Review protocol for approaches for diagnosing gout

ID	Field	Content
0.	PROSPERO registration number	Not applicable
1.	Review title	The most accurate and cost-effective approaches to diagnosing gout, in particular serum urate level compared with joint aspiration?
2.	Review question	2.2 What are the most accurate and cost-effective approaches to diagnosing gout, in particular serum urate level compared with joint aspiration?
3.	Objective	To determine which approaches for diagnosing gout are the most accurate and cost-effective.
4.	Searches	The following databases (from inception) will be searched: • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE Medline search strategy to be quality assured using the PRESS evidence-based checklist (see methods chapter for full details) Searches will be restricted by: • English language studies • Human studies The searches may be re-run 6 weeks before the final committee meeting and further studies retrieved for inclusion if relevant. The full search strategies will be published in the final review.
5.	Condition or domain being studied	Gout (including people with gout and chronic kidney disease)
6.	Population	Inclusion: Adults (18 years and older) with suspected gout

		Exclusion: People with calcium pyrophosphate crystal deposition, including pseudogout.
7.	Index test/approach	• Clinical assessment (history and examination) • Serum urate level (persistently above 380 micromol/L) • Clinical assessment plus serum urate level (history and examination plus serum urate level persistently above 380 micromol/L) • X-ray • Ultrasound • Dual-energy CT (DECT)
8.	Reference standard	• Joint aspiration (urate crystals are observed in synovial fluid or tophi)
9.	Types of study to be included	Diagnostic accuracy cross-sectional studies. Systematic reviews of diagnostic accuracy cross-sectional studies.
10.	Other exclusion criteria	Non-English language studies. Conference abstracts will be excluded as it is expected there will be sufficient full text published studies available Case-control studies will be excluded
11.	Context	The 'gold standard' for diagnosing gout is looking for urate crystals in synovial fluid, however testing for urate crystals is not always possible therefore other means of diagnosis would be useful for practical reasons.
12.	Primary outcomes (critical outcomes)	Primary paired outcome: Sensitivity/specificity
13.	Secondary outcomes (important outcomes)	N/A
14.	Data extraction (selection and coding)	EndNote will be used for reference management, sifting, citations and bibliographies. All references identified by the searches and from other sources will be screened for inclusion. 10% of the abstracts will be reviewed by two reviewers, with any disagreements resolved by discussion or, if necessary, a third independent reviewer. The full text of potentially eligible studies will be retrieved and will be assessed in line with the criteria outlined above. A standardised form will be used to extract data from studies (see manual section 6.4). 10% of all evidence reviews are quality assured by a senior research fellow. This includes checking:

		• papers were included /excluded appropriately • a sample of the data extractions • correct methods are used to synthesise data • a sample of the risk of bias assessments Disagreements between the review authors over the risk of bias in particular studies will be resolved by discussion, with involvement of a third review author where necessary. Study investigators may be contacted for missing data where time and resources allow.
15.	Risk of bias (quality) assessment	The Quality Assessment of Diagnostic Accuracy Studies version 2 (QUADAS-2) checklist will be used (see Appendix H in the NICE guidelines manual 2014[54]).
16.	Strategy for data synthesis	• Coupled forest plots of sensitivity and specificity with their 95% CI across studies will be produced for each test (and for each clinically relevant threshold), using RevMan5. . Data would be meta-analysed when data are available from 3 or more studies (given data were reported at the same threshold or within a defined range of similar thresholds). To do this, data would be entered into a bivariate model using WinBUGS. Summary diagnostic outcomes will be reported from the meta-analyses with their 95% confidence intervals in adapted GRADE tables. If meta-analysis is not possible, data will be presented as individual values in adapted GRADE profile tables and plots of un-pooled sensitivity and specificity from RevMan software.
17.	Analysis of sub-groups	Subgroups that will be investigated if heterogeneity is present: • Setting
18.	Type and method of review	☐ Intervention ☒ Diagnostic ☐ Prognostic ☐ Qualitative ☐ Epidemiologic ☐ Service Delivery ☐ Other (please specify)
19.	Language	English
20.	Country	England
21.	Anticipated or actual start date	21st May 2021
22.	Anticipated completion date	13th June 2022

<table>
<tr><td>23.</td><td>Stage of review at time of this submission</td><td>Review stage</td><td>Started</td><td>Completed</td></tr>
<tr><td></td><td></td><td>Preliminary searches</td><td>☑</td><td>☑</td></tr>
<tr><td></td><td></td><td>Piloting of the study selection process</td><td>☑</td><td>☑</td></tr>
<tr><td></td><td></td><td>Formal screening of search results against eligibility criteria</td><td>☑</td><td>☑</td></tr>
<tr><td></td><td></td><td>Data extraction</td><td>☐</td><td>☐</td></tr>
<tr><td></td><td></td><td>Risk of bias (quality) assessment</td><td>☐</td><td>☐</td></tr>
<tr><td></td><td></td><td>Data analysis</td><td>☐</td><td>☐</td></tr>
<tr><td>24.</td><td>Named contact</td><td colspan="3">5a. Named contact
National Guideline Centre

5b Named contact e-mail
managementofgout@nice.org.uk

5e Organisational affiliation of the review
National Institute for Health and Care Excellence (NICE) and National Guideline Centre</td></tr>
<tr><td>25.</td><td>Review team members</td><td colspan="3">From the National Guideline Centre:
Gill Ritchie [Guideline lead]
Julie Neilson [Senior systematic reviewer]
Audrius Stonkus [Systematic reviewer]
Alexandra Bonnon [Health economist]
Amber Hernaman [Project manager]
Joseph Runicles [Information specialist]</td></tr>
<tr><td>26.</td><td>Funding sources/sponsor</td><td colspan="3">This systematic review is being completed by the National Guideline Centre which receives funding from NICE.</td></tr>
<tr><td>27.</td><td>Conflicts of interest</td><td colspan="3">All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the</td></tr>
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		minutes of the meeting. Declarations of interests will be published with the final guideline.	
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website: [NICE guideline webpage].	
29.	Other registration details	[Give the name of any organisation where the systematic review title or protocol is registered (such as with The Campbell Collaboration, or The Joanna Briggs Institute) together with any unique identification number assigned. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.]	
30.	Reference/URL for published protocol	[Give the citation and link for the published protocol, if there is one.]	
31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts • issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE. [Add in any additional agree dissemination plans.]	
32.	Keywords	[Give words or phrases that best describe the review.]	
33.	Details of existing review of same topic by same authors	[Give details of earlier versions of the systematic review if an update of an existing review is being registered, including full bibliographic reference if possible. NOTE: most NICE reviews will not constitute an update in PROSPERO language. To be an update it needs to be the same review question/search/methodology. If anything has changed it is a new review]	
34.	Current review status	☒	Ongoing
		☐	Completed but not published
		☐	Completed and published
		☐	Completed, published and being updated
		☐	Discontinued
35..	Additional information	[Provide any other information the review team feel is relevant to the registration of the review.]	
36.	Details of final publication	www.nice.org.uk	