



## A 10 year asthma programme in Finland: major change for the better.

<https://arctichealth.org/en/permalink/ahliterature168103>

Author: T. Haahtela  
L E Tuomisto  
A. Pietinalho  
T. Klaukka  
M. Erhola  
M. Kaila  
M M Nieminen  
E. Kontula  
L A Laitinen

Author Affiliation: Skin and Allergy Hospital, Helsinki University Central Hospital, P O Box 160, FIN-00029 HUS, Finland.  
tari.haahtela@hus.fi

Source: Thorax. 2006 Aug;61(8):663-70

Date: Aug-2006

Language: English

Publication Type: Article

Keywords: Adult  
Anti-Asthmatic Agents - therapeutic use  
Asthma - economics - epidemiology - therapy  
Child  
Communication  
Cost of Illness  
Disabled Persons  
Emergency Treatment - statistics & numerical data  
Finland - epidemiology  
Health Promotion - economics - organization & administration - trends  
Hospitalization - statistics & numerical data  
Humans  
Incidence  
Insurance, Disability - economics  
Interprofessional Relations  
National Health Programs - economics - trends  
Pharmaceutical Services - standards  
Primary Health Care  
Program Evaluation  
Smoking - epidemiology

**Abstract:** A National Asthma Programme was undertaken in Finland from 1994 to 2004 to improve asthma care and prevent an increase in costs. The main goal was to lessen the burden of asthma to individuals and society.

The action programme focused on implementation of new knowledge, especially for primary care. The main premise underpinning the campaign was that asthma is an inflammatory disease and requires anti-inflammatory treatment from the outset. The key for implementation was an effective network of asthma-responsible professionals and development of a post hoc evaluation strategy. In 1997 Finnish pharmacies were included in the Pharmacy Programme and in 2002 a Childhood Asthma mini-Programme was launched.

The incidence of asthma is still increasing, but the burden of asthma has decreased considerably. The number of hospital days has fallen by 54% from 110 000 in 1993 to 51 000 in 2003, 69% in relation to the number of asthmatics (n = 135 363 and 207 757, respectively), with the trend still downwards. In 1993, 7212 patients of working age (9% of 80 133 asthmatics) received a disability pension from the Social Insurance Institution compared with 1741 in 2003 (1.5% of 116 067 asthmatics). The absolute decrease was 76%, and 83% in relation to the number of asthmatics. The increase in the cost of asthma (compensation for disability, drugs, hospital care, and outpatient doctor visits) ended: in 1993 the costs were 218 million euro which had fallen to 213.5 million euro in 2003. Costs per patient per year have decreased 36% (from 1611 euro to 1031 euro).

It is possible to reduce the morbidity of asthma and its impact on individuals as well as on society. Improvements would have taken place without the programme, but not of this magnitude.

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**PubMed ID:** 16877690 [View in PubMed](#) 

## Achievements and shortcomings of Finnish asthma care.

<https://arctichealth.org/en/permalink/ahliterature15137>

Author: Pekka Ikaheimo  
Tuuli Tuuponen  
Sirpa Hartikainen  
Jorma Kiuttu  
Timo Klaukka

Author Affiliation: Department of Public Health Science and General Practice, University of Oulu, Finland. pekka.ikaheimo@oulu.fi, pekka.ikaheimo@dnainternet.net

Source: Scand J Public Health. 2004;32(4):310-6

Date: 2004

Language: English

Publication Type: Article

Keywords: Adolescent  
Adult  
Aged  
Anti-Asthmatic Agents - therapeutic use  
Asthma - drug therapy  
Female  
Finland  
Humans  
Male  
Middle Aged  
Practice Guidelines  
Research Support, Non-U.S. Gov't

