


```

imaging # [e.g., CT scan, V-Q scan, MRI, chest X-ray]
biomarker # [e.g., PSA, BNP, PTH]
clinical.test # [e.g., this can be a challenge test such as using levodopa
for idiopathic Parkinson's diagnosis, or doing a
treadmill test (stress test) or doing a tilt test]
physiologic.test # [e.g., measuring electric impedance, EKG, EEG, doppler
measurement of blood flow (not image, but Qa), sleep
apnea testing, spirometry]
endoscopy.exams # [e.g., gastroscopy, colonoscopy]

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[If there are no obvious candidates for the above, please describe in 80 chars]
describe.test _____

[Describe the search - again 1 = yes; 0 = no]

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exact.search.desc # [Do they report the *exact* search in a
way that can be replicated?]

```

[If the above is 0 then do they report the following]

```

search.terms # [they list or enumerate search terms without boolean
operands]
search.on.demand # [they state that the exact search is available upon request,
available on a website, or in a previous paper]

yr.searched # [search years mentioned]
qual.exc # [in the inclusion criteria do they describe excluding studies
based on study quality
We do count exclusions based on
- risk of verification bias
- timing between index and reference test
administration
- blinding etc.
We do not count study design characteristics
- i.e., exclusion of retrospective or Xsectional
studies ]

min.n # [in the inclusion criteria do they describe excluding studies
based on min sample size?]
min.no.sub ##### [if yes above, fill in cutoff sample size]

```

Which languages were included? [1] English only --- [2] English + specific other
--- [3] no restrictions or all --- [4] not stated
language #

Which of the following databases were searched?

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Medline # [MEDLINE - ANY VENDOR, Pubmed or OVID]
Embase # [EMBASE]
Conference # [conference proceedings]
biblio # [reference lists]
review # [review papers]
sci # [Science citation index]
cc # [current contents]
experts # [Contact experts in the field]
manufacturers # [were manufacturers specifically asked for info on studies]
specific.db # [Other specific database]
manual # [handsearching]
cochrane # [Cochrane CENTRAL or Cochrane database of systematic reviews]
CINAHL # [CINAHL]
unpublished.data # [Did they search for unpublished data]

```

Which funder? [0] No funder [1] Non-industry only --- [2] Any industry funding --- [3]
not mentioned
funding #

[Did the meta-analysis abstract for each individual study the following characteristics?]
[NB -Answer yes if they describe abstracting this information even if they
do not report it in a table, or even if they do not perform or report analyses by
these characteristics -- answer 0 [no] if they do not explicitly state that they
assessed the characteristic. Only note characteristics that were explicitly
mentioned.]

```

any.qual # [did they do any quality assessment - scores or items both
count]
settings # [setting of study -- e.g., tertiary care, rural]
consecutive # [whether participants were recruited consecutively or not]
prospective # [whether participants were recruited prospectively or not]
refstd # [the exact definition of the reference standard per study]
reader # [whether the test reader/assessor in each study was

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        experienced or not]
blinding.index      # [blinding of index test assessor to reference standard
                    # or to clinical information ]
blinding.refst     # [blinding of reference test assessor to index test results]
blinding.unspecif  # [they mention blinding but not distinguish in the above]
Age                # [describe age distribution in studies e.g., mean, sd]
Gender             # [male/female]
Location          # [geographic location e.g. US/Europe]
Spectrum bias     # [representativeness of spectrum of patients studied or
                    # description of severity]
Selection bias     # [what criteria were used to select patients for study]
Time              # [adequacy of the time interval between the index test and
                    # reference standard]
Test Independence  # [was the reference standard independent of the index test?
                    # i.e. the index test did not form part of the reference
                    # standard]
Indeterminant results# [were uninterpretable/intermediate test results reported?]
Withdrawals       # [were withdrawals from the study explained?]
verbias           # [verification bias - whether the decision to apply the reference
                    # test is influenced by the results of the index test]

```

[If they used QUADAS to rate studies indicate 1 below. If not, indicate 0.]

