# SUPPLEMENTARY TABLES

**Supplementary Table 1. Search strategy.**

**EMBASE**

**31 March 2025**

| No. | Search terms | Hits |
|---|---|---|
| 1. | 'infectio*':ab,ti AND 'hospital*':ab,ti | 431,070 |
| 2. | 'alzheimer disease*':ab,ti OR 'dementia*':ab,ti | 239,160 |
| 3. | #1 AND #2 | 1,979 |
| 4. | 'case study*':ti OR 'systematic review*':ti OR 'meta analysis*':ti OR 'case report*':ti OR 'conference abstract'/it | 6,278,846 |
| 5. | #3 NOT #4 | 977 |

**MEDLINE**

**31 March 2025**

| No. | Search terms | Hits |
|---|---|---|
| 1. | infectio*.ab,ti. AND hospital*.ab,ti. | 259,720 |
| 2. | Alzheimer disease*.ab,ti. OR dementia*.ab,ti. | 169,256 |
| 3. | 1 AND 2 | 963 |
| 4. | Case study*.ti. or systematic review*.ti. or meta analysis*.ti. or case report*.ti. | 814,436 |
| 5. | 3 NOT 4 | 923 |

**Breakdown**

| | |
|---|---|
| Total | 1900 |
| Duplicates | 744 |
| Remaining | 1156 |

**Supplementary Table 2. Study definitions of Hospitalization with infection, controls, Dementia and exclusion criteria.**

| Study | Hospitalisation with infection | Controls | Dementia | Exclusion criteria |
|---|---|---|---|---|
| Beydoun et al., 2023 | Hospital admission records with primary or secondary infection diagnosis; ICD-10 codes used. | No hospital-treated infection | ICD-10 codes; algorithmically derived from medical records | Prevalent dementia or dementia that occurred prior to baseline assessment at baseline |
| Bohn et al., 2023 | Hospitalizations were identified through telephone calls, local hospitals surveillance, and death interviews with proxies. Infection was coded by ICD-9/ICD-10. | Participants unexposed to hospitalisation with infection. | Identified via ICD-10 records, death certificates, in-person cognitive tests, and telephone interviews. | Dementia diagnosis at baseline |
| Chalitsios et al., 2023 | ICD-10 codes J12–J18; only community-acquired pneumonia. | Matched non-pneumonia individuals | CPRD diagnosis codes for dementia; verified by expert. | Excluded prior cognitive impairment or dementia diagnosis. Hospital acquired pneumonia. |
| Chou et al., 2017 | Diagnosis of septicaemia (ICD-9) in hospital records. | Matched individuals without septicemia | Insurance claim codes; includes AD and NAD. | Prior dementia diagnosis |
| Guerra et al., 2012 | Diagnosis of infection and severe sepsis in medical records (ICD-9). | ICU survivors ≥66 years with no infection | Diagnosis of dementia recorded from fee-for-service insurance claims. ICD-9 dementia codes. | Patients with any diagnosis of dementia, mild cognitive impairment or general symptom mental loss. Patients discharged to hospice care and patients who died in the same quarter (three months) of their discharge date. |
| Mawanda et al., 2016 | ICD-9 coded extra-CNS bacterial infections from hospital records. | Patients without extra-CNS bacterial infection diagnosis. | ICD-9 codes from inpatient and outpatient records. | Excluded patients with prior dementia or died during the baseline observation period. Patients with an ICD-9 code for other neurodegenerative disorders, cancer, chronic inflammatory diseases, or conditions associated with potentially reversible or non-neurodegenerative cognitive impairments. |
| Morton et al., 2023 | GP-recorded and ICD-10 coded hospital infections | Stroke survivors without infections | Read and ICD-10 codes from CPRD and HES respectively | Excluded pre-stroke dementia and dementia within 3 months post-stroke. |
| Muzambi et al., 2021 | ICD-10 codes, Read codes for infections and antibiotics prescription | ≥65 years old with no infections | Read and ICD-10 codes from CPRD and HES respectively | Excluded those with prior dementia and cognitive impairment |
| Ou et al., 2021 | Chlamydia pneumoniae infection using ICD-9 code from hospital records. | Matched individuals without Chlamydia pneumoniae infection | Alzheimer's Disease diagnosis based on ICD-9 codes from medical records. | Date of the AD diagnosis less than 1 year after the Chlamydia pneumonia diagnosis. |
| Pendlebury et al., 2024 | ICD-10 codes for infections | No hospitalisation for infections | Diagnosed via clinical assessment, cognitive tests, hospitalisation documentation, death certificates. All dementia diagnoses were made using the DSM-IV criteria by a senior study physician with expertise in dementia. | Patients with major stroke or pre-existing dementia excluded. |

| | | | | |
|---|---|---|---|---|
| Peters et al., 2022 | Clinical diagnoses for infections derived from medical records of hospitals and general practitioners. | No hospital-treated infections. | DSM-IV criteria or reviewing all medical records and cognitive assessments. | Patient with dementia, nonvascular neurologic diseases, a life expectancy less than 6 months, and all conditions that hinder cognitive testing or neuroimaging. |
| Richmond-Rakerd et al., 2024 | Diagnoses of infections using ICD-9 and ICD-10 codes from public inpatient hospital records. | No infection record across 30 years. | Hospital, pharmacy and death records via ICD-9 and ICD-10 codes | Patients with prior dementia or dementia within 1 month of infection diagnosis |
| Shah et al., 2013 | ICD-9 codes for pneumonia | No hospitalisation for pneumonia | Neuropsychiatric testing, magnetic resonance imaging evaluation and physician assessment. | Excluded patients with prior dementia |
| Sipilä et al., 2021 | ICD-10 codes from inpatient hospital discharge information for infections | No hospitalisation for infections | ICD-10 codes from hospital inpatient records, reimbursement for treatment of dementia, hospital outpatient records and death records | Excluded patients with prior dementia. |
| Tate et al., 2014 | ICD-9 codes for pneumonia | No hospitalisation for pneumonia | Expert panel adjudication using the DSM-IV and NINCDS-ADRDA criteria for dementia. | Excluded patients with dementia, Parkinson's, cognitive enhancers or cholinesterase inhibitors use |
| Wang et al., 2025 | ICD-10 codes extracted from the UK Biobank | No hospital-treated infection | ICD-10 codes from hospital admission records and death registries | Excluded patients with a history of neurodegenerative disease and missing covariate data |

Abbreviations: ICD: International Classification of Diseases; CPRD: Clinical Practice Research Datalink; HES: Hospital Episode Statistics; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; NINCDS-ADRDA: National Institute of Neurological and Communication Disorders and Stroke and Alzheimer's Disease and Related Disorders Association.