Abstract: BACKGROUND: The Finnish National Asthma Programme was launched in 1994. AIM: A postal self-completion questionnaire study was undertaken to evaluate how the guideline is working in the Finnish healthcare system. METHODS: A postal inquiry was sent to a random sample of 6,000 subjects aged 16+ years who were entitled to special reimbursement for anti-asthmatic medication and 4,657 subjects with self-reported asthma were included. RESULTS: The subjects comprised 38% men (n=1,781) and 62% women (n=2,876). In all, 62% of all the subjects and 78% of those with severe asthma had visited a doctor on account of asthma in the past 12 months. Some 83% of the respondents had a given physician who was responsible for treating their asthma, and 75% of these were under observation by a primary healthcare physician. Visits to asthma nurses were relatively rare. Inhaled glucocorticoids were used by 83% of the subjects, but short-acting beta-2-agonists were still the most commonly used asthma drug in monotherapy regardless of the severity of asthma. Inhaled glucocorticoids and a short-acting beta-2-agonist was the most frequent combination. Every tenth subject used this combination supplemented by a long-acting beta-2-agonist. CONCLUSION: Asthma care in Finland seems to be compatible with the national guidelines in terms of continuity and the common use of inhaled glucocorticoids. The primary care sector has adopted the main responsibility for the treatment of asthma. The common use of short-acting beta-2-agonists is an exception to an otherwise positive trend.

PubMed ID: 15370772 [View in PubMed](#) 

## Active and uncontrolled asthma among children exposed to air stack emissions of sulphur dioxide from petroleum refineries in Montreal, Quebec: a cross-sectional study.

<https://arctichealth.org/en/permalink/ahliterature124918>

Author: Leylâ Deger  
Céline Plante  
Louis Jacques  
Sophie Goudreau  
Stéphane Perron  
John Hicks  
Tom Kosatsky  
Audrey Smargiassi

Author Affiliation: Direction de santé publique de l' Agence de la santé et des services sociaux de Montréal, Université de Montréal, Québec.

Source: Can Respir J. 2012 Mar-Apr;19(2):97-102

Language: English

Publication Type: Article

Keywords: Air Pollutants - adverse effects  
Anti-Asthmatic Agents - therapeutic use  
Asthma - chemically induced - drug therapy - epidemiology  
Child  
Child, Preschool  
Cross-Sectional Studies  
Female  
Humans  
Industrial Waste - adverse effects  
Infant  
Male  
Petroleum Pollution - adverse effects  
Prevalence  
Quebec - epidemiology  
Questionnaires  
Regression Analysis  
Sulfur Dioxide - adverse effects  
Treatment Outcome

Abstract:

Little attention has been devoted to the effects on children's respiratory health of exposure to sulphur dioxide (SO<sub>2</sub>) in ambient air from local industrial emissions. Most studies on the effects of SO<sub>2</sub> have assessed its impact as part of the regional ambient air pollutant mix.

To examine the association between exposure to stack emissions of SO<sub>2</sub> from petroleum refineries located in Montreal's (Quebec) east-end industrial complex and the prevalence of active asthma and poor asthma control among children living nearby.

The present cross-sectional study used data from a respiratory health survey of Montreal children six months to 12 years of age conducted in 2006. Of 7964 eligible households that completed the survey, 842 children between six months and 12 years of age lived in an area impacted by refinery emissions. Ambient SO<sub>2</sub> exposure levels were estimated using dispersion modelling. Log-binomial regression models were used to estimate crude and adjusted prevalence ratios (PRs) and 95% CIs for the association between yearly school and residential SO<sub>2</sub> exposure estimates and asthma outcomes. Adjustments were made for child's age, sex, parental history of atopy and tobacco smoke exposure at home.

The adjusted PR for the association between active asthma and SO<sub>2</sub> levels was 1.14 (95% CI 0.94 to 1.39) per interquartile range increase in modelled annual SO<sub>2</sub>. The effect on poor asthma control was greater (PR=1.39 per interquartile range increase in modelled SO<sub>2</sub> [95% CI 1.00 to 1.94]).

Results of the present study suggest a relationship between exposure to refinery stack emissions of SO<sub>2</sub> and the prevalence of active and poor asthma control in children who live and attend school in proximity to refineries.

