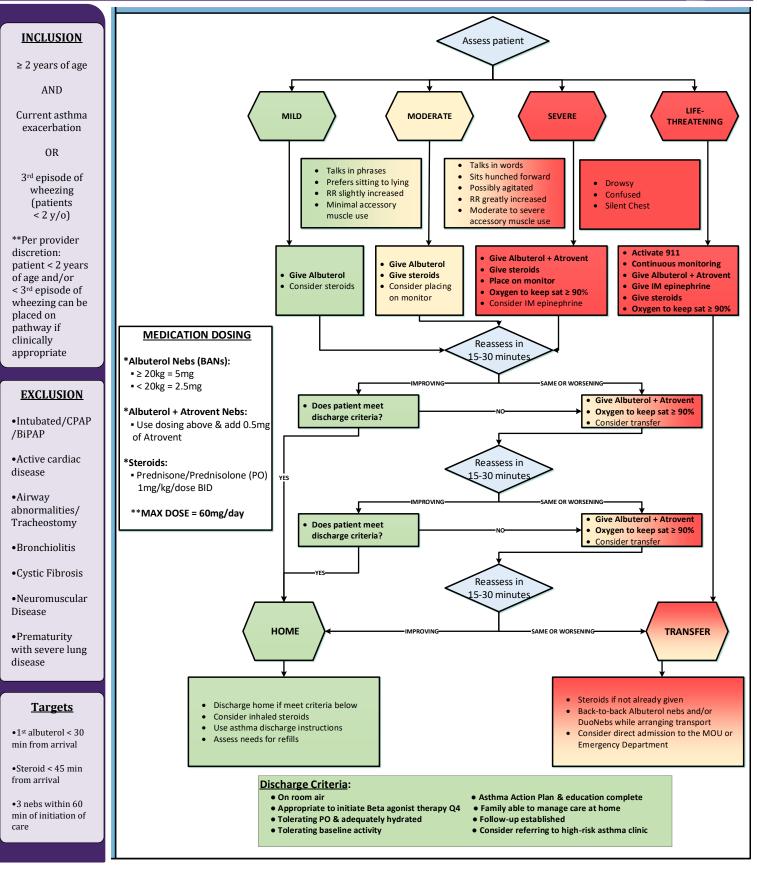
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Convenient Care Asthma Algorithm





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Evidence

Akinbami, L. J., Moorman, J. E., Garbe, P. L., & Sondik, E. J. (2009). Status of childhood asthma in the United States, 1980-2007. *Pediatrics, 123 Suppl 3*, S131-145. doi: 10.1542/peds.2008-2233C

Arnold, et al, 2012, Performance of the Acute Asthma Intensity Research Score for Acute Asthma Protocols. Ann Allergy Asthma Immunol. 2012 July; 109(1): 78–79. doi:10.1016/j.anai.2012.05.007

Bartlett, K.W., Parente, V.M., Morales, V., Hauser, J., McLean H.S. (2017). Improving the efficiency of care for pediatric patients hospitalized with asthma. *Hospital Pediatrics*, 7(1), 31-38. doi: 10.1542/hpeds.2016-0108

Becker, Allan; Nelson, Norma. The Pulmonary Index: Assessment of a Clinical Score for Asthma._ADJC – Col 138. June 1984.

Birken CS1, Parkin PC, Macarthur C. Asthma severity scores for preschoolers displayed weaknesses in reliability, validity, and responsiveness. J Clin Epidemiol. 2004 Nov; 57(11):1177-81.

Camargo, C. A., Jr., Spooner, C. H., & Rowe, B. H. (2003). Continuous versus intermittent beta-agonists in the treatment of acute asthma. *Cochrane Database Syst Rev*(4), CD001115. doi: 10.1002/14651858.cd001115

Carroll C, Sekaran A; Lerer T. A Modified Pulmonary Index Score with predictive value for pediatric asthma exacerbations. Annals of Allergy Asthma and Immunology. 2005; 94:355-359.

