



SHAREABLE PDF

Diagnosis of asthma in children: findings from the Swiss Paediatric Airway Cohort

Carmen C.M. de Jong ¹, Eva S.L. Pedersen¹, Rebeca Mozun ¹,
Dominik Müller-Suter², Anja Jochmann³, Florian Singer ^{4,5},
Carmen Casaulta^{4,6}, Nicolas Regamey⁷, Alexander Moeller ⁸,
Cristina Ardura-Garcia ¹ and Claudia E. Kuehni ^{1,4}

Affiliations: ¹Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland. ²Paediatric Respiratory Medicine, Kantonsspital Aarau, Aarau, Switzerland. ³Paediatric Respiratory Medicine, University Children's Hospital (UKBB), University of Basel, Basel, Switzerland. ⁴Paediatric Respiratory Medicine, Children's University Hospital of Bern, University of Bern, Bern, Switzerland. ⁵PedNet Bern, Children's University Hospital of Bern, University of Bern, Bern, Switzerland. ⁶Paediatric Respiratory Medicine, Kantonsspital Graubünden, Chur, Switzerland. ⁷Division of Paediatric Pulmonology, Children's Hospital, Lucerne, Switzerland. ⁸Division of Paediatric Pulmonology, University Children's Hospital of Zurich, University of Zurich, Zurich, Switzerland.

Correspondence: Claudia E. Kuehni, University of Bern, Institute of Social and Preventive Medicine, Mittelstrasse 43, CH-3012 Bern, Switzerland. E-mail: claudia.kuehni@ispm.unibe.ch

@ERSpublications

Asthma diagnosis does not seem straightforward, even for experienced pulmonologists, and this highlights the need for new evidence-based guidance <https://bit.ly/3dagdgv>

Cite this article as: de Jong CCM, Pedersen ESL, Mozun R, *et al.* Diagnosis of asthma in children: findings from the Swiss Paediatric Airway Cohort. *Eur Respir J* 2020; 56: 2000132 [<https://doi.org/10.1183/13993003.00132-2020>].

This single-page version can be shared freely online.

ABSTRACT

Introduction: Diagnosing asthma in children remains a challenge because respiratory symptoms are not specific and vary over time.

Aim: In a real-life observational study, we assessed the diagnostic accuracy of respiratory symptoms, objective tests and two paediatric diagnostic algorithms (proposed by the Global Initiative for Asthma (GINA) and the National Institute for Health and Care Excellence (NICE)) in the diagnosis of asthma in school-aged children.

Methods: We studied children aged 5–17 years who were referred consecutively to pulmonary outpatient clinics for evaluation of suspected asthma. Symptoms were assessed by parental questionnaire. The investigations included specific IgE measurement or skin prick tests, measurement of exhaled nitric oxide fraction (F_{eNO}), spirometry, body plethysmography and bronchodilator reversibility (BDR). Asthma was diagnosed by paediatric pulmonologists based on all available data. We assessed diagnostic accuracy of symptoms, tests and diagnostic algorithms by calculating sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and area under the curve (AUC).

Results: Among 514 participants, 357 (70%) were diagnosed with asthma. The combined sensitivity and specificity was highest for any wheeze (sensitivity=75%, specificity=65%), dyspnoea (sensitivity=56%, specificity=76%) and wheeze triggered by colds (sensitivity=58%, specificity=78%) or by exercise (sensitivity=55%, specificity=74%). Of the diagnostic tests, the AUC was highest for specific total airway resistance (sR_{tot} ; AUC=0.73) and lowest for the residual volume (RV)/total lung capacity (TLC) ratio (AUC=0.56). The NICE algorithm had sensitivity=69% and specificity=67%, whereas the GINA algorithm had sensitivity=42% and specificity=90%.

Conclusion: This study confirms the limited usefulness of single tests and existing algorithms for the diagnosis of asthma. It highlights the need for new and more appropriate evidence-based guidance.