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**Title:** Problematic severe asthma in children: A nationwide study in The Netherlands

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**Body:** Introduction: Epidemiological data on problematic severe asthma in children are sparse. Methods: A 3 year (2008-2011), nationwide survey on PSA in children 4-18yrs old in the Netherlands through a national surveillance system among all paediatricians. Results: In this cross sectional study 328 children, aged 4-18yrs with PSA, were identified. A prevalence of at least 0.01% of children with asthma. PSA is more frequent in boys than in girls under 12yrs old. This sex ratio reverses >12yrs old. Eighty-five% had allergic asthma and in 85% symptoms started before they were 4yrs old. Investigations included lung function, FeNO, trials of steroids, chest radiographs, sweat tests, immunodiagnosics, HRCT, bronchoscopy in various percentages of patients. Over 10% had 5-13 exacerbations requiring prednisolon in the past year. ICU admittance in 11%. Fifty% had exacerbations with no symptoms in between, 40% suffered from very

acute asthma attacks and 30% were continuously symptomatic. All despite up-to-date intensive surveillance and treatment. Seventy-five% received psycho diagnostics and 50% psychotherapy. FEV1 was normal in 85% of patients. Persistent airflow limitation in the past year was present in 13%. Daily prednisolon, omalizumab or antiTNFalfa was used in resp 5%, 1% and 0,08%. Conclusions: PSA in a country with a high standard medical system and coverage of medical cost for all, is rare. Asthma symptoms in children with PSA start <4yrs old. Children have severe symptoms despite intensive treatment and follow-up. Daily ICS doses are high with additional frequent oral steroids courses. Follow-up of this cohort into adulthood will yield the natural course of symptoms, lungfunction and psychosocial problems.