GID-HTE10065 Algorithms applied to spirometry to support the diagnosis of lung conditions in primary care and community diagnostic centres

Final Protocol

Produced by: **Newcastle External Assessment Group (EAG)**

Authors: **Rosalyn Parker**, Head of Evaluation, Clinical Scientist, The Newcastle upon Tyne Hospitals (NuTH);

Rachel O'Leary, Head of Informatics, Clinical Scientist, NuTH;

Elliot Blacklock, Technical and Quality Lead, NuTH;

Paula Leslie, Pre-registrant Clinical Scientist, NuTH;

Fiona Beyer, Senior Information Specialist, Newcastle University;

Alex Inskip, Information Specialist, Newcastle University;

Luke Vale, Professor in Health Economics, London School of Hygiene and Tropical Medicine, NuTH;

Kim Keltie, EAG Director, NuTH;

Correspondence to: Kim Keltie, Northern Medical Physics and Clinical Engineering, NMPCE (Medical Physics, NCCC Level 2), Freeman Hospital, High Heaton, Newcastle upon Tyne, NE7 7DN; nuth.nmpce.hta@nhs.net

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1. Decision problem

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 who have suspected lung conditions and will undergo spirometry to support initial diagnosis.	The EAG note that the use of bronchodilator reversibility (BDR) testing with spirometry is recommended as a diagnostic test for asthma and COPD, NICE NG115), asthma (NICE NG245) and spirometry alone for idiopathic pulmonary fibrosis (NICE CG163). The EAG also note that the evidence may not specify whether BDR test with spirometry or spirometry alone was used and will consider evidence relating to people undergoing spirometry and BDR testing with spirometry where reported.
Subgroups	Where data permits, the following subgroups may be considered: • People who have suspected COPD and will undergo spirometry to support initial diagnosis • Adults who have suspected asthma and will undergo spirometry to support initial diagnosis • Children who have suspected asthma and will undergo spirometry to support initial diagnosis • Adults who have suspected restrictive lung disease and will undergo spirometry to support initial diagnosis • Children who have suspected restrictive lung disease and will	The EAG note that not all technologies are indicated in all age groups and that children with suspected lung conditions may routinely be referred to secondary care for diagnosis. The EAG will consider evidence in populations and settings that align to the technology Instructions for Use (IFU).

	undergo spirometry to support initial diagnosis	
Intervention(s)	Technologies that use algorithms (artificial intelligence or rules-based) to support diagnosis of lung conditions in primary care and community diagnostic centres (see Section **Error! Reference source not found.**, NICE Final Scope): • ArtiQ.Spiro (ArtiQ, a Clario company) • LungHealth Diagnostic Spirometry module (LungHealth Ltd) • MIR Spiro (MIR) • EasyOne Connect (NDD) • GoSpiro (Monitored Therapeutics) • NuvoAir (NuvoAir)	The EAG acknowledge that the included technologies may use a combination of algorithms based on machine-learning AI or rules-based; NICE are responsible for considering the eligibility of the included technologies. The EAG will consider evidence for the included technologies and summarise the algorithm type used, where reported or confirmed by the Company.
Comparators	The comparator in this assessment is recommended usual care, whereby • quality assurance of spirometry is done by an accredited clinician, without algorithm support • spirometry pattern recognition is done by an accredited clinician, without algorithm support • a diagnosis is made by an accredited clinician, considering the results of objective tests in the context of a person's characteristics, without algorithm support.	Evidence pertaining to diagnostic accuracy is likely to include comparison with specialist opinion or other objective assessment. The EAG note that in some primary and community care services, access to objective tests may be limited and diagnosis may be made without objective testing or following specialist opinion in secondary care. The EAG will therefore consider any comparative evidence, including where the comparator is a diagnosis without objective testing or determined following secondary care referral.
Setting	Spirometry performed in the following settings to support a diagnosis made in primary care or community diagnostic centres: • primary care • community diagnostic centres • the patient's home	The EAG note that evidence, such as for diagnostic accuracy, may come from secondary care settings or comparing with specialist opinion. The EAG will not restrict the evidence by setting, however may prioritise publications in a primary or community setting where deemed practical or appropriate.

