

Table e-1. Definitions for exclusion criteria.

Definition	ICD-code/ATC-code/other code	Measurement period	Data source
Use of antiepileptic medication	ATC: N03A	Within one year prior to index date to ascertain incident use; any time after index date (including index date) to ascertain exposure	PR
Hip fracture	Hospitalization (ICD-10: S72.0, S72.1, S72.2, ICD-9: 820, ICD-8: 82000, 82010, 82090, 82001, 82011 and 82091)	Within one year prior to index date	FCR
Long-term hospitalization/ institutionalization	Hospitalized or institutionalized over 50% of the period or an ongoing stay of ≥ 90 days at the end of the period	Within one year prior to index date	FCR combined with register maintained by the SII
Ongoing hospitalization/ institutionalization ≥ 90 days at cohort entry			FCR combined with register maintained by the SII
Active cancer		Within one year prior to index date	FCR, PR
Death			SF

Index date is the date of the first dispensation of an AED after AD diagnosis for incident users and the matched date for non-users. Abbreviations: ATC, Anatomical Therapeutic Chemical; FCR, Finnish Care Register; ICD, International Classification of Diseases; PR, Prescription Register; SF, Statistics Finland; SII, Social Insurance Institution of Finland.

Table e-2. Definitions and classifications of baseline covariates.

Socio-demographic and socio-economic factors	Classification	Measurement	Data source
Age (years)	≤ 64 65-74 75-84 ≥ 85	At cohort entry	PR
Gender	Male Female	NA	PR
University hospital catchment area	Helsinki Turku Tampere Kuopio Oulu	Baseline	SF
Occupational socioeconomic position	Managerial/professional Office Farming/forestry Sales, industrial, cleaning Unknown and those with missing data at Statistics Finland	Highest position recorded since 1972 up to 3 years prior to the diagnosis of Alzheimer's disease	SF
Medication used at baseline	ATC code	Measurement period	Data source
Antidepressants	N06A	Within 12 months prior to index date	PR
Benzodiazepines and related drugs	Benzodiazepines N05BA, N05CD and/or Z-drugs N05CF	Within 12 months prior to index date	PR
Antipsychotics	N05A	Within 12 months prior to index date	PR
Opioids	N02A	Within 12 months prior to index date	PR
Memantine	N06DX01	Within 12 months prior to index date	PR
Antiparkinsonians	N04A, N04B	Within 12 months prior to index date	PR
Other drugs	C01B	Within 12 months prior to index date	PR
Cardiovascular drugs	Cardiac glycosides (C01AA), antiarrhythmics (C01B), organic nitrates (C01DA), diuretics (C03), beta blocking agents (C07), calcium channel blockers (C08), agents acting on the renin-angiotensin system	Within 12 months prior to index date	PR

