

Supplementary material

Title: Prevalence and management of severe asthma in Sweden, Norway, and Finland – Findings from the NORDSTAR cohort

Table S1. Data sources utilized in the study

	Sweden	Norway	Finland	General content
In- and outpatient specialist care	Swedish National Patient Register; NBHW	N/A	Care register for health care; THL	Diagnosis codes (ICD-9/10), dates and types of visit
Prescription medicines	Swedish Prescribed Drug Registry; NBHW	Norwegian Prescription Database (NorPD); NIPH	Finnish Electronic Prescription Database (KANTA); KELA	Dispatch dates, type of medication, strengths, and dosage
Mortality	Swedish Causes of Death Registry; NBHW	N/A	Finnish Causes of Death Registry; Statistics Finland	Date and cause of death

KELA: The Social Insurance Institution of Finland, NBHW: Swedish National Board of Health and Welfare, NIPH: Norwegian Institute of Public Health, NorPD: Norwegian Prescription Database, THL: National Institute for Health and Welfare.

Table S2. Definitions of study outcomes

Outcome	Definition
Exacerbations	Dispensation of burst OCS (ATC: H02AB) or an asthma-related emergency department visit or an asthma-related hospital admission during 2018 If two exacerbations occur within 14 days of each other they are only counted as a single exacerbation. The 14 days are counted from each exacerbation to the next occurring, i.e., three or more exacerbations in sequence where each occurring within 14 days of the previous is counted as a single exacerbation.
Asthma-related ED visit	Definition for Swedish data Asthma related outpatient visit where contact is <u>not</u> pre-arranged or planned. Definition for Finnish data Asthma related outpatient care contact and care contact coded as ED care contact Not available in Norway.
Asthma-related hospital admission	Number of asthma-related inpatient care contacts during the study period Not available in Norway.
Treatment in specialist care	≥1 outpatient visit not at ED with either: 1. A primary diagnosis of asthma (ICD-10 codes: J45.x or J46.x) or 2. A secondary diagnosis with asthma (ICD-10 codes: J45.x or J46.x) and any of the following primary diagnosis codes: (Jxx.x, R05.x – R09.x, Zxx.x). Not available in Norway.
High SABA use	Dispensed equivalent of ≥600 doses (puffs) of SABA. When SABA is dispensed for use with nebulizers, one dose is defined as 2.5mg.
Asthma control	Uncontrolled asthma is defined as: 1. ≥2 exacerbations (≥2 burst OCS and/or asthma related ED visits) And/or 2. ≥1 asthma-related hospitalization And/or 3. High SABA use (of ≥600 doses (puffs))
Respiratory infections	Defined as ≥1 prescription for antibiotics for respiratory infection (Table S4).
Hospital attendance with pneumonia	Defined as ≥1 emergency department (ED) visit or hospitalization with an associated primary or secondary ICD-10 code for pneumonia (Table S5). Not available in Norway.

Table S3. Definition of comorbidities in the study

Comorbidities	Definition ATC codes	Definition ICD-10 codes (A-diagnosis)
Allergy/allergic rhinitis	≥2 prescriptions of R06 and/or S01G in 2018	Allergic asthma (J45.0), J30 in 2018 or 5 years preceding 2018
Rhinitis (non-allergic rhinitis + allergic rhinitis)	≥2 prescriptions with R01AD in 2018	J30-J32 in 2018 or 5 years preceding 2018
Nasal polyps	NA	J33 in 2018 or 5 years preceding 2018

Table S4. Antibiotics for respiratory tract infection

Type of antibiotic	Spectrum	ATC-codes
Penicillin	Narrow	J01CE02
	Broad	J01CA02, J01CA04, J01CA01
Penicillin combined with beta-lactamase inhibitor	Broad	J01CR02
Cefuroxime	Broad	J01DC02
Macrolide	Narrow	J01FA10, J01FA06, J01FA09, J01FA01
Quinolones (moxifloxacin, ciprofloxacin):	Broad	J01MA14, J01MA02
Cephalosporin	Broad	J01DB01

Table S5. Hospital attendance with pneumonia

Hospital attendance	ICD-10-code	Description
ED visit or admission	J18, J180, J181, J182, J188, J189, J15, J150, J151, J152, J153, J154, J155, J156, J157, J158, J159, J12, J120, J121, J122, J123, J128, J129, J13, J139, J14, J149, J16, J160, J168, J17, J170, J171, J172, J173, J178	Pneumonia