Outcomes eligible for inclusion **(organised by outcome type)**	Intermediate outcomes: • Access to spirometry and the number of spirometry tests performed • Quality of spirometry performance • Accuracy of interpretation of spirometry • Time to perform and interpret spirometry • Time-to-diagnosis • Diagnostic accuracy of initial diagnosis • Number of referrals to secondary care for a diagnosis to be made Clinical outcomes: • Number of hospital admissions due to exacerbations because of missed diagnosis and/or treatment • Mortality • Morbidity Clinician-reported outcomes: • Clinician confidence in performing quality-controlled diagnostic spirometry, interpreting results and making a diagnosis in primary care/CDCs • Clinician acceptability, perceived ease of use, experience and satisfaction Patient-reported outcomes: • Health-related quality of life (EQ-5D-3L) • Patient and carer acceptability, views, experience and satisfaction Costs and resource use: • Cost of technology (including hardware cost for software-only technologies) • Cost of treatment and management • Cost of training and/or accreditation	Additional outcomes, where reported and available, may be summarised by the EAG where time permits.

	• Staff time and cost at different specialisms and levels of pay • Health service resource use at different settings	
Economic analysis	• A health economic model will be developed where possible, using a cost-comparison or cost utility analysis • Costs will be considered from an NHS and Personal Social Services perspective • This assessment covers multiple conditions with different diagnostic and care pathways. Scenario analysis should be done, where possible. This is to address the relative effect of parameter or structural uncertainty on model results by, modelling the effects of the included technologies in different patient populations and settings.	The EAG will develop a conceptual economic model comparing the alternatives. This model will outline the both the structure of the model and key relationships. The EAG will then consider the availability of data to populate this model and only attempt a formal analysis when sufficient data is available. Where data is not available the conceptual model will be used to consider key research gaps to inform the development of an evidence generation plan. Scenario analysis will be considered where appropriate, and where data allow.
Time horizon	The time horizon for estimating potential for clinical and cost effectiveness should be sufficiently long to reflect potential for differences in costs or outcomes between the technologies being compared	No EAG comment.
Evidence gap analysis	Evidence gaps in clinical evidence and cost modelling should be identified to help direct further evidence generation.	The conceptual model will be used to consider key research gaps to inform the development of an evidence generation plan. This may not however any economic modelling.

1.1 Objectives

The purpose of this evidence assessment is to summarise the existing evidence for the health technologies included in the Final Scope. The aim is to evaluate the clinical-effectiveness and cost-effectiveness, identify evidence gaps, and highlight any risks associated with the potential use of these technologies in the NHS while further evidence is generated. It should be noted that the purpose of the review is not

to compare the technologies with each other. Based on the Final Scope developed by NICE, the following specific primary objectives are proposed:

- To identify, review and summarise evidence of the clinical effects and safety of technologies that apply algorithms to spirometry to support healthcare professionals in making an initial diagnosis for patients with suspected lung conditions, when compared with standard care.
- To identify, review and summarise the economic evidence of the included technologies used to support initial diagnosis, when compared with standard care.
- To develop a conceptual economic model to identify key model parameters and the relationship between them. An initial assessment of the potential cost-effectiveness of included technologies when compared with standard care will only be provided if feasible.
- To summarise information on the capacity, capabilities and practicalities of implementing the included technologies.
- To identify important evidence gaps and outline what data could be collected to address them.

2. Evidence review methods

The EAG will review the standard request for information forms and instructions for use (IFU) submitted to NICE for each technology within scope to develop a technology summary. Any missing or incomplete information may be supplemented from information found in the public domain, for example from company websites, as appropriate. Indications and contraindications listed in each technology's IFU will be considered and any evidence identified which has been undertaken in a contraindicated population (either exclusively or where results are reported for a mixed population) will be excluded by the EAG. Technology summary tables may be sent to each company to ensure accuracy of content. NICE will be responsible for

providing a summary of the relevant regulatory and Digital Technology Assessment Criteria (DTAC) status of the included technologies.

The EAG may ask clinical experts and specialist committee experts if any additional national guidance or data collection is relevant to this topic. Relevant sources will be summarised in the clinical context section.

The EAG will review the standard request for evidence forms submitted to NICE for each technology within scope. This will be supplemented by an independent pragmatic literature search undertaken by the EAG.

2.1 Inclusion criteria

The inclusion and exclusion criteria are outlined in Table 2. In instances where no evidence directly relevant to the scope is identified for a technology from the literature searching, the EAG may expand the elements of the scope and will consult with clinical experts to determine the generalisability of the included evidence and findings to the UK NHS.

