accuracy study; HTA, health technology assessment; ICER, incremental cost-effectiveness ratio, MR, magnetic

resonance; MRI, magnetic resonance imaging; QALY, quality-adjusted life year; RCT, randomised controlled trial.

¹Studies comparing AI MRI alone with radiologist assessment will be excluded from the review but will be tagged and may be included if there is limited evidence for the combined triage and onwards pathway.

²Systematic reviews are not included in the review, but recent systematic reviews (published in the last 3 years) will be checked for any additional relevant studies.

Initial scoping searches and company websites indicate that eligible technologies have been used from 2020 onwards, and screening a sample of studies published before 2020 has confirmed this. This is reflected in the eligibility criteria.

If we identify a large number of studies we will prioritise those that provide the most relevant and rigorous evidence.

For the review of clinical evidence, we will prioritise:

- RCTs
- DTA studies
- prospective studies reporting comparative evidence.

Inclusion criteria may be expanded if no evidence directly relevant to the evaluation is available, for example, including studies that report on relevant information, but do not include the intervention technologies, or by including single-arm studies for some outcomes where appropriate e.g. technology failure rate. In addition, studies comparing AI MRI alone with radiologist assessment may be included if there is limited evidence for the combined triage and onwards pathway.

For the economic review, we will prioritise:

- Studies reporting full economic evaluations over partial economic evaluations, on an intervention-by-intervention basis
- Studies conducted in the UK, or if not in the UK, Europe or Canada.

2.2 Search strategy

A MEDLINE (OvidSP) search strategy designed to identify clinical and economic evidence on the eligible technology is presented in Appendix A.

The strategy comprises search terms for prostate cancer (search lines 1 to 5), MRI (search lines 6 to 13), AI technologies (search lines 14 to 29), and terms associated with the eligible technologies, such as eligible technology names (search line 31) or company names (search line 32). Company names (search line 32) are combined with the prostate cancer concept. The search is structured: (prostate cancer AND MRI AND AI technologies) OR eligible technology names OR (prostate cancer AND company names).

Two of the eligible technologies, Prostate Health and Prostate MR, both retrieved many irrelevant studies when searched. Terms for these 2 technologies have therefore been combined with the MRI and AI concepts (search lines 34 and 35).

The search terms for the AI technologies concept (search lines 14 to 29) are based on the NICE search filter for identifying evidence about AI medical device interventions from Ovid MEDLINE and Ovid Embase (Ayiku L 2025).

The strategy excludes animal studies from MEDLINE using a standard algorithm (search line 37). The strategy also excludes some ineligible publication types which are unlikely to yield relevant study reports (editorials, news items, and case reports) and records with the phrase 'case report' in the title (search line 38).

Reflecting the eligibility criteria, the strategy is restricted to studies published in the English language since 2020 (search line 40).

The final Ovid MEDLINE strategy will be peer-reviewed before execution by a second Information Specialist. Peer review will consider the appropriateness of the strategy for the review scope and eligibility criteria, inclusion of key search terms, errors in spelling, syntax and line combinations, and application of exclusions.

2.2.1 Resources to be searched

We will conduct the literature search in the databases and information sources shown in Table 3.

Table 3. Databases and information sources to be searched

Resource	Interface / URL
Databases	
MEDLINE(R) ALL	OvidSP
Embase	OvidSP
Cochrane Database of Systematic Reviews (CDSR)	Cochrane Library/Wiley
Cochrane Central Register of Controlled Trials (CENTRAL)	Cochrane Library/Wiley
HTA database	https://database.inahta.org/
Conference Proceedings Citation Index – Science (CPCI-S)	Web of Science
EconLit	OvidSP
Trials Registers	
ClinicalTrials.gov	https://clinicaltrials.gov/
WHO International Clinical Trials Registry Platform (ICTRP)	https://trialsearch.who.int/
Reference list checking	n/a
Evidence submitted by companies	n/a

The resources include sources of both clinical and economic studies. The trials register sources listed above (ClinicalTrials.gov and ICTRP) will be searched to identify information on studies in progress.

The CPCI-S search results and records indexed in Embase as conference abstracts will be restricted to studies published from 2023 to date.

We will also check included studies lists of any industry submissions to NICE, as well as retrieved relevant systematic reviews or meta-analyses published in the last 3 years, for additional eligible studies.

2.2.2 Running the search strategies and downloading results

We will conduct searches using each database or resource listed in the protocol, translating the agreed Ovid MEDLINE strategy appropriately. Translation includes consideration of differences in database interfaces and functionality, in addition to variation in indexing languages and thesauri. The final translated database strategies

will be peer-reviewed by a second Information Specialist. Peer review will consider the appropriateness of the translation for the database being searched, errors in syntax and line combinations, and application of exclusions.