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PubMed ID: 22536578 [View in PubMed](#) 

Adherence to guidelines for drug treatment of asthma in children: potential for improvement in

## Swedish primary care.

<https://arctichealth.org/en/permalink/ahliterature122367>

Author: Maria Ingemansson  
Björn Wettermark  
Eva Wikström Jonsson  
Maria Bredgard  
Marina Jonsson  
Gunilla Hedlin  
Anna Kiessling

Author Affiliation: Paediatric Department, Astrid Lindgrens Hospital, Karolinska University Hospital, Sweden.

Source: Qual Prim Care. 2012;20(2):131-9

Date: 2012

Language: English

Publication Type: Article

Keywords: Adolescent

Anti-Asthmatic Agents - therapeutic use  
Asthma - drug therapy  
Child  
Child, Preschool  
Female  
Guideline Adherence  
Humans  
Infant  
Male  
Physician's Practice Patterns - statistics & numerical data  
Primary Health Care  
Quality of Health Care  
Sweden

**Abstract:** Adherence to guidelines in general is poor. Because asthma is the most common chronic disease in Swedish children, identifying areas for improvement regarding drug treatment for asthma is crucial.

To explore the utilisation patterns of anti-asthmatic drugs in children with asthma in relation to evidence-based guidelines.

All children visiting 14 primary healthcare centres in Stockholm, Sweden, who had their first prescription of anti-asthmatic agents dispensed between July 2006 and June 2007 were followed over 24 consecutive months. The children (1033 in total) were divided in two age groups: 0-6 years and 7-16 years. The outcome measurements were: the characteristics of the physicians initiating drug treatment; the extent to which the children were initiated on the drugs recommended in the guidelines; and the amount and frequency of drugs dispensed over time and whether the dosage texts on the prescriptions contained adequate information.

In 54% of the older children and 35% of the younger children, only one prescription for anti-asthmatic drugs was dispensed during two years of follow-up following the first prescription. In school-aged children, 50% were initiated on inhaled short-acting bronchodilating beta2-agonists (SABA) in monotherapy. Among preschool children, 64% were initiated on SABA and inhaled corticosteroids in combination. In 41% of the prescriptions dispensed, the indication was stated and in 25% the mechanism of action was stated. Drug therapy was initiated by a general practitioner in 42% of the younger children and 72% of the older children.

There is a need for improvement in adherence to guidelines in important areas. Asthma, especially among children aged 7-16 years, is usually a chronic disease and should, in many cases, be treated with anti-asthmatics counteracting inflammation. However, this was not the case in our study. In addition, the dosage texts written by the physicians did not follow recommendations and may negatively influence patient safety.

[Airborne particulate matter from primarily geologic, non-industrial sources at levels below National Ambient Air Quality Standards is associated with outpatient visits for asthma and quick-relief medication prescriptions among children less than 20 years old enrolled in Medicaid in Anchorage, Alaska.](#)

<https://arctichealth.org/en/permalink/ahliterature80178>

Author: Chimonas Marc-Andre R  
Gessner Bradford D

Author Affiliation: Division of Occupational and Environmental Medicine, Duke University Medical Center, Durham, NC 27710, USA.  
mchimonas@msn.com

Source: Environ Res. 2007 Mar;103(3):397-404

Date: Mar-2007

Language: English

Publication Type: Article

Keywords: Adolescent  
Alaska - epidemiology  
Ambulatory Care - statistics & numerical data  
Anti-Asthmatic Agents - therapeutic use  
Asthma - drug therapy - epidemiology - etiology  
Child  
Child, Preschool  
Cohort Studies  
Female  
Humans  
Infant  
Infant, Newborn  
Male  
Medicaid  
Models, Statistical  
Particle Size  
Particulate Matter - adverse effects - analysis - standards

Abstract: In Anchorage, Alaska, particulates with aerodynamic diameter  $\geq 34$  micro g/m<sup>3</sup>. A significant 18.1% increase (RR: 1.181, 95% CI: 1.010-1.381) in the rate of quick-relief medication prescriptions occurred during days with PM(10) of 34-60 micro g/m<sup>3</sup>, and a 28.8% increase (RR: 1.288, 95% CI: 1.026-1.619) occurred during days with PM(10)  $\geq 61$  micro g/m<sup>3</sup>. Similar results for outpatient asthma visits and quick-relief medication occurred in weekly models. There were no significant associations with PM(2.5) in either daily or weekly models. These subtle but statistically significant associations suggest that non-industrial, geologic sources of PM(10) may have measurable health effects at levels below current national standards.