Castro-Rodriguez, J. A., & Rodrigo, G. J. (2004). beta-agonists through metered-dose inhaler with valved holding chamber versus nebulizer for acute exacerbation of wheezing or asthma in children under 5 years of age: a systematic review with meta-analysis. *J Pediatr*, *145*(2), 172-177. doi: 10.1016/j.jpeds.2004.04.007

Cates, C. J., Crilly, J. A., & Rowe, B. H. (2006). Holding chambers (spacers) versus nebulisers for beta agonist treatment of acute asthma. *Cochrane Database Syst Rev*(2), CD000052. doi: 10.1002/14651858.CD000052.pub2

CCHMC. (2010). Acute Asthma Guideline, Cincinnati Children's Hospital Medical Center: Evidence-based care guideline for management of acute asthma exacerbation in children *Asthma Exacerbation in Children Pediatric Evidence Based Care Guidelines, Cincinnati Children's Hospital Medical Center* (Vol. Guideline 4, pp. 1-35).

Chisolm, D. J., McAlearney, A. S., Veneris, S., Fisher, D., Holtzlander, M., & McCoy, K. S. (2006). The role of computerized order sets in pediatric inpatient asthma treatment. *Pediatr Allergy Immunol*, *17*(3), 199-206. doi: 10.1111/j.1399-3038.2005.00362.x

Delgado, A., Chou, K. J., Silver, E. J., & Crain, E. F. (2003). Nebulizers vs metered-dose inhalers with spacers for bronchodilator therapy to treat wheezing in children aged 2 to 24 months in a pediatric emergency department. *Arch Pediatr Adolesc Med*, *157*(1), 76-80.

Dolovich, M. B., Ahrens, R. C., Hess, D. R., Anderson, P., Dhand, R., Rau, J. L., . . . Guyatt, G. (2005). Device selection and outcomes of aerosol therapy: Evidence-based guidelines: American College of Chest Physicians/American College of Asthma, Allergy, and Immunology. *Chest*, *127*(1), 335-371. doi: 10.1378/chest.127.1.335

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Evidence

Ducharme et al, 2008, The Pediatric Respiratory Assessment Measure: A Valid Clinical Score for Assessing Acute Asthma Severity from Toddlers to Teenagers. J Pediatr 2008; 152:476-80)

Fleming S, Thompson M, Stevens R. Normal ranges of heart rate and respiratory rate in children from birth to 18years of age: a systematic review of observational studies. The Lancet. Vol 377. Mar 2011.

Gorelick M, Stevens M, Schultz T. Performance of a Novel Clinical Score, the Pediatric Asthma Severity Score (PASS), in the evaluation of acute asthma. Academic Emergency Medicine. 2004. Vol 11.1

Gouin S, Robidas I, Gravel J. Prospective Evaluation of Two Clinical Scores for Acute Asthma in Children 18 months to 7 yrs of age. Academic Emergency Medicine. June 2010. Col 17.6

JCAHO. The Joint Commission. Children's Asthma Care (CAC) performance measure set. Retrieved 8/19/2012, from <u>http://www.jointcommission.org/childrens_asthma_care/</u>

Johnson KB, Blaisdell CJ, Walker A, Eggleston P. <u>Effectiveness of a clinical pathway for inpatient asthma</u> <u>management.</u> Pediatrics. 2000 Nov; 106(5):1006-12. PubMed PMID: 11061767.

Kelly CS, Andersen CL, Pestian JP, Wenger AD, Finch AB, Strope GL, Luckstead EF. <u>Improved</u> outcomes for hospitalized asthmatic children using a clinical pathway. Ann Allergy Asthma Immunol. 2000 May; 84(5):509-16. PubMed PMID: 10831004.

Kenyon CC1, Fieldston ES2, Luan X2, Keren R2, Zorc JJ3. Safety and effectiveness of continuous aerosolized albuterol in the non-intensive care setting. *Pediatrics.* 2014 Oct;134(4):e976-82. doi: 10.1542/peds.2014-0907.