We will document all search strategies and search results, and we will provide this in the final report to meet standard requirements for clear formal reporting of the search process. The report of search methods will be informed by the PRISMA-S (Preferred Reporting Items for Systematic reviews and Meta-Analyses literature search extension) checklist (Rethlefsen et al. 2021) and the PRISMA 2020 statement (Page et al. 2021a, Page et al. 2021b).

Where possible, we will download the results of searches in a tagged format and load them into bibliographic management software (EndNote) (Clarivate 2021). The results will be deduplicated using several algorithms and the deduplicated references held in a duplicates EndNote database for checking if required. Results from resources which do not allow export in a format compatible with EndNote will be saved in Word or Excel documents as appropriate and manually deduplicated.

2.3 Study selection

Record assessment will be undertaken as follows:

- A single researcher will remove obviously irrelevant records such as those ineligible conditions.
- The titles and abstracts of remaining records will be assessed in detail for relevance against the protocol eligibility criteria by a single experienced reviewer, with a 10% sample checked by a second reviewer and any queries regarding eligibility addressed in discussion with the second reviewer.
- The full text of potentially relevant studies will be obtained and assessed for relevance against the protocol criteria by a single reviewer, with any queries regarding eligibility addressed in discussion with a second reviewer.

We will list studies excluded after assessment of the full document in an excluded studies table, with the reasons for exclusion.

2.4 Data extraction strategy

A bespoke data extraction template will be developed in Word and piloted on 10% of the included studies. One researcher will extract data and a second researcher will check outcome data. Data extraction will be targeted, involving the limited extraction of key details describing the study reference (bibliographic details), study design, key patient characteristics, key intervention / comparator characteristics, and outcomes.

2.5 Quality assessment strategy

Formal risk of bias assessment is not required in the early use assessment process and so will not be conducted. However, the report will include discussion of any concerns regarding the reliability of the key included studies, due to study designs used and consequently how the risk of bias might have affected key outcomes. The report will comment on the generalisability of the results to clinical practice in the NHS.

2.6 Methods of synthesis and analysis

The data will be summarised in tables and synthesised in a narrative review.

3. Economic analysis methods

We propose the development of an economic model to estimate the clinical and economic outcomes associated with the use of AI technologies to help detect prostate cancer on multiparametric and biparametric MRI tests. The economic evaluation will adopt an NHS and Personal Social Services (PSS) perspective, in line with NICE guidelines (NICE 2022).

The model will address the decision problem outlined in the final scope (see Section 1 for the draft decision problem). We will also consider the costs and clinical outcomes in specific sub-groups, where data allows. Sub-groups will be analysed in line with those outlined in the scope.

3.1 Model development

This evaluation will include analysis for the patient population, and conditional on evidence, disaggregated analyses will also be conducted to examine costs and clinical outcomes for relevant subgroups and scenarios. We anticipate there will be

differences in the level and quality of evidence available across subgroups. Where this is identified, we will reference and interpret this in the final report, including to inform recommendations for future data collection.

Expert clinical opinion will be used to guide the model design, use of subgroups, and to ensure that key clinical events and outcomes are appropriately captured.

Outcomes will be prioritised based on expert clinical input on their importance and available evidence. Those outcomes with greater uncertainty may be included in additional scenario analyses.

Costs associated with the use of AI technologies may include cost of the technology and training costs for the healthcare professions. Where company-supplied evidence is available, the model will aim to explore different intervention cost structures such as one-off purchase, pay-per use, annual subscription, and site license costs.

Clinical outcomes, diagnostic accuracy, biopsy referrals, and biopsy-related adverse events rates, which influence costs will also be included.

Model inputs will be informed by published literature, company submissions, NHS data sources, and expert opinion. To identify appropriate evidence for costs and resource use, we will conduct targeted searches of the economic literature, supplemented by data from the NHS Cost Collection data (NHS 2025), the Unit Costs of Health and Social Care published by the Personal Social Services Research Unit (PSSRU) (Jones 2024) , and the British National Formulary (BNF) (NICE 2026). All costs will be inflated to the 2024/25 price year.

The model will include health-related quality of life outcomes (HRQoL) where available. However, it may not be possible to quantify the views, experience, and satisfaction of the AI technologies for service users. Where we are unable to quantify this, these issues will be discussed qualitatively in the final report.

Other factors that may not be possible to quantify within the model include the variation between the populations used to train the AI algorithms, the variation between hospital IT systems, and the issue of clinically insignificant cancer being identified and treated. Where we are unable to model these factors, these issues will instead be discussed qualitatively in the final report.

Where appropriate and feasible (based on available data), sensitivity analyses will be undertaken to explore uncertainty. Deterministic sensitivity analysis will be performed to account for first-order uncertainty around the data. A tornado diagram will be included to display the parameters with the greatest impact on model outcomes. Probabilistic sensitivity analysis (PSA) will also be undertaken to investigate second-order uncertainty. Notably, if there is a significant lack of data for some parameters, the results of the PSA may not be fully accurate, as the underlying probability distributions may be less robust.