PubMed ID: 17049511 [View in PubMed](#)



## Air Pollution and Dispensed Medications for Asthma, and Possible Effect Modifiers Related to Mental Health and Socio-Economy: A Longitudinal Cohort Study of Swedish Children and Adolescents.

<https://arctichealth.org/en/permalink/ahliterature291426>

Author: Anna Oudin  
Lennart Bråbäck  
Daniel Oudin Åström  
Bertil Forsberg

Author Affiliation: Occupational and Environmental Medicine, Umeå University, 90187 Umeå, Sweden. [anna.oudin@umu.se](mailto:anna.oudin@umu.se).

Source: Int J Environ Res Public Health. 2017 11 16; 14(11):

Date: 11-16-2017

Language: English

Publication Type: Journal Article  
Research Support, Non-U.S. Gov't

Keywords: Adolescent  
Air Pollutants - analysis  
Air Pollution - analysis  
Anti-Asthmatic Agents - therapeutic use  
Asthma - drug therapy  
Child  
Child, Preschool  
Cohort Studies  
Female  
Humans  
Logistic Models  
Longitudinal Studies  
Male  
Mental health  
Nitrogen Dioxide - analysis  
Odds Ratio  
Social Class  
Socioeconomic Factors  
Sweden

Abstract:

It has been suggested that children that are exposed to a stressful environment at home have an increased susceptibility for air pollution-related asthma. The aim here was to investigate the association between air pollution exposure and asthma, and effect modification by mental health and by socio-economic status (as markers of a stressful environment). All individuals under 18 years of age in four Swedish counties during 2007 to 2010 (1.2 million people) were included. The outcome was defined as dispensing at least two asthma medications during follow up. We linked data on NO<sub>2</sub> from an empirical land use regression to data from national registers on outcome and potential confounders. Data was analyzed with logistic regression. There was an odds ratio (OR) of 1.02 (95% Confidence Interval (CI): 1.01-1.03) for asthma associated with a 10 µg-m<sup>-3</sup> increase in NO<sub>2</sub>. The association only seemed to be present in areas where NO<sub>2</sub> was higher than 15 µg-m<sup>-3</sup> with an OR of 1.09 (95% CI: 1.07-1.12), and the association seemed stronger in children with parents with a high education, OR = 1.05 (95% CI: 1.02-1.09) and OR = 1.04 (95% CI: 1.01-1.07) in children to mothers and father with a high education, respectively. The association did not seem to depend on medication history of psychiatric disorders. There was weak evidence for the association between air pollution and asthma to be stronger in neighborhoods with higher education levels. In conclusion, air pollution was associated with dispensed asthma medications, especially in areas with comparatively higher levels of air pollution, and in children to parents with high education. We did not observe support for our hypothesis that stressors linked to socio-economy or mental health problems would increase susceptibility to the effects of air pollution on the development of asthma.

