

## **Prevalence, characteristics and management of frequently exacerbating asthma patients: an observational study in Sweden (PACEHR)**

Christer Janson<sup>1</sup>, Karin Lisspers<sup>2</sup>, Björn Stållberg<sup>2</sup>, Gunnar Johansson<sup>2</sup>, Marcus Thuresson<sup>3</sup>, Gunilla Telg<sup>4</sup>, Kjell Larsson<sup>5</sup>

1. Department of Medical Sciences, Respiratory, Allergy and Sleep Research, Uppsala University, Sweden 2. Public Health and Caring Science, Family Medicine and Preventive Medicine, Uppsala University, Sweden; 2. Department of Medical Sciences, Respiratory, Allergy and Sleep Research, Uppsala University, Sweden; 3. Statisticon AB, Uppsala, Sweden; 4. AstraZeneca Nordic-Baltic, Södertälje, Sweden; 5. The National Institute of Environmental Medicine, Karolinska Institutet, Sweden

Online Data Supplement

**SUPPL Table S1.** Percentage of patients without concomitant COPD diagnosis collecting at least one claim of asthma medication at baseline and during follow-up, grouped by patients with and without frequent exacerbations during the observation period.

	No exacerbations n=11182			Frequent exacerbations n=219		
	Before	Follow-up	OR* (95% CI)	Before	Follow-up	OR* (95% CI)
Short-acting $\beta$ 2-agonists, %	27.9	33.7	1.62 (1.50-1.75)	60.7	67.1	1.74 (0.96-3.23)
Long-acting $\beta$ 2-agonists (LABA), %	8.4	9.4	1.37 (1.17-1.59)	20.1	26.0	3.17 (1.22-9.69)
Inhaled corticosteroids (ICS), %	26.8	30.9	1.54 (1.42-1.68)	40.6	45.2	1.59 (0.83-3.11)
Fixed ICS/LABA combination, %	20.1	23.4	1.77 (1.58-1.98)	47.0	53.0	1.93 (0.98-3.98)
Any Inhaled corticosteroid, %	45.3	52.6	1.85 (1.71-2.00)	79.0	88.1	3.22 (1.49-7.74)
Leukotriene receptor antagonists, %	3.7	4.0	1.29 (1.03-1.62)	25.1	33.8	4.17 (1.67-12.42)
Long acting anticholinergics, %	80.8	1.3	3.07 (2.01-4.80)	3.7	7.3	5.00 (1.07-46.93)

\*OR - Odds ratios refers to the ratio of the odds of changing category within patient (from no to yes, vs yes to no)

**SUPPL Table S2.** Health care utilisation at baseline and during the 3-year observation period in patients without concomitant COPD diagnosis, grouped by patients that have frequent exacerbations and those without exacerbations

	No exacerbations n=11182			Frequent exacerbations n=219		
	Before	Follow-up	OR* (95% CI)	Before	Follow-up	OR* (95% CI)
<b>Primary care</b>						
Doctor visits, %	56.8	47.1	0.52 (0.48-0.56)	68.5	59.4	0.39 (0.19-0.77)
Doctor visit due of asthma, %	18.0	10.4	0.45 (0.41-0.50)	35.2	31.5	0.76 (0.43-1.31)
<b>Secondary care</b>						
Outpatient visit, %	14.0	11.9	0.76 (0.69-0.83)	50.7	47.9	0.82 (0.48-1.40)
Outpatient visit due to asthma, %	3.9	2.1	0.43 (0.36-0.53)	28.8	23.3	0.57 (0.29-1.09)
Hospitalisation, all cause, %	6.0	5.8	0.95 (0.84-1.07)	21.9	22.4	1.03 (0.61-1.77)
Hospitalisation due to asthma, %	0.0	0.0	NA (0.00-Inf)	4.6	3.7	0.75 (0.21-2.46)

\*OR - Odds ratios refers to the ratio of the odds of changing category within patient (from no to yes, vs yes to no)

**SUPPL Table S3.** Characteristics of patients without concurrent COPD diagnosis, patients without any exacerbations compared with those with frequent exacerbations every year during the observational period

	No exacerbations n=11182	Frequent exacerbations n=219	p- value*
Age, mean (sd)	45.3 (18.4)	53.4 (16.9)	<0.001
Female, n (%)	6767 (60.5%)	153 (69.9%)	0.004
Neutrophils, cells/mm <sup>3</sup> , mean (sd), n	4.79 (2.37), 852	5.26 (1.99), 50	0.176
Eosinophils, x10 <sup>3</sup> cells/μL, mean (sd), n	0.29 (0.34), 1464	0.39 (0.43), 72	0.012
BMI, mean (sd), n	27.5 (6.0), 5625	27.1 (5.1), 116	0.474
FEV1 % predicted, (sd), n	91.1 (16.0), 745	82.0 (14.7), 22	0.008
FVC % predicted, (sd), n	99.0 (16.0), 672	91.4 (14.7), 13	0.087
Rhinitis/sinusitis, n (%)	2458 (22.0%)	67 (30.6%)	0.003
Non-allergic rhinitis, n (%)	506 (4.5%)	13 (5.9%)	0.342
Allergic rhinitis, n (%)	1913 (17.1%)	44 (20.1%)	0.256
Chronic rhinitis, n (%)	296 (2.6%)	17 (7.8%)	<0.001
Chronic sinusitis, n (%)	97 (0.9%)	7 (3.2%)	0.005
Nasal polyps, n (%)	251 (2.2%)	17 (7.8%)	<0.001
Chronic bronchitis, n (%)	153 (1.4%)	6 (2.7%)	0.129
COPD, n (%)	0 (0.0%)	0 (0.0%)	1.000
Type 2 diabetes, n (%)	552 (4.9%)	21 (9.6%)	0.005
Hypertension, n (%)	2144 (19.2%)	64 (29.2%)	<0.001
Ischaemic heart disease, n (%)	528 (4.7%)	20 (9.1%)	0.007
Cerebrovascular diseases, n (%)	223 (2.0%)	7 (3.2%)	0.247
Anxiety, n (%)	1087 (9.7%)	25 (11.4%)	0.414
Depression, n (%)	1567 (14.0%)	41 (18.7%)	0.057
Osteoporosis, n (%)	143 (1.3%)	12 (5.5%)	<0.001
Inflammatory bowel disease, n (%)	288 (2.6%)	10 (4.6%)	0.097

\*Adjusted for age and sex

BMI = Body Mass Index