SUPPLEMENTARY MATERIALS

SEARCH STRATEGY

Database: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and **Ovid MEDLINE(R) <1946 to Present>** Search Strategy:

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1 carcinoma, non-small-cell lung/ or carcinoma, bronchogenic/ (52807)

2 (((Non-Small-Cell or "Non Small Cell" or nonsmall cell) adj3 (lung$ or bronchial or bronchiol$ or bronchus or pulmonary or pulmo$ or thoracic$ or transthoracic$ or intrathoracic$ or intra-thoracic$)) or NSCLC).ab,kf,kw,ti. (51894)

3 or/1-2 [**NSCLC**] (69330)

4 "Biopsy"/ and (needle or "fine needle" or fine-needle).ab,kf,kw,ti. (3574)

5 biopsy, needle/ or biopsy, fine-needle/ or endoscopic ultrasound-guided fine needle aspiration/ (60653)

6 ((Fine-needle? or Fine needle? or fineneedle? small or needle) adj3 (Biops$ or aspir$ or cytolog$ or cytomorpholg$ or patholog$ or diagnosis)).ab,kf,kw,ti. (46562)

7 (("1?" or "2" or "3" or "4" or "5" or "6" or "7" or "8" or "9" or "20" or "21" or "22") adj2 (gauge? adj2 needle?) adj3 (Biops$ or aspir$ or cytolog$ or cytomorpholg$ or patholog$ or diagnosis)).ti,ab,kw,kf. (448)

8 or/4-7 [**Needle Biopsy**] (81224)

9 Adenocarcinoma/ or Adenocarcinoma In Situ/ or Adenocarcinoma, Bronchiolo-Alveolar/ or Adenocarcinoma, Mucinous/ or Adenocarcinoma, Papillary/ or carcinoma, papillary, follicular/ or Carcinoma, Acinar Cell/ or Carcinoma, Mucoepidermoid/ or Carcinoma, Neuroendocrine/ or Carcinoma, Medullary/ or Carcinoma, Merkel Cell/ or Somatostatinoma/ or Vipoma/ (171127)

10 (adenocarcinoma$ or (adenoma$ adj2 malignant) or (carcinoma$ adj2 (granular cell or tubular or cribiform or basal cell or oxyphilic))).ab,kf,kw,ti. (143031)

11 ((Adenocancer$ adj2 (in situ or insitu or bronchio-aveoloar or bronchioaveoloar or clear cell or mucinous or papillary)) or (Carcinoma$ adj2 (acinar cell or mucoepidermoid or neuroendocrine))).ab,kf,kw,ti. (7290)

12 or/9-11 [**Adeno ca**] (241355)

13 carcinoma, adenosquamous/ or Neoplasms, Squamous Cell/ or carcinoma, squamous cell/ or bowen's disease/ [exploded MeSH term, "carcinoma, adenosquamous"] (124655)

14 (((Squam or squamous or "squamous cell" or epidermoid or adenosquam$) adj3 (carcinoma\* or adenocarcinoma\* or cancer? or tumo?r\*)) or (adenocarcinoma$ or adenocancer$)).ab,kf,kw,ti. (216984)

15 or/13-14 [**Squamous Ca**] (268917)

16 lung/ or bronchi/ or bronchioles/ or pulmonary alveoli/ or blood-air barrier/ or pneumocytes/ (266110)

17 (lung$ or bronchial or bronchiol$ or bronchus or pulmonary or pulmo$ or thoracic$ or transthoracic$ or intrathoracic$ or intra-thoracic$).ab,kf,kw,ti. (1123262)

18 or/16-17 [ **Lung + thoracic terms**] (1180399)

19 Lung Neoplasms/ or Bronchial Neoplasms/ (206383)

20 Thoracic Neoplasms/ (6682)

21 or/19-20 [**Lung Ca** ] (212137)

22 ("23207436" or "18224506" or "2208037" or "22455850" or "3036184" or "22927132" or "6302615" or "11280601" or "7754123" or "23312886" or "9254168" or "2844046" or "19170169" or "12462083" or "25520119" or "19950704" or "20195168" or "22508674" or "16200036" or "6320564" or "24126803" or "9337548" or "21258246" or "23687077" or "12450072" or "21841504" or "23613404" or "3002080" or "6261561" or "21319328" or "17614298" or "21406513" or "26592713" or "17602342" or "24377813" or "3568988" or "1665154").ui. [**sterling set from BS**] (38)

23 and/3,8 [**NSCLC + needle biopsy]** (1291)

24 (21 and (12 or 15) and 8) not 23 [ **Lung cancer & Squamous/Adenocarc & needle biopsy**] (1002)

25 (18 and (12 or 15) and 8) not (or/23-24) [**Lungs Squamous/Adenocarc & needle biopsy**] (417)

26 (23 or 24 or 25) not 22 (2672)

27 remove duplicates from 26 (2554)

28 27 and (systematic review? or meta analys$ or metaanlys$).ab,ti,pt. [**SR & MA**] (19)

29 (27 not 28) and (Review or Case Reports or Editorial or Letter or Comment).pt. (1025)

