Maritime Child Health
IWK Health

The Pediatric Pulse

Keep your finger on the pulse of what's happening in pediatric medicine

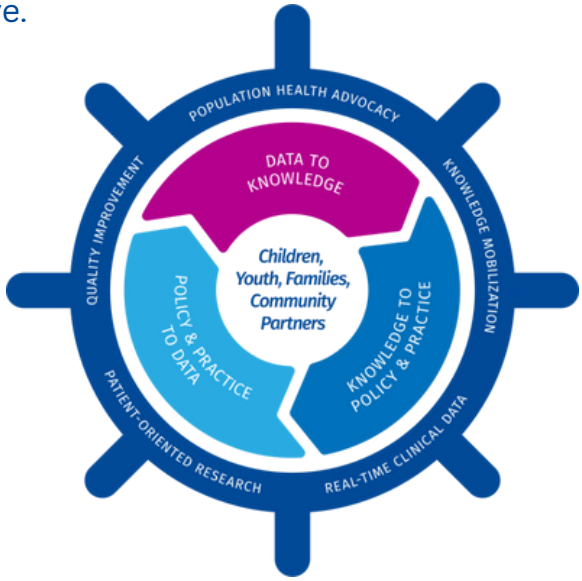
September 2025

Maritime Child Health

Welcome! This monthly pediatric newsletter is brought to you by Maritime Child Health. Maritime Child Health is a program through the IWK that brings together researchers, clinicians, decision-makers and patient partners from across the Maritimes to support optimal health and well-being for children and youth.

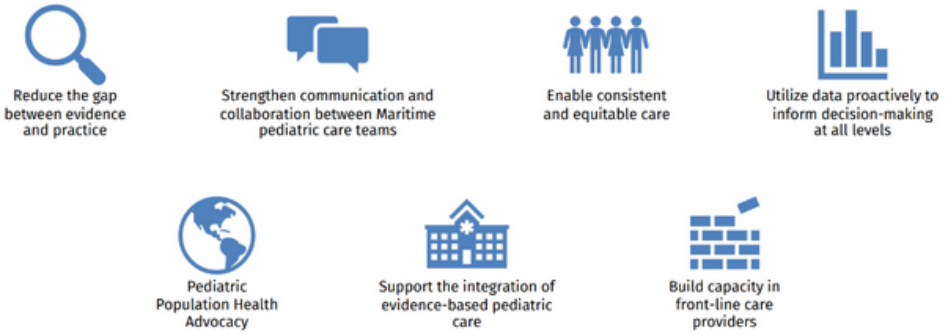
Using a **Learning Health System** approach, we strive to advance evidence-informed care that is responsive, equitable, accessible, and innovative.

Science, evidence, and care ultimately shape the patient experience. However, in the current state of the healthcare system, there are significant inefficiencies in the flow between these components which results in missed opportunities, waste, and harm. It is estimated that there is approximately a 17-year gap between when new research findings are produced and when they are translated into routine practice. A Learning Health System closes the loop by rapidly integrating evidence into healthcare systems.



Learning Cycles are the core process that drive Learning Health Systems. This involves analyzing data from patients, programs, and healthcare settings to generate knowledge about what works best and to identify gaps in care. This knowledge is fed back in real-time to inform policy and practice change.

Maritime Child Health Objectives



As part of our knowledge mobilization pillar and building capacity in front-line care providers, we have created this monthly pediatric newsletter that will highlight a different education topic each month. Make sure you sign up so you can keep your finger on the pulse of what's happening in pediatric medicine! This month is all about Asthma.

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Asthma

Asthma is a chronic inflammatory disorder of the airways characterized by paroxysmal “off and on” symptoms (dyspnea, tightness of the chest, wheeze and cough). The most common trigger for asthma exacerbations (flares) in children is a viral respiratory tract infection. Other triggers include exposure to allergens, air pollution (forest fires) and poor adherence to inhaled corticosteroids. Admissions tend to peak seasonally in spring and fall.