Additional scenario analyses may also be conducted on key drivers of the model, or as exploratory analysis on uncertain parameters. This may include key factors such as the use of AI among experienced versus inexperienced radiologists. Key scenarios will be decided in consultation with clinical experts.

3.2 Conceptual modelling

A conceptual model will be developed to address the decision problem. While it is not possible at this point to provide a definitive outline of the model structure, we propose the development of a decision tree with a one-year time horizon leading into a high-level lifetime partitioned survival model. The final model structure will be finalised following further exploration of the clinical pathways and the evidence assessment.

The decision tree aspect of the model is expected to focus primarily on the short-term outcomes, such as diagnostic outcomes, true underlying health state, and number of repeat MRIs. The impact of AI on MRI reading and reporting times will also be assessed in the short-term model. This will include assessing the staff time saved, the patient quality of life gain from faster diagnosis, and any other costs associated with improving system efficiencies. The lifetime model will aim to assess the long-term consequences of how improving the speed and accuracy of diagnosis may increase survival and quality of life.

Costs and health outcomes in the model will be discounted at 3.5% per annum, in line with the NICE reference case (NICE 2022). Due to the paucity of data in the literature detailing long-term clinical outcomes, it may not be possible to model some

outcomes. Therefore, exploratory assumptions may be necessary to investigate the range of potential impacts on model results.

This outlined approach enables us to balance the use of existing evidence, capture both short-term events and select long-term cost and health outcomes, while limiting the structural uncertainty that may arise from the use of more complex modelling structures.

Due to a variety of sub-populations, as well as specific workflows and preferences of speciality departments, there will be a range of additional long-term outcomes which will not be possible to capture. YHEC will take expert advice into account to consider long-term outcomes. Model results will be reported disaggregated by short- and long-term outcomes, and commentary will be provided on the relative robustness of each of these outcomes in the final report.

Once the model structure and key assumptions have been refined based on the final scope and evidence review, we will validate the approach with clinical experts. This will be done through dedicated meetings or email correspondence. Expert feedback will be used to test the face validity of the conceptual model, inform subgroup analysis, and ensure that key events and outcomes are appropriately captured.

3.3 Cost of reversing a decision

This assessment will also estimate the cost of reversing a decision to adopt the technologies into the NHS. This applies when an initial decision by NICE to recommend use of an AI technology while further evidence is generated is later changed after new evidence shows the technology is not cost-effective or cost-saving. These costs are likely to include the fixed and upfront costs of the AI technology, the cost of staff time needed to train radiologists, and any costs associated with removing the software.

4. Evidence gaps analysis

Evidence gaps relating to all NICE scope outcomes will be summarised in tabular and narrative form. If appropriate, a 'traffic light' scheme will be used to highlight relative importance of the gap. Key areas for evidence generation will be

summarised in tabular form. Narrative text will also address missing clinical evidence for other parts of the scope, such as population, setting, and comparators.

5. Handling information from the companies and other stakeholders

All data submitted by the companies in evidence and information requests by NICE, or data submitted by other stakeholders will be considered by the EAG if received by 22/04/26. Information arriving after this date is not guaranteed to be considered. If the data included in the information provided meets the inclusion criteria for the review, they will be extracted and quality assessed following the procedures outlined in this protocol. The EAG may seek clarification or additional information from companies and other stakeholders where necessary. All correspondence between the EAG and companies will happen through NICE.

Any 'commercial in confidence' data provided by a company and specified as such will be highlighted in **blue and underlined** in the assessment report. Any 'academic in confidence' data provided by company(s), and specified as such, will be highlighted in **yellow and underlined** in the assessment report. If confidential information is included in the economic model, the EAG will provide a copy of the model with 'dummy variable values' for the confidential values (using non-confidential values).

6. References

Ayiku L FA, Hudson T, Walsh N, Adams R. (2025) Development and validation of the NICE artificial intelligence (AI) medical device intervention search filters for MEDLINE and Embase (Ovid). *Int J Technol Assess Health Care*: 1-27

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Jones K C and W, Helen and Birch, Sarah and Castelli, Adriana and Chalkley, Martin and Dargan, Alan and Forder, Julien E. and Gao, Minyue and Hinde, Seb and Markham, Sarah and Premji, Shainur and Findlay, D. and Teo, H (2024) Unit Costs of Health and Social Care 2023 Manual. Personal Social Services Research Unit (University of Kent) & Centre for Health Economics (University of York), UK. Available from: <https://kar.kent.ac.uk/105685/>

NHS. National Cost Collection 2024/25. [online] Available from: <https://www.england.nhs.uk/costing-in-the-nhs/national-cost-collection/>

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<https://www.nice.org.uk/advice/mib280/chapter/Clinical-and-technical-evidence>

NICE. NICE technology appraisal and highly specialised technologies guidance: the manual (PMG36). [online] Available from:

<https://www.nice.org.uk/process/pmg36/resources/nice-health-technology-evaluations-the-manual-pdf-72286779244741>

NICE (2025) NICE HealthTech programme manual.

