

# The German Severe Asthma Registry and Type 2-high and Type 2-low asthma phenotypes

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## Introduction and aim

- Asthma is a heterogeneous disease that encompasses a range of phenotypes and biomarkers
- Targeted therapy is a relatively new treatment option for patients with severe asthma → precise phenotyping of this patient population is becoming more and more important
- Type 2-driven asthma is characterized by the release of signature cytokines IL-4, IL-5 and IL-13 from cells of both the innate and adaptive immune systems
- The degree of Type 2 inflammation defines Type 2-high and Type 2-low phenotypes with differential responses to available therapies



- Aim: To characterize patients with severe asthma in Germany according to Type 2 biomarkers

## Patients

- 1056 patients with severe asthma

Characterization based on atopic status (positive skin prick test/specific IgE), blood eosinophils and exhaled nitric oxide (FeNO)



- Frequency of Type 2-high and Type 2-low phenotypes

## Severe Asthma Registry

- Started 2011
- Germany, Austria, Slovenia, Czech Republic, Switzerland
- 1913 patients (Sep. 2019)
- Yearly follow-ups
- Specific tools for patients on therapy with biologics



## Patient characteristics

- Age: 47.0 ± 17.9 years, 57% female
- FEV1 2.03 ± 0.83 L (66.8 ± 22.8%) with 4.0 ± 4.2 exacerbations (previous year)
- 27.1% of patients treated with omalizumab and 6.8% with anti-IL-5 antibodies

## Results

- For 396 patients information on ALL biomarkers were available
- Type-2 low asthma (no atopy, blood eosinophils < 150/μl, FeNO < 25 ppb): n=16 (4%)
  - 1.8% (n=4) of patients not on OCS, 6.7% (n=12) of patients on OCS
- Type-2 high asthma (any Type-2 signal positive): n=380 (96%)
  - 43.7% (n=166) of patients on OCS (68.5% with positive skin prick test/specific IgE, 54.5% with blood eosinophils ≥ 150/μl, and 67.4% with FeNO levels ≥ 25 ppb)
  - 56.3% (n=214) of patients not on OCS (80.4% with positive skin prick test/specific IgE, 72.0% with blood eosinophils ≥ 150/μl, and 59.3% with FeNO levels ≥ 25 ppb)

Parameter (all adult registry patients)	Patients NOT treated with oral corticosteroids (n=631)	Patients treated with oral corticosteroids (n=404)
Positive skin prick test/specific IgE (n, %)	502, 79.9%	295, 73.0%
Blood eosinophils (median, interquartile range (IQR))	290 (130-510)/μl	180 (70-500)/μl
FeNO (median, IQR)	33 (15-55) ppb	37 (20-69) ppb
Total IgE (median, IQR)	188 (62-503) IU/ml	195 (82-490) IU/ml

## Conclusion

- Type 2-high asthma is the predominant phenotype among patients with severe asthma