Table 2. Inclusion and exclusion criteria

	Inclusion Criteria	Exclusion Criteria
Population	Patients undergoing lung function measurement in the diagnosis of suspected lung conditions (for example COPD, asthma) pre-diagnosis.	Patients using lung function measurements for ongoing monitoring following diagnosis. Screening of people without symptoms of lung conditions.
Intervention	Technologies listed in scope: • ArtiQ.Spiro (ArtiQ, a Clario company) • LungHealth Diagnostic Spirometry module (LungHealth Ltd) • MIR Spiro (MIR) • EasyOne Connect (NDD) • GoSpiro (Monitored Therapeutics) • NuvoAir (NuvoAir)	Studies that do not include technologies listed in the Final Scope. Studies that do not explicitly name the technology in the full paper and have not been sent by the company or identified on the company website (where the technology used can be inferred).
Comparators	Standard of care which may or may not include access to spirometry.	No exclusions.

	Inclusion Criteria	Exclusion Criteria
Setting	Community, primary and secondary care settings. Home-based spirometry testing.	Home-based spirometry testing following diagnosis (including where used to confirm provisional diagnosis, such as where treatment has been commenced).
Outcomes	Intermediate outcomes: • Access to spirometry and the number of spirometry tests performed • Quality of spirometry performance • Accuracy of interpretation of spirometry • Time to perform and interpret spirometry • Time-to-diagnosis • Diagnostic accuracy of initial diagnosis • Number of referrals to secondary care for a diagnosis to be made Clinical outcomes: • Number of hospital admissions due to exacerbations because of missed diagnosis and/or treatment • Mortality • Morbidity Clinician-reported outcomes: • Clinician confidence in performing quality-controlled diagnostic spirometry, interpreting results and making a diagnosis in primary care/CDCs • Clinician acceptability, perceived ease of use, experience and satisfaction Patient-reported outcomes: • Health-related quality of life (EQ-5D-3L)	Evidence not reporting on any outcome listed in the final scope.

	Inclusion Criteria	Exclusion Criteria
	• Patient and carer acceptability, views, experience and satisfaction Costs and resource use: • Cost of technology (including hardware cost for software-only technologies) • Cost of treatment and management • Cost of training and/or accreditation • Staff time and cost at different specialisms and levels of pay • Health service resource use at different settings	
Study design	Any study design reported in a peer-reviewed journal (including conference abstracts).	Unpublished evidence supplied by the Companies may be considered for relevance to the scope, however may be deprioritised if published evidence is available.

2.2 Search strategy

A pragmatic search strategy will be developed based on the literature search strategy shared by the NICE Information Specialist team during scoping (Appendix A, which will be edited to focus on the list of interventions included in the Final Scope), and identified published literature reviews in the topic area optimised for the decision problem (for example, including company and technology names listed in the Final Scope, and older device names as advised by the companies in their completed request for information). Searches will supplement information provided by the companies. The search strategy for clinical evidence will be initially constructed using technology names only. If any of the names retrieve too much irrelevant noise then they will be combined with terms for lung health measurement to improve precision. The search strategy for economic evidence will take the same approach as the clinical strategy, however where there is limited evidence specific to the technologies in scope, the EAG may supplement this with a broader economic

search to identify published economic evaluations of technologies using algorithms to support diagnosis of lung conditions.

The search strategies will be designed in Embase (OVID) and translated to the following sources:

- MEDLINE (OVID), Cochrane CENTRAL (Wiley), International HTA database (INAHTA) for clinical evidence,
- International HTA database (INAHTA), IDEAS (RePEc), PEDE (Paediatric Economic Database Evaluation) for economic evidence,
- World Health Organization International Clinical Trials Registry Platform (WHO ICTRP) for ongoing studies,
- MHRA Field Safety Notices for adverse events.

Filters may be applied, as appropriate, to identify diagnostic accuracy studies as well as clinical and economic evaluations. The EAG will consider applying limits to the literature search (for example published in English language, date of publication) where appropriate. Additional studies may be identified from hand searching relevant references of included papers.

Evidence provided by Companies and other stakeholders will also be considered and included if relevant to the decision problem and meets the inclusion criteria listed in Section 2.1. Where evidence is unable to be identified from the information provided, further clarification will be requested via NICE to enable source retrieval. Only evidence submitted to the EAG up 23 September 2025 (2 weeks prior to the submission of the draft External Assessment Report (EAR) to NICE) will be able to be considered within the EAR.

