

# CLINICAL HANDBOOK FOR PAEDIATRIC ASTHMA



Developed in partnership with



The Provincial Council for Maternal and Child Health (PCMCH) in partnership with the Lung Health Foundation released an updated version of the Clinical Handbook for Paediatric Asthma in November 2021 (from the original release in December 2017).

The Clinical Handbook for Paediatric Asthma is a compendium of evidence-based rationale and clinical consensus for emergency department, in-patient management and discharge planning for paediatric asthma for patients <18 years of age with a known or suspected diagnosis of asthma.

THE KEY OBJECTIVES ARE TO:

- provide clinicians with evidence-based recommendations regarding management of paediatric asthma for the Emergency Department (ED), in-patient episodes of care and for discharge;
- reduce variations in asthma diagnosis and the treatment of inpatients with asthma;
- promote standardized assessments of severity and severity-based treatment;
- reduce inappropriate ED revisits and in-patient admissions; and
- ensure that, upon discharge, children and their parents/caregivers receive asthma management education and instructions for appropriate follow-up and referrals in an Asthma Action Plan

## UPDATES TO THE PAEDIATRIC EMERGENCY DEPARTMENT ASTHMA CLINICAL PATHWAY (P-EDACP) INCLUDE:

**Salbutamol dosing now based on weight**, not age (mild, moderate and severe)  
less than 20 kg = 5 puffs / dose  
greater than or equal to 20 kg = 10 puffs / dose

**Oral Corticosteroids** –addition of dexamethasone (moderate and severe sections)  
0.6 mg/kg, MAX 12 mg PO x 2 doses

Updates to the **Moderate Severity** pathway:

**Salbutamol AND Ipratropium Bromide** administered together in first hour of treatment (option to use nebulized or MDI for both medications)

Update to the **Severe** section:

### Addition of Magnesium Sulfate

previously in the Impending Respiratory Failure section only

### ED Episode of Care Recommendations:

*P-EDACP amendments to the medication Guidelines* as per Expert Panel.

Prednisone/Prednisolone: start with 2mg/kg/day (day 1), followed by 1mg/kg/day(AM) for a minimum of 3 days therapy

**OR** Dexamethasone: 0.6mg/kg/day (q24h) for a maximum of 2 days total therapy.  
Max dose 12mg.

### In-Patient Episode of Care Recommendations:

- Oxygen Saturation
- Systemic Steroids
- Inhaled Corticosteroids

### Discharge Recommendations:

- Referral Recommendations: Referral to Asthma Specialist upon discharge and outpatient spirometry for individuals >6 yrs
- Discharge instructions and education: All ED and admitted patients with asthma (or suspected) to receive an Asthma Action Plan and referral to Asthma Education Provider

## P-EDACP PATHWAY TOOLS

- Paediatric Respiratory Assessment Measure (**PRAM**) – a validated measure to assess for 5 clinical signs for asthma
- Medication Guidelines
- Order sets for each of the 4-severity levels
- Patient Education Checklist
- Discharge Instructions (with integrated prescription)
- Medical Directive (optional) to authorize medical administration

Access to these Pathway Tools is available in the *Clinical Handbook for Paediatric Asthma*

To access the full Clinical Handbook for Paediatric Asthma, visit:

<https://www.pcmch.on.ca/clinical-handbook-for-paediatric-asthma/>

[https://health.gov.on.ca/en/pro/programs/ecfa/funding/hs\\_funding\\_qbp.aspx](https://health.gov.on.ca/en/pro/programs/ecfa/funding/hs_funding_qbp.aspx)