ASSESSMENT

- PRAM (Pediatric Respiratory Assessment Measure): A validated scoring tool to classify severity of asthma symptoms in children and youth
- The PRAM score is used to guide salbutamol dosing and weaning
- The PRAM is specific to asthma - it should not be used for bronchiolitis (or adults)

Score	0	1	2	3
Oxygen Saturation	At least 95 %	92-94%	Less than 92%	--
Air Entry	Normal	Decreased at Bases	Widespread Decrease	Absent/Minimal
Wheeze	Absent	Expiratory Only	Inspiratory & Expiratory	Audible Wheeze/Silent Chest
Suprasternal Retractions	Absent	--	Present	--
Scalene Contractions	Absent	--	Present	--

PRAM Pointers

- Oxygen saturation is measured on room air until stabilization of oximetry value for 1 minute. **Supplemental oxygen must be turned off.** If Sp02 falls below 92%, turn oxygen back on (maximum score of 2 has already been reached). NOTE: This threshold is different than your threshold to apply oxygen.
- Scalene contractions are a rare finding present only in ~10% of exacerbations (those that are most severe). This is a **palpable** assessment and cannot be visually assessed.

TREATMENT

- **Systemic (PO or IV) corticosteroids** are used for acute exacerbations to rapidly decrease airway inflammation. They should be given as soon as possible (they take 2-4 hours to start working). Early administration shortens ED stay and reduces hospital admissions. In patients able to tolerate PO, IV is no better than oral!

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- **Salbutamol** is a short-acting inhaled beta agonist (SABA) that induces airway smooth muscle relaxation (bronchodilator). It is used PRN to relieve acute airway symptoms. It is rapid-acting within 5-8 minutes, but effects wear off quickly. Salbutamol doesn't treat the underlying problem (inflammation), so it is used in combination with corticosteroids.
- **Ipratropium** is a bronchodilator, but it is not routinely used for hospital inpatients (or outpatients). It is usually only used in the ED, but may be given as (a single back-to-back series of 3 doses) to inpatients with severe symptoms (e.g. PRAM 8 or more).
- **Magnesium sulfate (IV)** may also be considered for inpatients with a PRAM of 8 or more, however close cardiac (BP) monitoring is required for hypotension.
- **Inhaled corticosteroids (ICS)** should be continued or initiated during the inpatient stay, even for patients getting systemic corticosteroids. ICS control chronic inflammation and can prevent readmissions.
- **Metered-dose inhalers (MDIs)** are almost always preferred over nebules. All doses of MDI are to be given using an appropriately sized spacer (+/- facemask).

INPATIENT MANAGEMENT

- Supplemental oxygen as needed to keep saturations above 91% . Some providers may order a threshold of above 90% (and that's OK too!)
- Initial PRAM q__h is ordered by the physician. This is an **assessment** frequency, NOT a **treatment** frequency!
- **Initially, salbutamol is given at weight-based (treatment) doses based on the PRAM :**
  - If PRAM 0-3: DO NOT give salbutamol (wean); repeat PRAM at the **next** interval (from the **last dose** of salbutamol)
    - Intervals = q30min -> q1h -> q90min -> q2h -> q3h -> q4h
  - If PRAM 4-7: give salbutamol; repeat PRAM in 15 minutes (post). Continue assessments at this frequency. Calculate the time since the last dose of salbutamol. This is your new PRAM assessment frequency!
  - If PRAM 8+: give salbutamol STAT & call MD
- **BUT**, once the salbutamol frequency is at q4h (i.e. it's been 4h since the last dose of salbutamol):
  - If PRAM 0-3: give salbutamol 2 puffs & continue 2 puffs q4h until discharge (as long as PRAM remains 0-3). This is considered a maintenance dose!
  - If at any point PRAM is 4 or more, return to weight-based (treatment) doses at q3h PRAM assessments

DISCHARGE

- Continue salbutamol 2 puffs q4h x 24h and daily ICS
- Asthma Action Plan (see next page!)
- Patient/family education is important (9 out of 10 patients use their inhaler wrong)!

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For Emergency Department management - see TREKK's Bottomline Recommendations on Asthma Exacerbation and algorithm for Pediatric Severe Asthma Exacerbation.