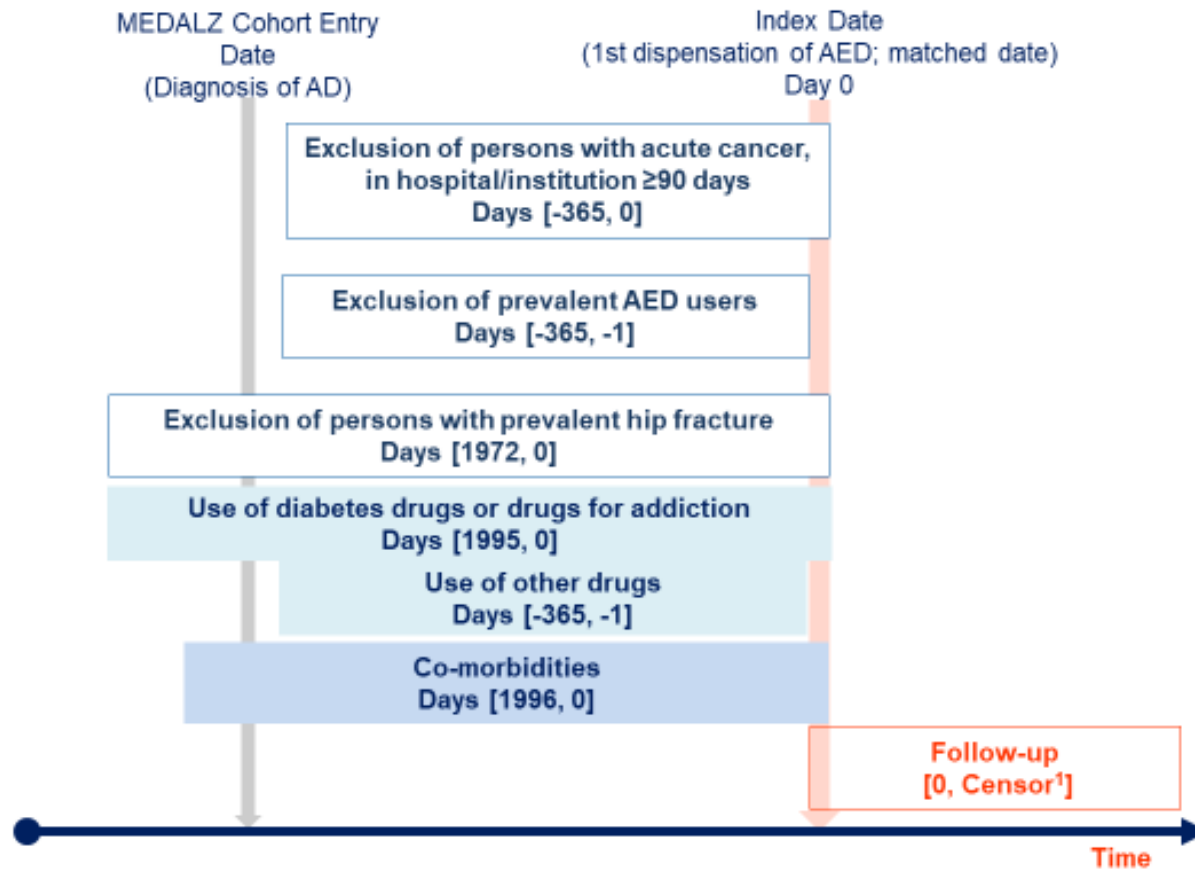
	(C09), lipid modifying agents (C10A, C10BA), antithrombotic agents (B01A). C01DA		
Corticosteroids, systemic	H02A, H02B, H02C	Within 12 months prior to index date	PR
PPIs	A02BC	Within 12 months prior to index date	PR
NSAIDs	M01A, M01AX05	Within 12 months prior to index date	PR
Drugs for urinary frequency and incontinence	G04BD	Within 12 months prior to index date	PR
Estrogens	G03GC	Within 12 months prior to index date	PR
Health conditions at baseline	ICD-10 code or Classification number	Measurement period	Data source
Psychiatric and neurological			
Depression	Hospitalization (ICD-10: F32-F34, F38-F39, ICD-9: 2961, 2968, 3011, 3004, ICD-8: 3004, 3011, 2960)	Diagnosed since 1972 until index date	FCR
Schizophrenia	Hospitalization (ICD-10: F20 to F29)	Diagnosed since 1996 until index date	
Epilepsy	Special reimbursement (classification number 111)	Diagnosed since 1972 until the index date	SRR
Related to HF			
Osteoporosis	Hospitalization (ICD-10: M80, M81), use of drugs for osteoporosis, ever (M05BA, M05BB, M05BC, M05BX)	Diagnosed since 1972 until index date in FCR or purchased ever since 1995 before index date in the PR	FCR, PR
Vision disturbances	Hospitalization [ICD-10: cataract (H25, H26, H27, H280), degeneration of macula and posterior pole (H353), glaucoma (H400, H401, H402, H403, H404, H405, H406, H408, H409, H420, H428)]	Diagnosed since 1996 until index date in FCR	FCR
Alcohol abuse	Hospitalization [ICD-10: Alcoholic psychosis (F10.3-F10.9), alcohol abuse (F10.0, F10.1), alcohol dependence syndrome (F10.2), alcohol polyneuropathy (G62.1), degeneration of nervous system due to alcohol (G31.2), alcoholic myopathy (G72.1), alcohol (I42.6), alcoholic gastritis (K29.2), alcoholic liver disease (K70-K70.4, K70.9), fetal alcohol syndrome (Q86.0), alcohol-induced chronic pancreatitis (K86.0), alcohol poisoning (X45, Y15, T51.0, T51.1, T51.9), excessive blood level of alcohol	Diagnosed since 1996 until index date in FCR or purchased ever since 1995 before index date in the PR	FCR, PR