2.3 Study selection

Titles and abstracts will be screened by a single reviewer with at least a 10% sample checked by a second reviewer for relevance to the scope. For those deemed potentially relevant to the scope, full papers will be retrieved and reviewed by two reviewers for relevance to the scope. Any disagreements will be considered by a

third reviewer for arbitration. Any exclusions of full papers will have the reason for exclusion tabulated and checked by a second reviewer.

If a large amount of relevant evidence is identified, the EAG will prioritise evidence it considers most relevant to the decision problem; this may be based on study location or setting, study design (such as comparative evidence prioritised over single arm studies for some outcomes), and sample size (Carroll et al. 2025). The EAG will prioritise published over unpublished studies, where available.

2.4 Data extraction strategy

Data will be extracted from included studies into bespoke tables to enable descriptive statistics. Independent, second review of data extraction may be done subject to time and resource availability. Data points to be extracted include information about the study reference, setting, design, population characteristics, intervention characteristics and results of relevant outcomes as listed in the Final Scope. Any additional outcomes reported in the included evidence will be extracted, if time permits.

2.5 Quality assessment strategy

Formal risk of bias assessment will not be completed. Discussion will be included in the EAR on potential biases in included studies and how the risk of bias could affect key outcomes. The report will explicitly detail the potential sources of bias such as the main confounding factors and will comment on the generalisability of the results to clinical practice in the NHS.

2.6 Methods of synthesis and analysis

Results from clinical evidence will be extracted and tabulated in a bespoke spreadsheet. These will be narratively synthesised and grouped by population (asthma, COPD, restrictive lung disease) where available, and by technology for each of the outcomes included in the Final Scope. The EAG may consider summarising evidence for groups of technologies that share a specific value proposition, for example for technologies providing quality assurance of test validity

and providing decision support following spirometry, with results reported for each indication or population separately.

Methods and findings from included published economic evidence will be summarised in a tabular format and synthesised in a narrative review by technology. Economic evidence from the perspective of the UK NHS and Personal Social Services will be presented in greater detail.

3. Economic analysis methods

The primary aim of the economic analysis is to work out whether it is plausible that using technologies with algorithms applied to spirometry to support diagnosis of lung conditions is cost-effective in the NHS. It will consider people aged 5 years and older with a suspected lung condition, although exact age ranges and lung conditions modelled will differ by technology. Analysis may also consider specific subgroups, as detailed in the Final Scope. An economic evaluation model that could be used to assess cost-effectiveness will be conceptualised. It is unlikely that there will be a published economic evaluation that fully meets the scope of this assessment, so it is likely that a de novo conceptual model will be developed. Model conceptualisation will include defining parameters and functional relationships needed to populate the model. Clinical experts and specialist committee members will be asked to comment on the validity of the model structure, its inputs, and assumptions, to make sure they are appropriate, especially where evidence is lacking.

3.1 Model development

Because of the different value propositions of the included technologies (as described in the scoping workshop), a single conceptual model will be developed. The model will be informed by published economic evaluations or other publications describing the diagnostic pathway and will use features of available models where appropriate. It will consider the two main value propositions proposed by the topic selection committee (better quality diagnoses and reduced waiting lists) and may include additional learnings from published economic studies. The EAG will describe the appropriate characteristics of the model (for example structure, setting, input parameters, sources of data, assumptions). The EAG will also identify, if appropriate,

sensitivity analysis that could be undertaken to explore uncertainty. These may include deterministic and probabilistic sensitivity analysis, scenario analyses and subgroup analyses focused on what are believed to be the key characteristics and population subgroups identified in the scope. Costs will be considered from an NHS and Personal Social Services perspective, with cost-effectiveness evaluated against a threshold of £20,000 per QALY, consistent with the NICE reference case framework (NICE Health Technology evaluations manual, 2022).

3.2 Conceptual modelling

The EAG plans to construct a single conceptual economic model built in either Microsoft Excel or R Programming Language. The EAG will then go on to consider the availability of data with which the model could be populated. This will identify key evidence gaps that could be filled with further evidence generation, and targeted searches for economic model inputs may be considered where appropriate. Should there be sufficient data to populate the conceptual model the EAG will consider formally estimating cost-effectiveness to identify key model drivers and so further clarify key evidence gaps. If this is possible it is expected that this will be a simplified version of the conceptual model, such as a restricted model structure or restricted time horizon. If possible, the EAG will explore the impact of different cost options supplied by companies on the economic model, and carry out further sensitivity analysis, as appropriate.