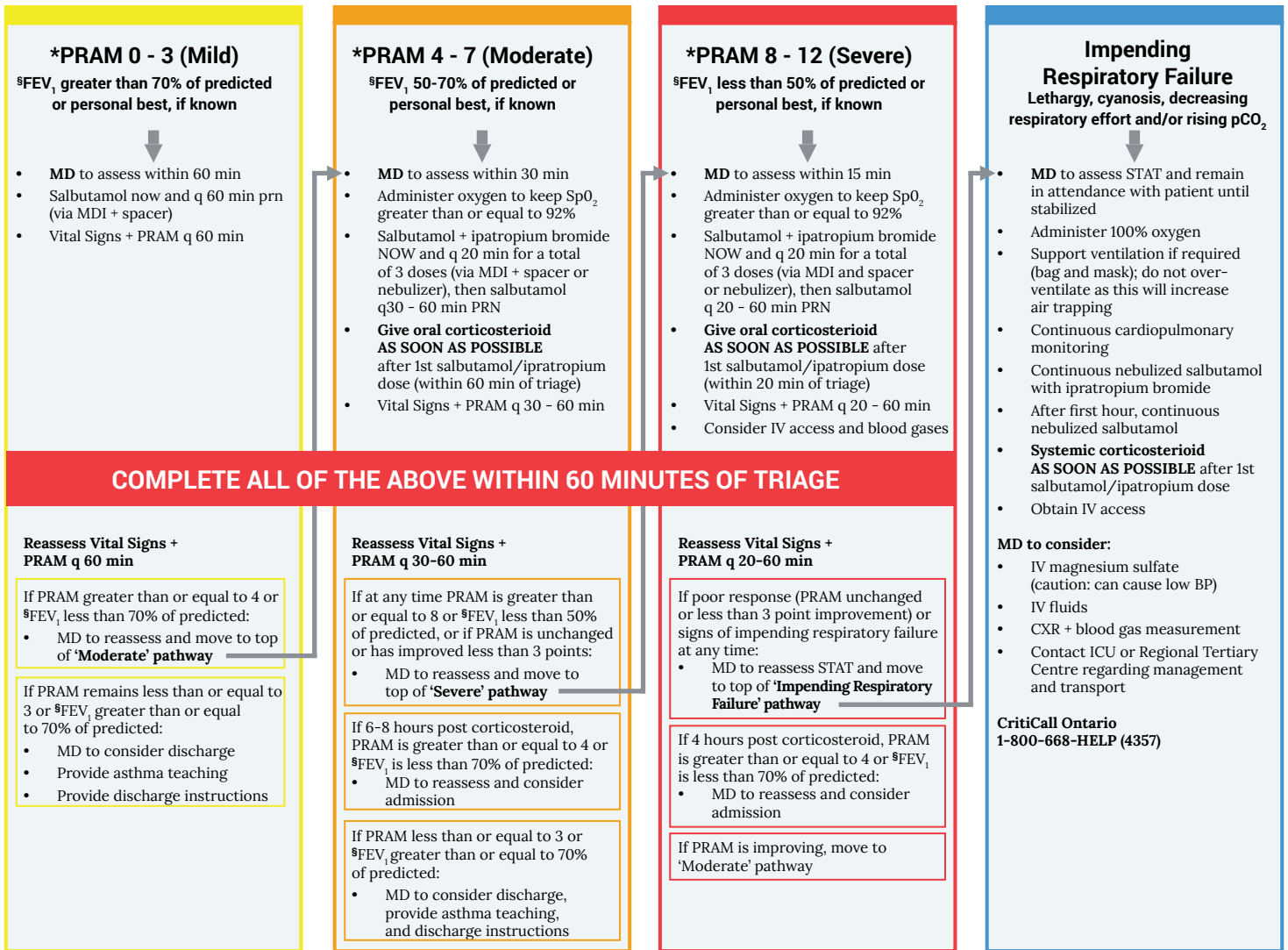


PCMCH and Lung Health Foundation would appreciate your feedback on the usability of this Clinical Handbook. [Click here](#) or scan the QR code:

# PAEDIATRIC ASTHMA CLINICAL PATHWAY

**Indications to start Paediatric Asthma Clinical Pathway:** Age 1-17 years with wheeze and/or cough **AND** asthma diagnosis and/or past history of wheeze.

**Physician assessment required prior to starting on clinical pathway if:** Any active chronic condition other than asthma **OR** Prior serious adverse reaction to salbutamol, ipratropium bromide, or oral corticosteroids **OR** Active chickenpox or suspected incubation of chickenpox **OR** Heart rate greater than or equal to 200 beats/min.



\* See below for PRAM scoring.  $\%FEV_1$  (or as second choice, PEF) should only be used in children aged 6 years and older with demonstrated reproducibility within 10% and when performed by healthcare personnel trained in spirometry. NOTE: FEV<sub>1</sub> results may be discordant with the severity level indicated by the PRAM (as clinical signs and lung function are different parameters); in case of discordance, the physician is invited to use their best judgement to decide which parameter to use to manage the child. Do not delay treatment to obtain FEV<sub>1</sub> and/or peak flow.