	(R78.0)], use of drugs for addiction, ever (N07BB, N07BC)		
Any fracture	Hospitalization (ICD-10: S*2, T02)	Diagnosed since 1996 until index date	FCR
Head trauma	Hospitalization (ICD-10: S0* (Injuries to the head))	Diagnosed since 1996 until index date	FCR
Rheumatoid arthritis	Hospitalization (ICD-10: M05, M06, M45) or special reimbursement (classification number 202)	Diagnosed since 1996 until index date in the FCR or since 1972 until index date in the SRR	FCR, SRR
Other conditions			
Any cancer	Hospitalization (ICD-10: C00-C97, Z85, ICD-9: 140-195, 2730, 2733, V1046, 200-208)	Diagnosed since 1987 until index date	FCR
Cardiovascular diseases	Hypertension [hospitalization (ICD-10: I10-I15) or special reimbursement (classification number 205)], heart failure [hospitalization (ICD-10: I42-43, I50, I11.0) or special reimbursement (classification number 201)], peripheral arterial disease [hospitalization (ICD-10: I70, I71.2, I71.4, I71.6, I71.9, I73, I77, I79, K55.1, K55.9, Z95.8, ICD-9: 4400-4409, 4412, 4414, 4417, 4419, 4431-4439, 4471, 5571, 5579, V434)], atrial fibrillation [hospitalization (ICD-10: I48)], coronary artery disease [hospitalization (ICD-10: I20-I25, NOMESCO: FNA, FNC, FNE, FNG00, FNG10, FN1AT, FN1BT, FN1YT) or special reimbursement (classification numbers 206, 213, 280)]	Diagnosed since 1996 until index date	FCR, SRR
Stroke	Hospitalization (ICD-10: I60-64, I69, ICD-9: 430-432, 4360, 4380A, 4330A, 4331A, 4339A, 4349A, 4340A, 4341A, ICD-8: 430-434)	Diagnosed since 1972 until index date	FCR
Diabetes	Diabetes medication (ATC: A10, excluding A10BX01 guar gum), or special reimbursement for diabetes (classification number 103)	At least 1 purchase prior to index date in the PR or diagnosed since 1972 until index date in the SRR	PR, SRR
Asthma/COPD	Hospitalization (ICD-10: J44, J45, J46), or special reimbursement (classification numbers 203)	Diagnosed since 1996 until index date in the FCR or since 1972 until index date in the SRR	FCR, SRR
Chronic liver disease	Hospitalization (ICD-10: B18, K70, K73, K74, K754, K76, ICD-9: 07032, 07033, 07054, 4560, 4561, 45620, 45621, 5710, 5712, 5713, 57140, 57149, 5715, 5716, 5718, 5719, 5723, 5728, V427)	Diagnosed since 1987 until index date	FCR

Chronic renal disease	Hospitalization (ICD-10: I13.1, N18, N19, Z94.0, Z99.2, Z49, ICD-9: 40311, 40391, 40412, 40492, 585, 586, V420, V451, V560, V568) or special reimbursement (classification numbers 137, 138)	Diagnosed since 1987 until index date in the FCR or since 1972 until index date in the SRR	FCR, SRR
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Figure 1. Study design.



1. Earliest of: incident hip fracture, AED discontinuation (for users), AED initiation (for non-users), death, disenrollment, start of continuous hospitalization/institutionalization lasting >90 days, study end date (December 31, 2015)