30 27 not 29 [Final study results] (1529)

31 27 not (28 or 29) [**Final study results** - fully deduped] (1510)

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| --- | --- | --- | --- |
| **Section/topic**  | **#** | **PRISMA-DTA Checklist Item**  | **Reported on page #**  |
| **TITLE / ABSTRACT** |  |
| Title  | 1 | Identify the report as a systematic review (+/- meta-analysis) of diagnostic test accuracy (DTA) studies. | 1 |
| Abstract | 2 | Abstract: See PRISMA-DTA for abstracts. | 2 |
| **INTRODUCTION**  |  |
| Rationale  | 3 | Describe the rationale for the review in the context of what is already known.  | 4 |
| Clinical role of index test | D1 | State the scientific and clinical background, including the intended use and clinical role of the index test, and if applicable, the rationale for minimally acceptable test accuracy (or minimum difference in accuracy for comparative design). |  |
| Objectives  | 4 | Provide an explicit statement of question(s) being addressed in terms of participants, index test(s), and target condition(s). | 4 |

**PRISMA CHECKLIST**

PRISMA CHECKLIST (CONTINUED)

|  |  |
| --- | --- |
| **METHODS**  |  |
| Protocol and registration  | 5 | Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.  | 4 |
| Eligibility criteria  | 6 | Specify study characteristics (participants, setting, index test(s), reference standard(s), target condition(s), and study design) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale. | 4-5 |
| Information sources  | 7 | Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.  | 4 |
| Search  | 8 | Present full search strategies for all electronic databases and other sources searched, including any limits used, such that they could be repeated. | Supplementarymaterials |
| Study selection  | 9 | State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).  | 4 |
| Data collection process  | 10 | Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.  | 5 |
| Definitions for data extraction | 11 | Provide definitions used in data extraction and classifications of target condition(s), index test(s), reference standard(s) and other characteristics (e.g. study design, clinical setting). | 5 |
| Risk of bias and applicability | 12 | Describe methods used for assessing risk of bias in individual studies and concerns regarding the applicability to the review question. | 5 |
| Diagnostic accuracy measures | 13 | State the principal diagnostic accuracy measure(s) reported (e.g. sensitivity, specificity) and state the unit of assessment (e.g. per-patient, per-lesion). | 5 |
| Synthesis of results  | 14 | Describe methods of handling data, combining results of studies and describing variability between studies. This could include, but is not limited to: a) handling of multiple definitions of target condition. b) handling of multiple thresholds of test positivity, c) handling multiple index test readers, d) handling of indeterminate test results, e) grouping and comparing tests, f) handling of different reference standards | 5 |

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| Meta-analysis | D2 | Report the statistical methods used for meta-analyses, if performed. | 5 |
| Additional analyses  | 16 | Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.  | 5 |

PRISMA CHECKLIST (CONTINUED)

|  |  |
| --- | --- |
| **RESULTS**  |  |
| Study selection  | 17 | Provide numbers of studies screened, assessed for eligibility, included in the review (and included in meta-analysis, if applicable) with reasons for exclusions at each stage, ideally with a flow diagram.  | 6 |
| Study characteristics  | 18 | For each included study provide citations and present key characteristics including: a) participant characteristics (presentation, prior testing), b) clinical setting, c) study design, d) target condition definition, e) index test, f) reference standard, g) sample size, h) funding sources | 14(Table 1) |
| Risk of bias and applicability | 19 | Present evaluation of risk of bias and concerns regarding applicability for each study. | 17 |
| Results of individual studies  | 20 | For each analysis in each study (e.g. unique combination of index test, reference standard, and positivity threshold) report 2x2 data (TP, FP, FN, TN) with estimates of diagnostic accuracy and confidence intervals, ideally with a forest or receiver operator characteristic (ROC) plot. | 18-20 |
| Synthesis of results  | 21 | Describe test accuracy, including variability; if meta-analysis was done, include results and confidence intervals. | 6 |
| Additional analysis  | 23 | Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression; analysis of index test: failure rates, proportion of inconclusive results, adverse events). | 6-7 |
| **DISCUSSION**  |  |
| Summary of evidence  | 24 | Summarize the main findings including the strength of evidence. | 7 |
| Limitations  | 25 | Discuss limitations from included studies (e.g. risk of bias and concerns regarding applicability) and from the review process (e.g. incomplete retrieval of identified research). | 8 |
| Conclusions  | 26 | Provide a general interpretation of the results in the context of other evidence. Discuss implications for future research and clinical practice (e.g. the intended use and clinical role of the index test). | 9 |
| **FUNDING**  |  |
| Funding  | 27 | For the systematic review, describe the sources of funding and other support and the role of the funders. | 10 |

*Adapted From:*  McInnes MDF, Moher D, Thombs BD, McGrath TA, Bossuyt PM, The PRISMA-DTA Group (2018). Preferred Reporting Items for a Systematic Review and Meta-analysis of Diagnostic Test Accuracy Studies: The PRISMA-DTA Statement. JAMA. 2018 Jan 23;319(4):388-396. doi: 10.1001/jama.2017.19163.

For more information, visit: **www.prisma-statement.org**.