## MEDICATION GUIDELINES

BRONCHODILATORS	CORTICOSTEROIDS	PRAM SCORING TABLE																																																	
<p><b>Inhaled medication delivery by MDI and age appropriate valved spacer is preferred unless continuous oxygen is required because of increased efficiency and decreased side effects: tachycardia, tremor and decreased risk of transmission of respiratory infections.</b></p> <p><b>Metered Dose Inhaler (MDI)<sup>†</sup></b> via age appropriate spacer, allow 30 sec between puffs</p> <p><b>salbutamol (100 mcg/puff)</b>                      less than 20 kg: 5 puffs/dose                      greater than or equal to 20kg: 10 puffs/dose</p> <p><b>ipratropium bromide (20 mcg/puff)</b>                      3 puffs/dose, alternate each puff with salbutamol</p> <p><b>Wet Nebulization<sup>†</sup></b> driven by oxygen flow of 6-8 L/min via well-fitting mask</p> <p><b>salbutamol (5mg/mL solution or unit dose nebulizer)</b>                      less than 20 kg: dose = 2.5 mg; use 2.5 mg nebulizer OR                      0.5 mL of 5mg/mL solution in 3 - 4 mL NaCl 0.9%                      greater than or equal to 20 kg: dose = 5 mg; use 2 x 2.5 mg nebulizer OR                      5 mg nebulizer OR                      1 mL of 5 mg/mL solution in 3 - 4 mL NaCl 0.9%</p> <p><b>ipratropium bromide</b>                      all patients: 250 mcg, mixed with salbutamol</p>	<p><b>Oral route</b></p> <p><b>dexamethasone</b> 0.6 mg/kg/dose x 1 (max 12 mg/dose)  <b>prednisone/prednisolone</b> 2 mg/kg/dose x 1 (max 50 mg/dose)</p> <p><b>Parenteral route</b></p> <p><b>hydrocortisone sodium succinate</b>                      8mg/kg/dose IV or IM (max 400 mg/dose) x1, then 5mg/kg/dose (max 400 mg/dose) q6h</p> <p><b>MAGNESIUM SULFATE</b></p> <p><b>magnesium sulfate (requires cardiorespiratory monitoring and frequent BP checks)</b>                      50 mg/kg/dose IV x 1 (max 2 g/dose), give over 20-30 min</p>	<table border="1"> <thead> <tr> <th>Criteria</th> <th>Description</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td rowspan="3">O<sub>2</sub> saturation</td> <td>≥ 95%</td> <td>0</td> </tr> <tr> <td>92-94%</td> <td>1</td> </tr> <tr> <td>&lt; 92%</td> <td>2</td> </tr> <tr> <td rowspan="2">Suprasternal retraction</td> <td>Absent</td> <td>0</td> </tr> <tr> <td>Present</td> <td>2</td> </tr> <tr> <td rowspan="2">Scalene muscle contraction</td> <td>Absent</td> <td>0</td> </tr> <tr> <td>Present</td> <td>2</td> </tr> <tr> <td rowspan="4">Air entry *</td> <td>Normal</td> <td>0</td> </tr> <tr> <td>↓ at the base</td> <td>1</td> </tr> <tr> <td>↓ at the apex and the base</td> <td>2</td> </tr> <tr> <td>Minimal or absent</td> <td>3</td> </tr> <tr> <td rowspan="4">Wheezing †</td> <td>Absent</td> <td>0</td> </tr> <tr> <td>Expiratory only</td> <td>1</td> </tr> <tr> <td>Inspiratory (± expiratory)</td> <td>2</td> </tr> <tr> <td>Audible without stethoscope or silent chest (minimal or no air entry)</td> <td>3</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>PRAM score : (max. 12)</b></td> </tr> <tr> <td><b>Score</b></td> <td>0-3</td> <td>4-7</td> <td>8-12</td> </tr> <tr> <td><b>Severity</b></td> <td>Mild</td> <td>Moderate</td> <td>Severe</td> </tr> </tbody> </table>	Criteria	Description	Score	O <sub>2</sub> saturation	≥ 95%	0	92-94%	1	< 92%	2	Suprasternal retraction	Absent	0	Present	2	Scalene muscle contraction	Absent	0	Present	2	Air entry *	Normal	0	↓ at the base	1	↓ at the apex and the base	2	Minimal or absent	3	Wheezing †	Absent	0	Expiratory only	1	Inspiratory (± expiratory)	2	Audible without stethoscope or silent chest (minimal or no air entry)	3	<b>PRAM score : (max. 12)</b>			<b>Score</b>	0-3	4-7	8-12	<b>Severity</b>	Mild	Moderate	Severe
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<sup>†</sup>Small volume nebulizer is an acceptable alternate.

Disclaimer: This Clinical Pathway is not intended to set the standard of care applicable in any particular clinical situation. It is merely prepared as a guide to assist physicians, nurses, registered respiratory therapists and other healthcare providers, in deciding on the appropriate care required for a particular patient. At all times, physicians, nurses, registered respiratory therapists and other healthcare providers must exercise their independent clinical judgment, based on their knowledge, training and experience, taking into account the specific facts and circumstances of each patient, when deciding on the appropriate course of investigation and/or treatment to recommend in a particular clinical situation. Any reference throughout the Lung Health Foundation document to specific pharmaceutical products as examples does not imply endorsement of any of these products. The views expressed are the views of the authors and do not necessarily reflect those of the Government of Ontario. Copyright © 2021 Lung Health Foundation. All rights reserved.