Kwan-Gett, Tao Sheng; Lozano, Paula, etc. One-Year Experience with an Inpatient Asthma Clinical Pathway. Arch of Pediatric and Adolescent Medicine. Vol 151. July 1997

Landrigan, C. P., Conway, P. H., Stucky, E. R., Chiang, V. W., & Ottolini, M. C. (2008). Variation in pediatric hospitalists' use of proven and unproven therapies: a study from the Pediatric Research in Inpatient Settings (PRIS) network. *J Hosp Med*, *3*(4), 292-298. doi: 10.1002/jhm.347

Leversha, A. M., Campanella, S. G., Aickin, R. P., & Asher, M. I. (2000). Costs and effectiveness of spacer versus nebulizer in young children with moderate and severe acute asthma. *J Pediatr*, *136*(4), 497-502.

Lowell D, Lister G. Wheezing in Infants: The response to Epinephrine. Pediatrics. 1987. Vol 79.6

McDowell, K. M., Chatburn, R. L., Myers, T. R., O'Riordan, M. A., & Kercsmar, C. M. (1998). A cost-saving algorithm for children hospitalized for status asthmaticus. *Arch Pediatr Adolesc Med*, *152*(10), 977-984.

MMWR. (2011). Vital signs: asthma prevalence, disease characteristics, and self-management education: United States, 2001--2009. *MMWR Morb Mortal Wkly Rep*, *60*(17), 547-552.

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Evidence

Morse, R. B., Hall, M., Fieldston, E. S., McGwire, G., Anspacher, M., Sills, M. R., ... Shah, S. S. (2011). Hospitallevel compliance with asthma care quality measures at children's hospitals and subsequent asthma-related outcomes. *JAMA*, 306(13), 1454-1460. doi: 10.1001/jama.2011.1385

NAEPP. (2007). *Expert Panel Report 3 (EPR-3)*. Washington, DC: National Institutes of Health National Heart, Lung, and Blood Institute Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm.

Narus, S. P., Srivastava, R., Gouripeddi, R., Livne, O. E., Mo, P., Bickel, J. P., . . . Keren, R. (2011). Federating clinical data from six pediatric hospitals: process and initial results from the PHIS+ Consortium. *AMIA Annu Symp Proc*, *2011*, 994-1003.

Norton, S. P., Pusic, M. V., Taha, F., Heathcote, S., & Carleton, B. C. (2007). Effect of a clinical pathway on the hospitalisation rates of children with asthma: a prospective study. *Arch Dis Child*, *92*(1), 60-66. doi: 10.1136/adc.2006.097287

Parkin, P., Macarthur, C., et al., Development of a Clinical Asthma Score for Use in Hospitalized Children between 1 and 5 Years of Age. J Clin Epidemiol Vol. 49, No. 8, pp. 821-825, 1996

Rutman et al. (2016). Modification of an established pediatric asthma pathway improves evidence-based, efficient care. *Pediatrics*, *138(6)*, e1-e10. doi: 10.1542/peds.2016-1248

Sabato, K., Ward, P., Hawk, W., Gildengorin, V., Asselin, J. (2011). Randomized controlled trial of a breathactuated nebulizer in pediatric asthma patients in the emergency department. *Respiratory Care*, *56(6)*, 761-70.

Smith S, Baty J, Hodge D. Validation of the Pulmonary Score: As Asthma Severity Score for Children. Academic Emergency Medicine. Feb 2002. Vol 9.2

Strub M, Frey C Jr, Waskerwitz S, Unfer S, Luskin AT, Chudwin DS. <u>Clinical assessment score and peak</u> <u>expiratory flow rate. Correlation in acute childhood asthma.</u> IMJ Ill Med J. 1986 Jul; 170(1):30-2. PubMed PMID: 2874121.

Titus, M.O., Eady, M., King, L.B., Bowman, M. (2012). Effectiveness of a breath-actuated nebulized device on asthma care in the pediatric emergency department. *Clinical Pediatrics*, 1-5. doi: 10.1177/0009922812458356

Wazeka, A., Valacer, D.J., Cooper, M., Caplan, D.W., & DiMaio, M. (2001). Impact of a pediatric asthma clinical pathway on hospital cost and length of stay. Pediatr Pulmonol, 32(3), 211-216.

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