```

Quadas            #
Stard             #

```

[IMPORTANT NOTE for HANDLING QUALITY EXTRACTIONS:

When the authors claim to have used QUADAS or STARD

First, check the corresponding checklist (QUADAS or STARD) above.

Then,

- If they report the specific items they used (which may be a subset of the checklist) then check ONLY the items they used.
- If they do not report any specific items from that checklist check ALL those that correspond to checklist items.]

With respect to the index test classification as (+) or (-) did the analysis examine only a single threshold or did it examine multiple thresholds (analysed in any way?)

Indicate

- 1= single threshold
- 2= multiple, analysed in separate meta-analyses
- 3= multiple, analysed in a single model (ordinal)

```

n.thresholds      # [based on the handling of the test in the meta-analysis]

```

Does the paper provide data to repeat analyses?

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has.counts        # [Yes, if they report counts for the 2x2 tables, i.e., TP, FN,
                    # FP, TN]

```

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can.calculate.counts # [If the above is no, do they provide sufficient statistics to
                    # calculate counts e.g., sensitivity and N diseased, with
                    # specificity and N nondiseased OR sensitivity, specificity,
                    # prevalence and overall sample size OR sensitivity,
                    # specificity and their CI's ]

```

ANALYSES - GENERAL

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rem.used          # [Yes if they used any random effects model in their analyses]

```

```

bayes.used        # [Yes if they used any bayesian approach in their analyses
                    # using just Bayes rule does not count
                    # as a Bayesian analysis]

```

ANALYSES - METRICS

Which of the following metrics were reported or anyhow analysed/calculated?

Please check only the metrics that were used in a synthesis or to interpret a synthesis. For example: A meta-analysis using the bivariate method synthesizes Sensitivity and Specificity

(should be checked). If it then takes the summary Sensitivity and Specificity and calculates

summary LR+ and LR- to aid in interpretation, then we should check LR also.

```

or                # [ diagnostic OR ]
sens              # [ sensitivity ]
spec              # [ specificity ]
LR                # [ likelihood ratios ]
Acc               # [ accuracy ]
pv                # [ predictive values ]
Q.star            # [ Synthesis of Q* - i.e. analysis based on Q* from primary

```

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studies]
auc          # [ Synthesis of individual ROC AUC's - i.e.
              analysis based on AUCs from primary studies]

*****
ANALYSES - GRAPHICS

plot.shown   # [ Do they show any graphs plots for synthesis ]

Specify the type of graphs that are shown

forest.plot  # [ Forest plot ]
roc.space.plot # [ Plot in the ROC space - sensitivity vs (1-) specificity ]

Other plot(s) related to Dx test analyses
plot.describe _____

*****
ANALYSES - HETEROGENEITY
Testing for heterogeneity

hetero.test  # [ Did they do any test for heterogeneity or for differential
              model fit between fixed and random effects models? ]

Exploring heterogeneity
0 = no exploration of heterogeneity, (or no heterogeneity to explore)
1 = subgroup analyses - excluding a single study
2 = exploration of heterogeneity with regression models

hetero.explore # [ for studies that do both meta-regression and subgroup
                 analyses enter "2" ]

*****
ANALYSES - MODELS

Do they perform univariate analyses? E.g., separate analyses of sensitivity,
specificity, analysis of ORs, AUCs, LRs and so on. Note that SROC analyses should not
be logged here - they should be logged under SROC/HSROC analyses

univariate  # [ analyses done one outcome-at-a-time ]
naive.univariate # [ Do they do naive "pooling"? Examples are summing up numerator
                   for sensitivity and specificity, or weighting by size
                   or getting an unweighted mean ]

Do they perform advanced multivariate analyses? E.g., bivariate model (joint analysis of
sensitivity and specificity) or the HSROC model (joint analysis of alpha and theta).
Note that we do not record meta-regressions with multiple predictors here.
0 = no advanced analyses
1 = bivariate model
2 = HSROC model
3 = bivariate and HSROC models (e.g., if they show the summary point and the line)
4 = other (e.g. multiple thresholds, or a custom model that is complex) - free text

advanced    #
other.advanced _____

If they perform SROC/HSROC analyses, what method do they use?
1 = Moses and Littenberg
2 = Rutter and Gatsonis
3 = other (e.g., random intercept variation of Moses, or major axis regression) - free
text

sroc.model  #
sroc.other  _____

*****
ANALYSES - COMPARATIVE

Do they perform formal comparative analyses between 2 or more index tests, based on
statistical procedures? Qualitative comparisons (eyeball, or based on overlap of CIs),
in the absence of a formal statistical test DO NOT COUNT as comparative.

comparative #

If yes, where the comparisons direct or indirect?
Direct: (1) Both index tests were given to the same patients in each study and were
        assessed against the same reference standard
        (2) This design was taken into account in a hierarchical model

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Indirect: All that do not fall under the above

direct.comparisons #

What statistical tests were used for comparing the performance characteristics of index tests?

z.score # [comparisons of summary estimates]

meta.regression # [test is a covariate in the HSROC or bivariate or other model]

State something about the comparison method:

compare.method _____
