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| **Code List Checklist\*: Sleep Apnoea** | |
| **Metadata** | |
| Title | Sleep Apnoea |
| Name | sleep\_apnoea |
| Authors | Helen Strongman, Tim Quinnell, Sofia Eriksson |
| Target data source | Clinical Practice Research Datalink Aurum (March 2023 and September 2023), GOLD (March 2023), linked Hospital Episode Statistics data |
| Terminology | Read (GOLD), SNOMED-CT (Aurum), EMIS (Aurum) and NHS 5th edition ICD-10 (HES). |
| **Definition of clinical concept** | |
| Concept | To identify sleep apnoea diagnoses and categorise them as follows:  1 "Obstructive Sleep Apnoea (OSA)"  2 "Obstructive sleep apnoea syndrome (OSAS)"  3 "Sleep apnoea NOS"  4 "Sleep apnoea syndrome NOS"  5 "Central sleep apnoea only"  6 "Primary sleep apnoea only"  Notes:  - Non-specific codes are commonly used  - Central and primary sleep apnoea are distinct from OSA and have different co-morbidities and health implications.  - Mixed sleep apnoea codes are included in codes 1 to 4 because OSA is likely to be the dominant or at least co-dominant condition.  In the validation study, we defined incident OSA using the following  approach:  (1) First ever record of OSA (category 1 to 4).  (2) Exclude if prior record of central sleep apnoea or primary sleep apnoea (codes 5 & 6). |
| Timeframe | No restrictions |
| Accuracy | Records of diagnosed narcolepsy are mostly accurate but diagnosis dates are not.  More stringent definitions improve accuracy but identify fewer cases.  See validation study for more detail (referenced in resources published section) |
| Setting | Diagnoses recorded in primary care and hospital activity inpatient data |
| **Identify and evaluating existing code lists** | |
| Source searched | Google search using the terms “cprd apnoea” “cprd apnea” and “cprd sleep apnoea” |
| Existing code lists found | None found |
| Verified by others | N/A |
| Verified by yourself | N/A |
| Existing code lists used | No |
| **Create a new code list** | |
| Synonyms | Sleep apnoea, sleep apnoea, OSA, sleep apnoea hypopnoea syndrome, |
| Exceptions | Primary sleep apnoea of newborn |
| Methods used | A script of lower-case search terms was used to identify relevant Read, medcodeid, snomedctconceptid in CPRD medical dictionaries and ICD-10 fields in NHS medical dictionaries. Terms anywhere in the string were identified. An additional search of Read Chapters was undertaken. Text searches were used to categorise codes. |
| Search terms | Inclusion: apnoea, apnea, OSA  Exclusion: mosaic, mask, questionnaire, clinic, appliance, treatment, monitoring, recording, assessment, operation  Terms without both “sleep” and either “apnoea” or “apnea” were also excluded |
| Hierarchy used to extend search | Inclusion: Read Chapters H5B, R005 and Fy03 |
| Decisions made while iterating | Separate categories were created for central and primary sleep apnoea and care pathway codes were excluded from the code list because they were rare and mostly indicate sleep apnoea testing.  Organic sleep apnoea and complex sleep apnoea were found in the September 2023 code list but not the March 2023 code lists. These were classified as “Sleep Apnoea NOS”. |
| Categories | 1. **Obstructive Sleep Apnoea (OSA)** This category includes terms including the strings "obstructive" or "mixed" but not "syndrome" 2. **Obstructive Sleep Apnoea Syndrome (OSAS)** This category comprised terms that included "obstructive" or "mixed" and "syndrome" 3. **Sleep apnoea NOS**  This category includes terms not otherwise classified 4. **Sleep apnoea syndrome NOS**  This category includes terms not otherwise classified that include the string "syndrome" 5. **Central sleep apnoea only** This category comprised terms that included the string "central" 6. **Primary sleep apnoea only** This category comprised terms that included the string "primary" |
| **Review, finalise and publish** | |
| Reviewers | Dr Sofia Eriksson (Neurologist & sleep specialist, University College London Hospitals NHS Foundation Trust and UCL): code list validity.  Dr Tim Quinnell (Respiratory & sleep specialist, Royal Papworth Hospital Trust) |
| Scope of review | The draft code list, search terms and exclusion terms were reviewed. |
| Evidence of review | The process is documented in HTML files.  (See “Resources published” section). |
| Internal checks | Undertaken by Helen Strongman |
| External checks | Validated as part of this study using a questionnaire asking GPs to confirm secondary care (hospital) diagnosis/ treatment for sleep apnoea. This was used as the “Gold Standard” comparison to assess the CPRD/HES codes identified (see resources published). |
| Code list published | The code list is published on the project’s LSHTM Data Compass page <https://doi.org/10.17037/DATA.00004742>.  And in the study’s Github repositories at: <https://github.com/hstrongman/OSA-narc_CPRD_validation> (Aurum Sept 2023)  <https://github.com/hstrongman/OSA-narc-CPRD-chronology> (Aurum/GOLD March 2023)  Files include:  codelist\_sleep\_apnoea\_aurum.txt  codelist\_sleep\_apnoea\_aurum.dta  codelist\_sleep\_apnoea\_gold.txt  codelist\_sleep\_apnoea\_gold.dta  codelist\_sleep\_apnoea\_hesapc.txt  codelist\_sleep\_apnoea\_hesapc.dta |
| Resources published | Strongman, H., S. H. Eriksson, K. Asare, M. A. Miller, M. Sykorova, H. Mistry, K. Veighey, C. Warren-Gash and K. Bhaskaran (2025). "Validation of algorithms identifying diagnosed Obstructive Sleep Apnoea and narcolepsy in coded primary care and linked hospital activity data in England." medRxiv: 2025.2003.2010.25323660.  <https://www.medrxiv.org/content/10.1101/2025.03.10.25323660v1>  The Do file and HMTL documents describing the code list derivation and search strategy, are in the study’s GitHub repository.  Files include:  codelist\_sleep\_apnoea.do (refers to associated text files)  codelist\_sleep\_apnoea\_description.html (early version of this checklist)  codelist\_sleep\_apnoea\_derivation\_aurum.html  codelist\_sleep\_apnoea\_derivation\_gold.html  codelist\_sleep\_apnoea\_derivation\_hesicd.html |

\*Matthewman J, Andresen K, Suffel A, Lin LY, Schultze A, Tazare J, Bhaskaran K, Williamson E, Costello R, Quint J, Strongman H. Checklist and guidance on creating codelists for routinely collected health data research [version 2; peer review: 3 approved]. NIHR Open Res. 2024 Sep 18;4:20.