

Test type	Bronchial hyper-reactivity and associated symptoms	Reference
Direct tests		
Methacholine challenge test	<ul style="list-style-type: none"> • Wheeze, • Wheeze with dyspnea, • Cough • History of chronic bronchitis, pneumonia, and acute bronchitis 	Dales RE, Ernst P, Hanley JA, Battista RN, Becklake MR. Prediction of airway reactivity from responses to a standardized respiratory symptom questionnaire. <i>Am Rev Respir Dis.</i> 1987;135(4):817-21. doi: 10.1164/arrd.1987.135.4.817. PMID: 3551703.
	<ul style="list-style-type: none"> • Wheezy chest • Attacks of shortness of breath with wheezing • Dry cough at night 	Remes ST, Pekkanen J, Remes K, Salonen RO, Korppi M. In search of childhood asthma: questionnaire, tests of bronchial hyperresponsiveness, and clinical evaluation. <i>Thorax.</i> 2002;57(2):120-6. doi: 10.1136/thorax.57.2.120
	<ul style="list-style-type: none"> • Wheezing, • Shortness of breath • Cough • History of episodes of dyspnea and wheeze 	Yurdakul AS, Berna Dursun, Sema Canbakan, Aslihan Çakaloğlu & Nermin Çapan (2005) The Assessment of Validity of Different Asthma Diagnostic Tools in Adults, <i>Journal of Asthma</i> , 42:10, 843-846, DOI: 10.1050/08770900500370981
	<ul style="list-style-type: none"> • Cough • Cough from chest • Shortness of breath • Chest tightness 	Shin B, Cole SL, Park SJ, Ledford DK, Lockey RF. A new symptom-based questionnaire for predicting the presence of asthma. <i>J Investig Allergol Clin Immunol.</i> 2010;20(1):27-34. PMID: 20232771.
Histamine challenge test	<ul style="list-style-type: none"> • Shortness of breath or wheezing, or both to irritants like cold air, smoky atmospheres, traffic fumes, and common household chemicals (hair sprays, perfumes, bleach, etc) • Bronchial irritability • Nocturnal dyspnea • Morning tightness 	Mortagy AK, Howell JB, Waters WE. Respiratory symptoms and bronchial reactivity: identification of a syndrome and its relation to asthma. <i>Br Med J (Clin Res Ed).</i> 1986;293(6546):525-9. doi: 10.1136/bmj.293.6546.525
	<ul style="list-style-type: none"> • Wheeze • Shortness of breath • Tightness in the chest on coming into contact with animals, dust or feathers 	Burney PG, Chinn S, Britton JR, Tattersfield AE, Papacosta AO. What symptoms predict the bronchial response to histamine? Evaluation in a community survey of the bronchial symptoms questionnaire (1984) of the International Union Against Tuberculosis and Lung Disease. <i>Int J Epidemiol.</i> 1989;18(1):165-73. doi: 10.1093/ije/18.1.165.
Indirect tests		
inhaled procaterol	<ul style="list-style-type: none"> • Wheeze • Breathlessness • Chest tightness • Cough⁷ 	Tomita K, Sano H, Chiba Y, Sato R, Sano A, Nishiyama O, Iwanaga T, Higashimoto Y, Haraguchi R, Tohda Y. A scoring algorithm for predicting the presence of adult asthma: a prospective derivation study. <i>Prim Care Respir J.</i> 2013 Mar;22(1):51-8. doi: 10.4104/pcrj.2013.00005. PMID: 23348712; PMCID: PMC6442773.

Table I. Surrogate markers of airway hyperresponsiveness