Notes:

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PubMed ID:

29144419 [View in PubMed](#) 

## Ample use of physician-prescribed medications in Finnish elite athletes.

<https://arctichealth.org/en/permalink/ahliterature169925>

Author: A. Alaranta  
H. Alaranta  
M. Heliövaara  
M. Airaksinen  
I. Helenius

Author Affiliation: Division of Social Pharmacy, Faculty of Pharmacy, University of Helsinki, Helsinki, Finland.  
antti.alaranta@helsinki.fi

Source: Int J Sports Med. 2006 Nov;27(11):919-25


Date: Nov-2006

Language: English

Publication Type: Article

Keywords: Adult  
Anti-Allergic Agents - therapeutic use  
Anti-Asthmatic Agents - therapeutic use  
Anti-Bacterial Agents - therapeutic use  
Anti-Inflammatory Agents, Non-Steroidal - adverse effects - therapeutic use  
Epidemiologic Methods  
Female  
Finland  
Humans  
Male  
Sex Distribution  
Sports

Abstract: The present study aimed at determining the use of physician-prescribed medication in a large number of elite athletes compared with a representative control sample of the general population. Of all the athletes (N = 494) financially supported by the National Olympic Committee, 446 completed a structured questionnaire (response rate 90.3 %) in 2002. A control group (N = 1503, response rate 80.1 %) comprised an age-matched sample from the population-based study collected by the National Public Health Institute. Any prescribed medication was used by 34.5 % of the athletes and 24.9 % of the controls during the past seven days. The most frequently reported physician-prescribed medications among athletes during the previous seven days were anti-allergic medicines (12.6 % of the respondents), non-steroidal anti-inflammatory drugs (NSAIDs; 8.1 %), anti-asthmatic medicines (7.0 %), and oral antibiotics (2.7 %). The adjusted odds ratios (95 % CI) for the physician-prescribed medications used during the previous seven days was 2.42 (1.69 - 3.46), 3.63 (2.25 - 5.84), 3.42 (2.05 - 5.70), and 2.15 (1.03 - 4.45) for use of anti-allergic medication, NSAIDs, anti-asthmatic medication, and oral antibiotics, respectively, in the athletes compared with controls. Every fifth athlete reported some NSAID-related adverse effect. In conclusion, the athletes used NSAIDs, antibiotics, anti-asthmatic and anti-allergic medication significantly more often than a representative sample of age-matched controls. All these medicines have potential adverse effects that may have a deleterious impact on the maximum exercise performance of elite athletes. Adverse effects were commonly reported in connection with NSAID use.

PubMed ID: 16586342 [View in PubMed](#) 

[Antibiotics and asthma medication in a large register-based cohort study - confounding, cause and](#)

Author: C. Almqvist  
B. Wettermark  
G. Hedlin  
W. Ye  
C. Lundholm

Author Affiliation: Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden.  
catarina.almqvist@ki.se

Source: Clin Exp Allergy. 2012 Jan;42(1):104-11

Date: Jan-2012

Language: English

Publication Type: Article

Keywords: Anti-Asthmatic Agents - therapeutic use  
Anti-Bacterial Agents - classification - therapeutic use  
Asthma - complications - drug therapy  
Child, Preschool  
Cohort Studies  
Confounding Factors (Epidemiology)  
Female  
Gram-Positive Bacterial Infections - complications - drug therapy - microbiology  
Humans  
Infant  
Infant, Newborn  
Male  
Registries - statistics & numerical data  
Respiratory Tract Infections - complications - drug therapy - microbiology  
Sweden

Abstract: An association between asthma and antibiotic usage has been demonstrated, and the issue of reverse causation and confounding by indication is much debated.

Our aim was to study the association between different classes of antibiotics and prescription of asthma medication in a register-based cohort of all Swedish children, born between July 2005 and June 2009, ever treated with antibiotics.

Data on dispensed prescriptions of antibiotics (ATC-codes J01) and asthma medication (ATC-codes R03A-D) were requested from the Prescribed Drug Register. The association between dispensed prescriptions of different classes of antibiotics and asthma medication was analysed with Cox regression and a descriptive sequence symmetry analysis.

In total, 211 192 children had received prescriptions of antibiotics. There was a strong association between prescription of antibiotics and prescription of asthma medication. The hazard ratios (HRs) for asthma medication associated with prescription of amoxicillin, penicillin, cephalosporin and macrolides (Gram-positive infections) were stronger than HRs associated with prescription of sulphonamides, trimethoprim and quinolones (urinary tract infections) and flucloxacillin (skin and soft tissue infections), e.g. first year HR = 2.27 (95% confidence intervals 2.17-2.37) as compared with HR = 1.04 (0.78-1.40). The HR associated with broad spectrum antibiotics was significantly higher than the narrow spectrum.

