Supplementary Material

*Database description*

The database used for the analyses was IMS Health’s German LRx database24. This database covers around 60% of German statutory health insurance claims, starting in January 2008 and updated at monthly intervals. For each prescription, a patient ID number (fully anonymized, in accordance with German data protection legislation (“*Bundesdatenschutzgesetz*”, §3, Sect. 6)) is recorded so that individual patient histories can be analyzed inside and across markets and morbidities. The data is obtained from data collection centers acting as intermediaries between pharmacies and statutory health insurance fund. All collection centers have provided data continuously since 2008. For each prescription, the LRx database provides the exact dispensing date, the prescribing physician’s specialty and full details of the medication (brand, formulation, active compound, dose level, strength, package size, etc.). The patients’ basic demographic characteristics (age and gender) are known in most cases. The database lacks diagnostic information, so that a patient’s disease profile has to be inferred from the prescribed products.

*Correction of outcome variables*

The progression of allergic rhinitis and asthma were assessed in terms of the level of consumption of relevant medications in the analytical timespan. To this end, the total number of prescriptions per timespan were summed and divided by the length of the timespan (in years), in order to render the values for patients with different timespan lengths comparable. To correct for different treatment intensities at baseline, the outcome variable was defined as the ratio between the two timespans:

$$\frac{^{Prescriptions during the analysis period}/\_{Duration of the period (y)}}{Prescriptions during the pre-index period}$$

 This variable was analyzed by linear regression. The occurrence of asthma was analyzed as a binary (yes/no) variable in a logistic regression. The time to asthma onset (the first of two ICS or SABA prescriptions in the same or successive years) was assessed by Cox regression.

 The structure of the selection process distorted the outcome variable for AR progression in the treatment period; all non AIT patients were required to have AR treatment in the treatment period, whereas the SLIT tablet group only had to have AR treatment before the index date. The progression of AR was therefore analyzed in the follow-up period only. The asthma analyses, however, were performed for all three analytical periods (i.e. the treatment, follow-up and full analysis periods).

*Covariates*

The following covariates were included in the multiple regression analyses for all outcome variables: patient gender (test variable: male, female; control variable: unknown); patient age group at the index date (test variable: <18; control variable: 18 and over); main prescriber (test variables: dermatologist, ENT specialist, pediatrician, pulmonologist, internal medicine specialist, other specialty; control variable: primary care physician). The following covariates were included in relevant regression analyses only: asthma status at the index date (test variable: asthma at the index date; control variable: no asthma at the index date; this was only used in analyses of AR progression); the severity of AR before the index date (as measured by the number of AR prescriptions in the year before the index date; this was only used in analyses of asthma onset and progression); and the length of the analytical time period (in days; this was only used in the logistic regression for asthma occurrence because the value was not standardized for all patients, and patients with a longer time period had a higher probability of developing asthma).

*Matching procedures*

During the matching process, it was ensured that each SLIT patient was matched to an identical number of Control patients as the other SLIT patients and that no Control patient (of whom each could have more than one potential index date) was included twice or contributed more than one index date. To this end, each SLIT patient was matched to a (Control patient) index date, the information was stored and all index dates of the selected Control patient were removed from the list of potential index dates for matching. Once the first run (one match per SLIT patient) was completed, a second run was started. When no suitable match could be found for a SLIT patient, the matching process was stopped, the results of that particular run discarded and the matches of all previous runs (25 runs in total) used for the final analyses.