3.3 Cost of reversing a decision

Where possible, the EAG can consider the costs associated with implementing each technology within the NHS, including consideration of whether any of these costs are irrecoverable or not, for example, any fixed or up-front costs related to the purchase of equipment, training costs or changes to organisation of care pathways. These will also be considered in sensitivity analysis, if appropriate.

4. Evidence gaps analysis

Evidence gaps identified pertaining to the intermediate and final outcomes from the scope and those pertaining to the conceptual economic modelling will be summarised in tabular and narrative form. 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. The EAG will outline potential study designs to address specific research questions to address identified evidence gaps, incorporating feedback from the clinical experts on the feasibility of proposed studies.

5. Handling information from the companies and other stakeholders

All data submitted by the companies in evidence and information requests by NICE, will be considered by the EAG if received up to 23 September 2025. If the data included in the information provided meets the inclusion criteria for the review, it 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. Company information arriving after this date will not be considered in the EAG final report, but may be submitted by stakeholders at consultation. The draft report will be shared with specialist committee members on 23 October 2025; the EAG will consider their feedback prior to submission of the final report to NICE on 30 October 2025.

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. Additional information sources

The EAG will consult with experts and specialist committee members to address queries about the clinical pathways and context of this assessment in addition to commenting on the validity and appropriateness of the conceptual economic model structure, its inputs and assumptions. The EAG note that NICE will recruit experts and specialist committee members for this assessment. Specialist committee

members are recruited in accordance with NICE's appointments to advisory bodies policy and procedure. The EAG may also consult with local clinical experts based within the Newcastle upon Tyne Hospitals NHS Foundation Trust who are subject to the same confidentiality agreements as the EAG.

7. Competing interests of authors

None.

8. References

Carroll C, Cooper K, Harnan S, Wailoo A. (2025) Technical Support Document 27. Prioritising studies and outcomes for consideration in NICE HealthTech literature reviews. Available from https://sheffield.ac.uk/nice-dsu/tsds/prioritising-studies-and-outcomes-consideration-nice-healthtech-literature-reviews

Appendix A: Literature search from NICE Information Specialist team during scoping (Medline)

Database searches

The EAG note that the following searches were conducted prior to the production of the Final Scope, therefore reflects technologies that have been considered for inclusion that may not be included in the Final Scope. As stated in section 2.2, the EAG will amend this search strategy including edits to focus on the list of interventions included in the Final Scope.

Databases*	Date searched	No retrieved	Version/files
MEDLINE All (Ovid)	14/07/2025	230	Ovid MEDLINE(R) ALL 1946 to July 11, 2025
EMBASE (Ovid)	14/07/2025	478	Embase 1974 to 2025 July 10
Embase Conferences (OVID)	14/07/2025	388	Embase 1974 to 2025 July 10
CDSR (Wiley)	14/07/2025	0	Issue 7 of 12, July 2025
CENTRAL (Wiley)	14/07/2025	19	Issue 6 of 12, June 2025
CENTRAL conferences	14/07/2025	29	Issue 6 of 12, June 2025
HTA database (INAHTA)	14/07/2025	4	-
Epistemonikos	14/07/2025	182	-

Google Scholar (device only)	14/07/2025	184	-
Total		*1514*	
Total after deduplication		**1221**	

Database strategies: Medline

Ovid MEDLINE(R) ALL <1946 to July 11, 2025>

1 (artiq* or lunghealth or "sleep health solutions" or "active+me" or aseptika or espiro or "n-tidal" or tidalsense or PatientMPower or spirobank or "Medical International Research" or smartone or spirodoc or spirolab or "Air Next Spirometer" or Minibox* or PulmOne or GoSpiro or "Monitored Therapeutics" or respicorder or Arete Medical Technologies or spirohome or Infofab or Spirofy or Alveoair or Alveofit).af. 234
2 (NuvoAir and spiromet*).af. 10
3 (easyone and (lab or connect or software or NDD)).af. 18
4 (CAMFIC and respiratory).af. 8
5 or/1-4 266
6 limit 5 to english language 230

