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Table SI. Atopic dermatitis severity

AD severity	Criteria	ATC code/NOMESCO procedure code
Mild	Not fulfilling criteria of moderate *OR* severe AD	
Moderate	Not fulfilling criteria of severe AD and including ≥1 of the following:	
	Purchase of topical calcineurin inhibitors, ≥120 g/y	ATC: tacrolimus D11AH01, pimecrolimus D11AH02
	Purchase of topical corticosteroids with mid to high potency, ≥200 g/y	ATC for mid potency: D07AB, D07BB, D07CB; ATC for high potency: D07AC, D07BC, D07CC
	≥1 phototherapy period	NOMESCO: WXQ10, WXQ12, WXQ20, WXQ21, WXQ24, WXQ26, WXQ27 (and the corresponding codes used at Social Insurance Institution in 2005-2017: 903, 904, 905)
	≥1 visit to dermatology clinic in public healthcare setting	
Severe	Including ≥1 of the following:	
	Purchase(s) of topical corticosteroids with high to ultra-high potency ≥600 g/y	ATC for high potency: D07AC, D07BC, D07CC; ATC for ultra-high potency: D07AD, D07BD, D07CD
	Purchase(s) of topical tacrolimus ≥360 g/y	ATC: D11AH01
	Purchase(s) of methotrexate, azathioprine, cyclosporine, mycophenolate mofetil, or dupilumab for AD (only purchases related to AD considered; see **Supplemental Table II** for definitions)	ATC: methotrexate L04AX03, azathioprine L04AX01, cyclosporine L04AD01, mycophenolate mofetil L04AA06, dupilumab D11AH05
	≥3 dermatology clinic visits/y in public healthcare setting	
	Hospitalization due to AD (ICD-10 code L20 as main diagnosis or comorbidity) in public healthcare setting	

AD: atopic dermatitis; ATC: Anatomical Therapeutic Chemical Classification System; ICD-10: International Classification of Diseases, 10th Revision; NOMESCO: Nordic Medico-Statistical Committee Classification of Surgical Procedures.

Table SII. Inclusion and exclusion criteria for systemic medication purchases

Type of criteria	Code	Description
Inclusion		
Reimbursement code[a]	134	Generalized erythroderma
	395	Dupilumab
Exclusion[b]		
ICD-10 code[c]	G35	Multiple sclerosis
	L10	Pemphigus
	L12	Pemphigoid
	M05	Seropositive rheumatoid arthritis
	M06	Other rheumatoid arthritis
	M07	Psoriatic and enteropathic arthropathies
	M08	Juvenile arthritis
	M45	Ankylosing spondylitis
	M30	Polyarteritis nodosa and related conditions
	M31	Other necrotizing vasculopathies
	M32	Systemic lupus erythematosus
	M33	Dermatopolymyositis
	M34	Systemic sclerosis
	M35	Other systemic involvement of connective tissue
	K50	Crohn disease
	K51	Ulcerative colitis
	Z94	Transplanted organ and tissue status
	K75	Other inflammatory liver diseases
	D69	Purpura and other hemorrhagic conditions
Reimbursement code[a]	108	Myasthenia gravis
	109	Multiple sclerosis
	122	Aplastic anemia
	127	Prior organ transplant
	129	Thrombocytopenia or granulocytopenia
	130	Other malignant tumors
	202	Disseminated connective tissue diseases, inflammatory arthropathies and other comparable conditions
	208	Ulcerative colitis and Crohn disease

ICD-10: International Classification of Diseases, 10th Revision.

[a]At least one reimbursed purchase of systemic medication (methotrexate, cyclosporine, azathioprine, mycophenolate mofetil, or dupilumab) with any of the reimbursement codes.

[b]Applied only to patients who did not meet inclusion criteria.

[c]Any of the diagnoses received within one year before first purchases of systemic medication (methotrexate, cyclosporine, azathioprine, mycophenolate mofetil, or dupilumab).

Table SIII. Diagnoses used in logistic regression model

Diagnosis group	Diagnosis	ICD-10 codes
Psychiatric	Alcohol dependence/harmful use	F10.1, F10.2
	Schizophrenia and schizotypal disorders	F20, F21
	All psychotic disorders	F20, F21, F22, F23, F24, F25, F28, F29, F30.2
	Mania + bipolar disorder	F30, F31
	Depression	F32, F33, F34.1
	Anxiety	F40, F41
	Obsessive-compulsive disorder	F42
	Other neurotic, stress-related and somatoform disorders	F43, F44, F45, F48
	Eating disorders	F50
	Non-organic sleep disorders	F51
	Personality disorders	F60, F61, F62
	ADHD	F90
Cutaneous, subcutaneous infections; common dermatosis	Abscess	L02
	Cellulitis and erysipelas	L03, A46
	Dermatophytosis (tinea)	B35
	Impetigo and pyoderma	L08, L01
	Herpes simplex virus, non-genital	B00
	Anogenital herpes	A60
	Herpes zoster	B02
	Candidiasis	B37
	Viral warts	B07
	Condylomas	A63
	Other dermatitis	L30
	Allergic contact dermatitis	L23
	Urticaria	L50
	Acne	L70
	Rosacea	L71
Acute respiratory tract infections	Upper respiratory tract infections	J00, J01, J02, J03, J04, J05, J06
	Bronchitis	J20