<https://www.nice.org.uk/process/PMG48>

NICE. British National Formulary (BNF). [online] Available from:

<https://bnf.nice.org.uk/>

NICE Decision Support Unit. Technical Support Unit Document 27: Prioritising studies and outcomes for NICE HealthTech literature reviews [online]

Available from: <https://sheffield.ac.uk/nice-dsu/tsds/prioritising-studies-and-outcomes-consideration-nice-healthtech-literature-reviews>

Page MJ, McKenzie JE, Bossuyt PM, et al. (2021a) The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 372: n71

Page MJ, Moher D, Bossuyt PM, et al. (2021b) PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. *BMJ* 372: n160

Rethlefsen ML, Kirtley S, Waffenschmidt S, et al. (2021) PRISMA-S: an extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews. *Syst Rev* 10(1): 39

Appendix A: Draft search strategy

1 exp prostatic neoplasms/ (163595)

2 prostatic intraepithelial neoplasia/ (1441)

3 prostatic hyperplasia/ (25837)

4 (prostat* adj6 (adenocarcin* or adenofibromyomatosis or adenoma* or angiosarcoma* or cancer* or carcin* or hyperplas* or hypertroph* or intraepithelial* or intra-epithelial* or leiomyosarcoma* or lymphom* or malignan* or neoplas* or oncol* or rhabdomyosarcoma* or sarcoma* or tumor* or tumour*)).ti,ab,kf. (228481)

5 or/1-4 (254591)

6 magnetic resonance imaging/ (528578)

7 multiparametric magnetic resonance imaging/ (2201)

8 (imag* adj3 (chemical shift or magneti* or mr or nmr or proton spin or spin echo)).ti,ab,kf. (433839)

- 9 (tomograph* adj3 (magneti* or mr or nmr or proton spin or spin echo)).ti,ab,kf. (36222)
- 10 (transfer* adj3 magnet*).ti,ab,kf. (5305)
- 11 (mri or bpmri or fmri or mpmri).ti,ab,kf. (449479)
- 12 zeugmatograph*.ti,ab,kf. (35)
- 13 or/6-12 (831830)
- 14 algorithm*.ti,kf. (89189)
- 15 (algorithm* adj2 (learn* or automate* or detect* or predict* or treatment* or therap* or radiolog* or AI or DL or data or dataset* or base* or classif*)).ab. (126792)
- 16 artificial intelligen*.ti,ab,kf. (104726)
- 17 AI.ti,kf. (32095)
- 18 (machine adj2 learn*).ti,ab,kf. (188768)
- 19 machinelearn*.ti,ab,kf. (41)
- 20 (deep adj2 learn*).ti,ab,kf. (111087)
- 21 deeplearn*.ti,ab,kf. (51)
- 22 neural network*.ti,ab,kf. (149686)
- 23 (convolutional adj1 network*).ti,ab,kf. (5842)
- 24 automate*.ti. (56547)
- 25 (automate* adj3 (system* or score* or software* or analysis* or analyse* or risk* or evaluat* or tool* or detect* or process*)).ab,kf. (52576)
- 26 (vector machine* or svm*).ti,ab,kf. (43900)
- 27 radiomic*.ti,ab,kf. (18147)
- 28 ((supervised or unsupervised) adj3 (classifier* or prediction*)).ti,ab,kf. (1234)
- 29 or/14-28 (654985)
- 30 5 and 13 and 29 (1764)
- 31 (hProstate* or mdprostate* or Prostate Suite* or Quantib Prostate* or ProstatID* or Prostate Intelligence* or QP-Prostate*).ti,ab,kf,ot. (7)
- 32 (AI-Rad Companion* or Siemens Healthineers* or hevi AI* or mediaire* or Bot image* or Lucida Medical* or Quibim*).ti,ab,kf,ot. (509)

33 31 or (5 and 32) (18)

34 (prostate health or prostate healthtm or prostate healthr or prostate mr or prostate mrr or prostate mrtm).ti,ab,kf,ot. (934)

35 13 and 29 and 34 (59)

36 30 or 33 or 35 (1784)

37 exp animals/ not humans/ (5436826)

38 (news or editorial or case reports).pt. or case report.ti. (3580619)

39 36 not (37 or 38) (1743)

40 limit 39 to (english language and yr="2020 - 2026") (1422)