Database strategies: Embase

Embase <1974 to 2025 July 10>

1 (artiq* or lunghealth or "sleep health solutions" or "active+me" or aseptika or espiro or "n-tidal" or tidalsense or PatientMPower or spirobank or "Medical International Research" or smartone or spirodoc or spirolab or "Air Next Spirometer" or Minibox* or PulmOne or GoSpiro or "Monitored Therapeutics" or respicorder or Arete Medical Technologies or spirohome or Infofab or Spirofy or Alveoair or Alveofit).af. 701
2 (NuvoAir and spiromet*).af. 78
3 (easyone and (lab or connect or software or NDD)).af. 200
4 (CAMFIC and respiratory).af. 8
5 or/1-4 968
6 limit 5 to english language 933
7 clinical trial.pt. 533511
8 6 not 7 866
9 (conference abstract* or conference review or conference paper or conference proceeding).db,pt,su. 6326128
10 8 not 9 478
11 8 and 9 388

Database strategies: Wiley Cochrane

ID Search Hits
#1 (artiq* or lunghealth or "sleep health solutions" or "active+me" or aseptika or espiro or "n-tidal" or tidalsense or PatientMPower or spirobank or "Medical International Research" or smartone or spirodoc or spirolab or "Air Next Spirometer" or Minibox* or PulmOne or GoSpiro or "Monitored Therapeutics" or respicorder or "Arete Medical Technologies" or spirohome or Infofab or Spirofy or Alveoair or Alveofit):ti,ab 59
#2 (NuvoAir):ti,ab 5
#3 (easyone AND (lab or connect or software or NDD)):ti,ab 19

#4	(CAMFIC):ti,ab	0	
#5	{or #1-#4}	82	
#6	(clinicaltrials or trialsearch):so		574336
#7	#5 NOT #6	48	
#8	"conference":pt	261367	
#9	#7 AND #8	29	
#10	#7 NOT #8	19	

Database strategies: INAHTA

Line	Query	Hits	Date
5	#4 OR #3 OR #2 OR #1	4	
4	((CAMFIC AND respiratory))	0	
3	((easyone AND (lab or connect or software or NDD)))	0	
2	((NuvoAir AND spiromet*))	0	
1	((artiq* or lunghealth or "sleep health solutions" or "active+me" or aseptika or espiro or "n-tidal" or tidalsense or PatientMPower or spirobank or "Medical International Research" or smartone or spirodoc or spirolab or "Air Next Spirometer" or Minibox* or PulmOne or GoSpiro or "Monitored Therapeutics" or respicorder or "Arete Medical Technologies" or spirohome or Infofab or Spirofy or Alveoair or Alveofit))	4	

Database strategies: Epistemonikos

(title:((title:((artiq* OR lunghealth OR sleep health solutions OR active me OR aseptika OR espiro OR n-tidal OR tidalsense OR PatientMPower OR spirobank OR Medical International Research OR smartone OR spirodoc OR spirolab OR Air Next Spirometer OR Minibox* OR PulmOne OR GoSpiro OR Monitored Therapeutics OR respicorder OR Arete Medical Technologies OR spirohome OR Infofab OR Spirofy OR Alveoair OR Alveofit)) OR abstract:((artiq* OR lunghealth OR sleep health solutions OR active me OR aseptika OR espiro OR n-tidal OR tidalsense OR PatientMPower OR spirobank OR Medical International Research OR smartone OR spirodoc OR spirolab OR Air Next Spirometer OR Minibox* OR PulmOne OR GoSpiro OR Monitored Therapeutics OR respicorder OR Arete Medical Technologies OR spirohome OR Infofab OR Spirofy OR Alveoair OR Alveofit))) OR (title:(NuvoAir) OR abstract:(NuvoAir)) OR (title:((easyone AND (lab OR connect OR software OR NDD))) OR abstract:((easyone AND (lab OR connect OR software OR NDD)))) OR (title:((CAMFIC AND respiratory)) OR abstract:((CAMFIC AND respiratory)))) OR abstract:((title:((artiq* OR lunghealth OR sleep health solutions OR active me OR aseptika OR espiro OR n-tidal OR tidalsense OR PatientMPower OR spirobank OR Medical International Research OR smartone OR spirodoc OR spirolab OR Air Next Spirometer OR Minibox* OR PulmOne OR GoSpiro OR Monitored Therapeutics OR respicorder OR Arete Medical Technologies OR spirohome OR Infofab OR Spirofy OR Alveoair OR Alveofit)) OR abstract:((artiq* OR lunghealth OR sleep health solutions OR active me OR aseptika OR espiro OR n-tidal OR tidalsense OR PatientMPower OR spirobank OR Medical International Research OR smartone OR spirodoc OR spirolab OR Air Next Spirometer OR Minibox* OR PulmOne OR GoSpiro OR Monitored Therapeutics OR respicorder OR Arete Medical Technologies OR spirohome OR Infofab OR Spirofy OR Alveoair OR Alveofit))) OR (title:(NuvoAir) OR abstract:(NuvoAir)) OR (title:((easyone AND (lab OR connect OR software OR NDD))) OR abstract:((easyone AND (lab OR connect OR software OR NDD)))) OR (title:((CAMFIC AND respiratory)) OR abstract:((CAMFIC AND respiratory)))))

