

## **Appendix.**

### **Major common chronic disease groups in Sleep Apnea**

As a basis for the disease grouping, we used the classification of chronic comorbidities used by the Finnish Institute for Health and Welfare, which relies on the proposal made by Calderón-Larrañaga et al. in *Gerontol A Biol Sci Med Sci*, 2017, Vol. 72, No. 10, 1417–1423.

To make the classification more relevant for sleep apnea, we chose 26 diseases or disease groups of interest for analysis, based on expert opinion. The rationale for inclusion of each disease or disease group in the analyses can be found in the table below.

To better capture the chronic disease diagnoses made in the primary healthcare sector, we included also ICPC-2 coding, which is a primary healthcare coding system proposed by the WHO. It is used by some, but not all primary healthcare providers in Finland. The ICPC-2 coding book includes a ICD-10 to ICPC-2 conversion code list, which was used to select the ICPC-2 codes for our analyses (<https://www.who.int/standards/classifications/other-classifications/international-classification-of-primary-care>).

Disease group	ICD-10	ICPC-2	Rationale for including disease group in analyses
Asthma	J45-J46	R81	Possible bidirectional association with SA
Atrial fibrillation	I48	K78	Associated with SA
Cancer	C00-C97	A79, B72-74, D75-77, L71, N74, R84-85, S77, S79, T71, U75-77, W72, X75-77, Y77-78	Association with SA controversial
Cardiovascular disease	I10-I99 excl. I10, I15, I48, I50, I60-69	B71, K74- K76, K70, K79-80, K82-84, K88, K92-93, K94, K96	Associated with SA
Cerebrovascular disease	I60-I69	K99	Associated with SA
COPD	J44	R95	Co-occurrence of COPD and SA associated with high risk
Dementia & other cerebral disorders	F00-F19, G30-G32	P16, P18-19, P40	Some evidence of association with SA, possible under-recognition of SA symptoms
Diabetes	E10-E14	T89-90	Metabolic syndrome associated with SA
Dyslipidaemia	E78	T93	Associated with SA as part of metabolic syndrome
Gastrointestinal disease	K05-K87	D07, D12, D84-87, D93-99	Some gastrointestinal diseases (e.g., gastro-oesophageal reflux) have been associated with SA
Glaucoma	H40, H42	F93	Some evidence of association with SA
Heart failure	I50	K77	Associated with SA
Hypertension	I10, I15	K86-87	Associated with SA
Kidney & urinary tract disease	N00-N23	U06, U14, U88, U95, U99	Uraemia associated with SA
Other metabolic disease	E15-E90 excl. E65-E66, E78	T80-81, T87, T93, T99	Metabolic syndrome associated with SA
Mood & neurotic disorders	F30-F69	P02, P07, P09, P74-78, P86, P99	Mood and anxiety disorders associated with SA
Musculoskeletal disorders	M05-M94	L01-03, L83-99	SA possibly modifies chronic pain

Neurological disorders	G10-G13, G20-26, G35-37 excl. G47, G25.8	N08, N86-94, N99	Stroke associated with SA; neuromuscular diseases associated with sleep-disordered-breathing
Nonorganic sleep disorders	F51		Insomnia and SA frequently co-occur.
Obesity	E65-66	T82-83	Strong association with SA
Organic sleep disorders	G47, G25.8		Hypersomnia main feature in SA. Periodic limb movement disorder associated with SA
Reflux	K21	D84	Associated with SA
Other respiratory disease	J30-J99 excl. J44-45	R75-79, R90, R95-99	Asthma and COPD associated with SA - limited evidence for other respiratory disease
Schizophrenia & delusional disorders	F20-29	P71-73, P98	Under-recognition of SA in severe psychiatric disorders
Thyroid disease	E00-07	T85-86	Hypothyroidism associated with SA
Urogenital disease	N40-51, N80, N81, N88	Y73, Y85-87, Y99	Prostatic enlargement and nocturia may be associated with SA

SA, sleep apnoea. COPD, chronic obstructive pulmonary disease.