	Pneumonia	J12, J13, J14, J15, J16, J18, J11.0
	Influenza	J09, J10, J11
Other infections	Conjunctivitis	H10 except for H10.1
	Gastroenteritis	A09
	Cystitis	N30
	Otitis media	H65, H66
	Endocarditis	I33
	Sepsis/septicemia	A41, A40
Autoimmune	Hypothyroidism (autoimmune or unspecified)	E03.8, E03.9
	Ulcerative colitis	K51
	Rheumatoid arthritis	M05, M06
	Crohn disease	K50
	Alopecia areata	L63
Cardiovascular, metabolic	Hypertension	I10
	High cholesterol and other disorders of lipid metabolism	E78
	Diabetes type 2	E11
	Obesity	E66
	Ischemic heart disease/myocardial infarction	I25, I21
	Cerebral infarction	I63
	Atherosclerosis	I70
Musculoskeletal	Dorsalgia and other dorsopathies	M54, M53
	Other soft tissue disorders	M79
	Shoulder or other joint lesions	M25, M75
	Arthrosis	M15, M16, M17, M18, M19
	Enthesopathies	M77, M70
	Intervertebral disc disorders	M50, M51
Other atopic diseases	Asthma	J45
	Allergic rhinitis	J30
	Allergic conjunctivitis	H10.1
	Nasal polyposis	J33
Neurologic	Migraine	G43

	Tension headache and other headache syndromes	G44
	Sleep apnea and other or unspecified sleep disorders	G47
	Carpal tunnel syndrome and other mononeuropathies of upper limb	G56
Possibly related to corticosteroid use	Drug-induced and other non-senile cataract	H26
	Senile cataract	H25
	Common fractures (forearm/wrist/lower leg/foot)	S52, S62, S92, S82
	Glaucoma	H40
	Osteoporosis	M80, M81
Malignancies	Breast cancer	C50
	Non-melanoma skin cancer	C44
	Prostate cancer	C61
	Lymphoma	C81, C82, C83, C84, C85

ADHD: attention deficit/hyperactivity disorder; ICD-10: International Classification of Diseases, 10th Revision.

Table SIV. Demographic characteristics of prevalent AD patients

	Overall N=54,361	Mild AD n=12,392 (22.8%)	Moderate AD n=25,484 (46.9%)	Severe AD n=16,485 (30.3%)	P value	Missing, %
Age, y						
Mean (SD)	46.3 (16.1)	47.0 (17.9)	46.2 (15.7)	45.9 (15.3)	<0.001	0.0
Median (IQR)	42.9 (32.5, 57.4)	42.7 (31.1, 60.5)	43.1 (32.9, 56.9)	42.8 (33.0, 56.5)	0.395	
Min, max	25, 102.7	25, 101.9	25, 102.7	25, 102.6	–	
Sex, n (%)						
Female	37,184 (68.4)	8182 (66.0)	17,760 (69.7)	11,242 (68.2)	<0.001	0.0
Male	17,177 (31.6)	4210 (34.0)	7724 (30.3)	5243 (31.8)		
Follow-up, y						
Mean (SD)	7.0 (0.0)	7.0 (0.0)	7.0 (0.0)	7.0 (0.0)	–	0.0
Median (IQR)	7.0 (7.0, 7.0)	7.0 (7.0, 7.0)	7.0 (7.0, 7.0)	7.0 (7.0, 7.0)	–	
Total	380,415.4	229,967.1	264,886.4	152,914.9	–	
Education, n (%)						
Upper secondary	24,072 (51.4)	5378 (52.5)	11,228 (50.5)	7466 (52.1)	<0.001	13.9
Post-secondary non-tertiary	701 (1.5)	133 (1.3)	352 (1.6)	216 (1.5)		
Short-cycle tertiary	4769 (10.2)	919 (9.0)	2335 (10.5)	1515 (10.6)		
Bachelor's degree or equivalent	10,265 (21.9)	2268 (22.1)	4928 (22.2)	3069 (21.4)		
Master's degree or equivalent	6455 (13.8)	1401 (13.7)	3135 (14.1)	1919 (13.4)		
Doctorate or equivalent	543 (1.2)	143 (1.4)	253 (1.1)	147 (1.0)		
Expert responsibility area (ERVA) of the home municipality, n (%)						

Helsinki University Hospital catchment area (HYKS)	18,779 (40.6)	5030 (48.2)	8731 (40.5)	5018 (35.2)	<0.001	14.9
Kuopio University Hospital catchment area (KYS)	7059 (15.3)	1383 (13.3)	3439 (15.9)	2237 (15.7)		
Oulu University Hospital catchment area (OYS)	5829 (12.6)	875 (8.4)	3012 (14.0)	1942 (13.6)		
Tampere University Hospital catchment area (TAYS)	6459 (14.0)	1346 (12.9)	2986 (13.8)	2127 (14.9)		
Turku University Hospital catchment area (TYKS)	8127 (17.6)	1792 (17.2)	3399 (15.8)	2936 (20.6)		

AD: atopic dermatitis; IQR: interquartile range.

P values are for the difference between AD severity groups: analysis of variance for normally distributed continuous variables, Kruskal-Wallis test for skewed continuous variables and chi-square test for categorical variables. All analyses assumed significance level of 0.05, and all tests were two sided.