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Title: Prescription patterns and treatment adherence of asthma controller therapy in children in a Dutch primary care database

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Body: Asthma is the most common chronic disease in children. Asthma is treated with quick relievers (inhaled short-acting beta-agonists, SABA) and controllers (inhaled corticosteroids,ICS;leukotriene antagonists,LTRA) that need to be taken daily to control asthma symptoms. Objective: To evaluate prescription patterns and adherence (Medication Possession Rate=MPR) of asthma controller therapies in Dutch children, stratified by age, gender and calendar year. Methods: Observational cohort study with data from IPCI, a Dutch primary care database containing complete medical records of more than 176,500 children. All children with physician diagnosed asthma, aged 5-18 years between 2000-2012, were identified. All prescriptions of asthma drugs were retrieved and the prevalence of use per 100 patient years (PY), stratified by age and gender, was calculated. In addition, the MPR was calculated for controller therapy. Results: We identified an asthma cohort of 14,304 children (58% boys) with 35,000 PY of follow-up. SABA (38/100 PY) and ICS (31/100 PY) were prescribed most frequently. The prevalence of use of asthma drugs was similar in girls and boys aged 5-13 years. After the age of 13, use was higher in girls. The MPR was highest for LTRA (median 49.8[IQR 36]) and lowest for ICS (median 24.6[IQR 30]). Overall, children with the best adherence were older at time of asthma diagnosis. For ICS, girls had the best adherence. The MPR for ICS was significantly lower in boys (median 23.7[IQR28]) than in girls (25.8[IQR 34]). Conclusions: In Dutch pediatric primary care ICS was the most prescribed controller therapy. Treatment adherence to controller therapy was low, especially for ICS.