Database strategies: Google Scholar
Searched for device names and manufacturer ArtiQ.PFT OR ArtiQ.Spiro LungHealth Sleep Health Solutions Active+Me AND Aseptika Espiro AND CAMFIC N-Tidal Diagnose/N-Tidal Capture AND Tidalsense PatientMPower Spirobank Smart / Spirobank II Essential /Spirobank II Basic/Spirobank II Advanced AND Medical International Research SmartOne AND Medical International Research Spirodoc AND Medical International Research Spirolab AND Intermedical Air Next Spirometer AND NuvoAir Minibox+ AND PulmOne GoSpiro AND Monitored Therapeutics Easyone pro LAB/EasyOne Connect software AND NDD Medical Technologies Respicorder AND Arete SpiroHome AND Infofab Spirofy AND Cipla Alveoair AND Alveofit

Conferences

Search Date	14/07/2025
Conferences were identified during searches in Embase and CENTRAL. Search numbers are shown in the table above and the results are included in the Eppi review. These can be filtered in or out when sifting in Eppi using the sources option in the filters.	

Search Notes:
Searches were limited to device names due to the number of technologies (25).

A test search using the AI search filter was run using a broad search focussing on spirometry to illustrate numbers from Medline. The indication is too broad to use as a limit. This strategy can be run at a later date if required.

Ovid MEDLINE(R) ALL <1946 to July 11, 2025>

1 (artiq* or lunghealth or "sleep health solutions" or "active+me" or aseptika or espiro or "n-tidal" or tidalsense or PatientMPower or spirobank or "Medical International Research" or smartone or spirodoc or spirolab or "Air Next Spirometer" or Minibox* or PulmOne or GoSpiro or "Monitored Therapeutics" or respicorder or Arete Medical Technologies or spirohome or Infofab or Spirofy or Alveoair or Alveofit).af. 234
2 (NuvoAir and spiromet*).af. 10
3 (easyone and (lab or connect or software or NDD)).af. 18

4 (CAMFIC and respiratory).af. 8
5 or/1-4 266
6 Respiratory Function Tests/ 50454
7 Spirometry/ 23670
8 Breath Tests/ 17034
9 ((lung or pulmonary) adj3 function test*).tw. 20090
10 ((breath* or respiratory or ventilation or feno or "fractional exhaled nitric oxide" or "impulse oscillation" or impulse oscillometr* or IOS or "peak flow") adj (test* or measure*)).tw. 12156
11 spiromet*.tw. 28492
12 or/6-11 114908
13 Algorithm*.ti,kf. 82823
14 (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. 116328
15 Artificial Intelligen*.ti,ab,kf. 80247
16 AI.ti,kf. 21404
17 (machine adj2 learn*).ti,ab,kf. 157364
18 machinelearn*.ti,ab,kf. 29
19 (deep adj2 learn*).ti,ab,kf. 92211
20 deeplearn*.ti,ab,kf. 41
21 neural network*.ti,ab,kf. 134901
22 (convolutional adj1 network*).ti,ab,kf. 4905
23 automate*.ti. 53387
24 (automate* adj3 (system* or score* or software* or analysis* or analyse* or risk* or evaluat* or tool* or detect* or process*)).ab,kf. 48545
25 (vector machine* or svm*).ti,ab,kf. 39591
26 radiomic*.ti,ab,kf. 15207
27 ((supervised or unsupervised) adj3 (classifier* or prediction*)).ti,ab,kf. 1121
28 or/13-27 572338
29 12 and 28 1281
30 5 or 29 1532