Bottomline Recommendations

Severe Asthma Algorithm

Asthma Action Plan

PEDIATRIC ASTHMA ACTION PLAN for _____

Prepared by: _____
Date: _____

GREEN ZONE
GOING WELL: Asthma is controlled

IF your child has ALL* of these:

- No symptoms at night
- No signs of a cold or flu
- Can do usual activities
- Uses reliever 2 times a week or less
- Has daytime symptoms 2 times a week or less
- Does not miss school or daycare due to asthma

If your child does not fit the above, your provider* may need to adjust your daily medications

INSTRUCTIONS:

Give controller medication(s) EVERY DAY:
_____ (_____ puffer) __ puff(s) __ time(s) daily
_____ (_____ puffer) __ puff(s) __ time(s) daily
_____ __ time(s) daily

Give reliever IF NEEDED for symptoms:
_____ (_____ puffer) ____ puff(s) every 4 hours

- Prevent asthma symptoms:
  - Avoid triggers
  - Wash hands
  - Get vaccines

Other:

YELLOW ZONE
CAUTION: Step Up Medication

IF your child has ANY of these:

- A cold or flu
- Tight chest, cough or is short of breath
- Trouble playing or doing sports
- Missing school or daycare due to asthma
- Trouble sleeping due to cough or breathing
- Using reliever 3 or more times in a week
- Using reliever more than 2 times per day

INSTRUCTIONS:

- Give reliever (_____ puffer) ____ puffs **every 4 hours IF NEEDED for symptoms**
- Continue to take controller medication(s)
- If reliever (_____ puffer) is needed every 4 hours for more than **2-3 days** OR if symptoms don't go away in **2-3 days**, call your asthma care provider*

Other:

RED ZONE
STOP: Get Help Now

IF your child has ANY of these:

- Non-stop cough
- Wheezing you can hear
- Can't talk due to breathing
- Skin sucking in at throat or between ribs
- Reliever doesn't work or is needed again before **3 hours**
- Blue or grayish skin
- Looks limp

GO TO THE NEAREST EMERGENCY ROOM NOW

INSTRUCTIONS:

- Stay calm
- Give reliever (_____ puffer) **5 puffs every 10-20 minutes on your way to the hospital**
- Do not wait to go to the hospital
- Bring this asthma action plan with you to the emergency room

Other:

Asthma information in 14 languages courtesy of UNIVERSITY OF CALGARY

*If you do not have an asthma care provider, call 811 for help

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Always remain on your controller medication(s), even if you are having no symptoms of asthma
Use a spacer with every dose of inhaler (if you use metered-dose (pump) inhalers)
Return empty inhalers to your local pharmacy for disposal

DISCHARGE INSTRUCTIONS:

To treat the current asthma attack, do the following:

- ☑ Watch for RED ZONE signs
- ☑ Take reliever (_____ puffer) ____ **puffs every 4 hours for _____ day(s) or until better**
- ☑ Continue to take controller medication(s)
- ☐ Give dexamethasone _____ mg on:
  _____ (date) at _____ (time)
- ☐ Make an appointment with your doctor or asthma care provider within _____ weeks

HOW TO USE YOUR INHALER (and spacer):

- Remove the inhaler cover
- Shake the inhaler for 5 seconds
- If your inhaler is new, has not been used in two weeks or has been dropped, spray one or two puffs into the air (away from your face)
- Insert the inhaler into the flat end of the spacer
- Place the spacer over the mouth and nose (mask) or in the mouth (no mask). Make sure there is a good seal
- Press down the top of the canister to release one puff of the medicine
- Take 5 breaths (in and out)
- Repeat these steps for each puff of medicine prescribed
- Wash your spacer once a week in the sink with warm soapy water. Rinse clean and air dry

Asthma Triggers

These are common asthma triggers. Know your triggers and try your best to avoid them.

COLDS are the most common trigger. Wash hands often. Follow Yellow Zone at the first sign of a cold.

SMOKING or being in a house or car where someone else smokes. Don't smoke and encourage your parents to STOP smoking. Even if they smoke outside, the smoke in their clothes and hair can trigger your asthma.

AIR POLLUTION including strong scents. Avoid fumes, chemicals, and scented products.

PETS with fur or feathers. If you have pets, bathe them regularly and keep them out of bedrooms.

POLLEN and other seasonal allergies. Close windows during pollen season (spring and fall). Avoid going outside on high pollen days and avoid freshly cut grass. Air conditioning helps.

DUST MITES. Wash bed sheets in hot water. Vacuum and dust often. Cover pillows and mattresses with dust mite resistant covers.

MOLD. Keep bathrooms and basements dry and clean up visible mold. Stay away from decomposing leaves in the fall.

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ALWAYS have a spare reliever inhaler on hand, especially if you will be around triggers

Written by: Madi Lewis, RN, BScN. Clinical Practice Leader, Pediatrics. Maritime Child Health - IWK
Reviewed by: Jaime McDonald, PharmD