Table 16: Review protocol: Positive Airway Pressure therapy variants for OSAHS/OHS/ COPD-OSAHS overlap syndrome

Field	Content
PROSPERO registration number	Not registered
Review title	Positive Airway Pressure therapy variants for OSAHS/OHS/ COPD-OSAHS overlap syndrome
Review question	What is the comparative clinical and cost effectiveness of different types of positive airway pressure devices (for example, fixed-pressure CPAP, variable-pressure CPAP, bi-level positive airway pressure or other modes of non-invasive ventilation for managing obstructive sleep apnoea/hypopnoea syndrome, obesity hypoventilation syndrome and COPD-OSAHS overlap syndrome? What is the clinical and cost effectiveness of the addition of humidification to positive airway pressure therapy for managing obstructive sleep apnoea/hypopnoea syndrome, obesity hypoventilation syndrome and COPD-OSAHS overlap syndrome?
Objective	To determine the most clinical and cost effective variants of positive airway pressure devices to use in OSAHS, OHS and COPD-OSAHS overlap syndrome
Searches	The following databases (from inception) will be searched: • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE • EPISTEMONIKOS Searches will be restricted by: • English language 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.
Condition or domain being studied	Obstructive sleep apnoea/hypopnoea syndrome is the most common form of sleep disordered breathing. The guideline will also cover obesity hypoventilation syndrome and COPD-OSAHS overlap syndrome (the coexistence of obstructive sleep apnoea/hypopnoea syndrome and chronic obstructive pulmonary disease
Population	Inclusion: People (16 and older) with OSAHS, OHS or COPD-OSAHS overlap syndrome (only if formal diagnosis methods)

	Population will be stratified by: • population: OSAHS, OHS, COPD-OSAHS overlap syndrome • severity: Mild, moderate, severe (based on AHI/ODI) Severity: • Mild OSAHS: AHI >5 but <15 • Moderate OSAHS: AHI >/= 15 but <30 • Severe OSAHS: AHI >/= 30 When a mixed severity population is included the severity of the majority of the population will be used by taking the mean AHI of the patients included and the study will be downgraded for indirectness. Exclusion: Children and young adults (under 16 years old)
Intervention/Exposure/Test	• Fixed pressure (default) CPAP with humidification • Fixed pressure CPAP without humidification
Comparator/Reference standard/Confounding factors	• Variable pressure CPAP with humidification • Variable pressure CPAP without humidification • Bi-level positive airwaypressure*/Non-invasive ventilation (NIV) with humidification • Bi-level positive airway pressure/ non-invasive ventilation (NIV) without humidification • No positive airway pressure device (for OHS and mild OSAHS only) Compare fixed CPAP with variable pressure CPAP (with or without humidification) and bilevel positive airway pressure * Non-invasive ventilation is the preferred terminology
Types of study to be included	Published NMAs and IPDs will be considered for inclusion. • RCTs only • Systematic review of RCTs • Parallel or crossover to be included Minimum duration of follow-up 1 months
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.
Context	-
Primary outcomes (critical outcomes)	• Generic or disease specific quality of life measures (continuous) Minimum follow up: 1 month
Secondary outcomes (important outcomes)	• Sleepiness scores (continuous, e.g. Epworth) • Apnoea-Hypopnoea index (continuous) • Oxygen desaturation index (continuous) • Hours of use (adherence measure, continuous) • Minor adverse effects of treatment (rates or dichotomous) • Impact on co-existing conditions: o HbA1c for diabetes (continuous) o Cardiovascular events for cardiovascular disease (dichotomous) o Systolic blood pressure for hypertension (continuous)

	• tolerability of the treatment • treatment pressure • expression of preference Minimum follow up: 1 month
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. EviBASE will be used for data extraction.
Risk of bias (quality) assessment	Risk of bias will be assessed using the appropriate checklist as described in Developing NICE guidelines: the manual. For Intervention reviews • Systematic reviews: Risk of Bias in Systematic Reviews (ROBIS) • Randomised Controlled Trial: Cochrane RoB (2.0) 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.
Strategy for data synthesis	• Pairwise meta-analyses will be performed using Cochrane Review Manager (RevMan5). • GRADEpro will be used to assess the quality of evidence for each outcome, taking into account individual study quality and the meta-analysis results. The 4 main quality elements (risk of bias, indirectness, inconsistency and imprecision) will be appraised for each outcome. Publication bias is tested for when there are more than 5 studies for an outcome. The risk of bias across all available evidence was evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ Where meta-analysis is not possible, data will be presented and quality assessed individually per outcome. • WinBUGS will be used for network meta-analysis, if possible given the data identified. Heterogeneity between the studies in effect measures will be assessed using the I^2 statistic and visually inspected. An I^2 value greater than 50% will be considered indicative of substantial heterogeneity. Sensitivity analyses will be conducted based on pre-specified subgroups using stratified meta-analysis to

	explore the heterogeneity in effect estimates. If this does not explain the heterogeneity, the results will be presented pooled using random-effects.	
Analysis of sub-groups	Subgroups that will be investigated if heterogeneity is present: • High risk occupational groups (for example heavy goods vehicle drivers, pilots) vs general population • Sleepiness – Epworth >9 vs Epworth 9 or less • Coexisting conditions – type 2 diabetes vs atrial fibrillation vs hypertension vs none • Precise humidification – HME vs cold passover water baths • BMI – obese vs non-obese	
Type and method of review	☒	Intervention
	☐	Diagnostic
	☐	Prognostic
	☐	Qualitative
	☐	Epidemiologic
	☐	Service Delivery
	☐	Other (please specify)
Language	English	
Country	England	
Anticipated or actual start date	NA – not registered on PROSPERO	
Anticipated completion date	NA – not registered on PROSPERO	
Named contact	5a. Named contact National Guideline Centre 5b Named contact e-mail SleepApnoHypo@nice.org.uk 5e Organisational affiliation of the review National Institute for Health and Care Excellence (NICE) and the National Guideline Centre	
Review team members	From the National Guideline Centre: Carlos Sharpin, Guideline lead Sharangini Rajesh, Senior systematic reviewer Audrius Stonkus, Systematic reviewer Emtiyaz Chowdhury (until January 2020), Health economist David Wonderling, Head of health economics Agnes Cuyas, Information specialist (till December 2019) Jill Cobb, Information specialist	

Funding sources/sponsor	This systematic review is being completed by the National Guideline Centre which receives funding from NICE.
Conflicts of interest	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 minutes of the meeting. Declarations of interests will be published with the final guideline.
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: https://www.nice.org.uk/guidance/indevelopment/gid-ng10098
Other registration details	NA – not registered A
Reference/URL for published protocol	NA – not registered
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.
Keywords	-
Details of existing review of same topic by same authors	NA
Additional information	-
Details of final publication	www.nice.org.uk