Our data suggest that the association between antibiotics and asthma is subject to either reverse causation or confounding by indication due to respiratory tract infections. This implies that careful consideration is required as to whether or not symptoms from the respiratory tract in early childhood should be treated with antibiotics or asthma medication.

## Are young adults with asthma treated sufficiently with inhaled steroids? A population-based study of prescription data from 1991 and 1994.

<https://arctichealth.org/en/permalink/ahliterature15857>

Author: D. Gaist  
J. Hallas  
N C Hansen  
L F Gram

Author Affiliation: Department of Clinical Pharmacology, Odense University, Denmark.

Source: Br J Clin Pharmacol. 1996 Apr;41(4):285-9

Date: Apr-1996

Language: English

Publication Type: Article

Keywords: Administration, Inhalation  
Adrenergic beta-Agonists - therapeutic use  
Adult  
Anti-Asthmatic Agents - therapeutic use  
Asthma - drug therapy  
Cross-Sectional Studies  
Denmark  
Drug Information Services  
Female  
Humans  
Male  
Pharmacoepidemiology

Abstract: 1. We conducted a descriptive cross-sectional study of asthma therapy among young adults to assess to what extent the current guidelines for asthma therapy have been implemented. In particular, we examined the use of inhaled corticosteroids in heavy users of inhaled beta-adrenoceptor agonists. 2. Data were retrieved from a population-based prescription database. For each of the years 1991 and 1994, all 20 to 44-year-olds who redeemed anti-asthma medication in the Odense area (210,000 inhabitants) were studied. 3. We identified the number of users and total sales volume for specific anti-asthma medications in defined daily doses (DDD) as well as the number of users and median annual doses of common regimens. Combined use of inhaled corticosteroids and inhaled beta-adrenoceptor agonists was also described. 4. The annual sales volume of anti-asthma drugs increased by 23% to 927,636 DDD from 1991 to 1994. Inhaled corticosteroids were mainly responsible for this with a 52% increase in number of users and an 88% increase in DDD. Inhaled beta-adrenoceptor agonists used in monotherapy remained the most popular regimen in 1994 (1685 users = 39%). Inhaled corticosteroids in combination with inhaled beta-adrenoceptor agonist were the second most popular regimen in 1994 (1308 users = 30%), increasing by 64% as compared with 1991. However, among patients with an annual use of inhaled beta-adrenoceptor agonist of 200 DDD (1600 "puffs") or more the percent of patients not receiving inhaled corticosteroids at all only fell from 37 to 33%. Though the number of patients being treated with inhaled corticosteroids has increased, there is still evidence of a substantial underuse.

PubMed ID: 8730973 [View in PubMed](#)

## Association between physician competence at licensure and the quality of asthma management among patients with out-of-control asthma.

<https://arctichealth.org/en/permalink/ahliterature132696>

Author: Yuko Kawasumi  
Pierre Ernst  
Michal Abrahamowicz  
Robyn Tamblyn

Source: Arch Intern Med. 2011 Jul 25;171(14):1292-4

Date: Jul-25-2011

Language: English

Publication Type: Article

Keywords: Adult  
Anti-Asthmatic Agents - therapeutic use  
Asthma - diagnosis - drug therapy  
Canada  
Chronic Disease  
Clinical Competence  
Cohort Studies  
Communication  
Drug Prescriptions - statistics & numerical data  
Emergency Service, Hospital - utilization  
Female  
Health Knowledge, Attitudes, Practice  
Humans  
Licensure, Medical - legislation & jurisprudence  
Logistic Models  
Male  
Middle Aged  
Multivariate Analysis  
Physician-Patient Relations  
Physicians - standards - statistics & numerical data  
Quality of Health Care - standards - trends  
United States

PubMed ID: 21788548 [View in PubMed](#) 