

Welcome to the new series of pediatric newsletter where emerging evidence meets everyday clinical practice. From the growing impact of air pollution on pediatric respiratory infections, to evolving insights into gut microbiota, allergic disease, and rational symptom management, this issue highlights key factors shaping child health today. We also spotlight practical evidence on commonly used therapies and align clinical decision-making with established guidelines supporting informed, safe, and effective care for children across diverse practice settings.

GLOBAL NEWS

Air Pollution: An Overlooked Driver of Pediatric URTIs



URTIs account for the majority of pediatric emergency visits, and growing evidence points to air pollution as a key contributor. In a 5-year analysis of over 2,500 children, higher emergency visits for URTIs closely tracked periods of peak pollution. After adjusting for seasonal factors and infections, carbon monoxide and sulfur dioxide emerged as independent risk factors, underscoring that poor air quality directly impacts children's respiratory health. Improving air quality may be a critical step in reducing the pediatric URTI burden.

Key Numbers at a Glance

- 81% of pediatric emergency outpatient visits are due to URTIs
- 12% of global deaths are attributed to respiratory diseases
- 2,572 children with URTI analyzed over a 5-year period
- Carbon monoxide independently increased URTI risk by 72%

Abbreviation: URTI: Upper respiratory tract infection
Reference: Wawryk-Gawda E, Miga-Órczykowska N, Matusiak J, et al. Air pollution exposure and the burden of pediatric upper respiratory tract infections in emergency departments: a retrospective time-series study. *Eur J Pediatr.* 2025 Nov 13;184(12):753.

Myth vs. Fact: Busting Myths Related to Childhood Allergies

Myths	Vs	Facts
Myth 1: Allergic diseases begin when symptoms appear	01	Fact 1: Immune programming starts in utero and during the first 1000 days. Gut microbiome alterations often precede eczema, food allergy, or wheeze.
Myth 2: Atopic dermatitis is only a skin disease	02	Fact 2: Atopic dermatitis is frequently the first step of the atopic march, reflecting systemic immune and barrier dysfunction—often linked to early gut dysbiosis.
Myth 3: All probiotics are equally effective in allergic children	03	Fact 3: Probiotic effects are strain-specific and age-dependent. Some strains improve symptoms (e.g., atopic dermatitis, allergic rhinitis), but prevention evidence remains limited.
Myth 4: Normal gut microbiota diversity rules out future allergy risk	04	Fact 4: Specific microbial signatures matter more than overall diversity, especially low early-life <i>Bifidobacterium</i> , <i>Lactobacillus</i> , and <i>Faecalibacterium</i> .
Myth 5: Food allergy-related dysbiosis is caused by elimination diets	05	Fact 5: Microbiota changes often reverse once tolerance develops, suggesting that the allergy drives dysbiosis, not just dietary restriction.

Reference: Ke H, Yao H, Wei P. Advances in research on gut microbiota and allergic diseases in children. *Curr Res Microb Sci.* 2025 Feb 18;100362.

Indoor Air Quality: An Invisible Risk for Children's Lungs

- 78% of homes had indoor PM_{2.5} levels above WHO limits
- 62% exceeded recommended CO₂ levels, indicating poor ventilation
- 61% of school-aged children (6–12 years) reported ≥ 1 respiratory symptom
- Most common symptoms:
 - o Nasal congestion: 41%
 - o Cough: 38%
- High PM_{2.5} exposure increased respiratory symptoms nearly 3-fold
- Elevated CO₂ doubled the risk of wheezing / breathlessness

Why This Matters in Practice

Children spend most of their time indoors often in poorly ventilated spaces. Indoors, air pollution is a modifiable yet overlooked trigger of respiratory symptoms that should be actively screened for and addressed

Expert Opinion: Pediatric Use of Chlorpheniramine + Phenylephrine



Across diverse pediatric practices in India, clinicians consistently report that the fixed-dose combination of chlorpheniramine maleate and phenylephrine is effective, well tolerated, and clinically reliable for managing symptoms of the common cold and allergic rhinitis in children.

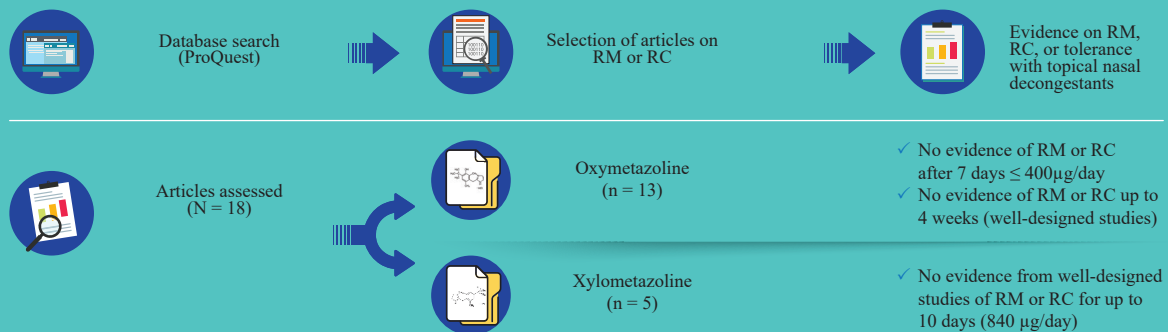
Key clinical insights:

- Provides rapid relief of rhinorrhea, sneezing, and nasal congestion
- Anticholinergic action of chlorpheniramine effectively controls excessive nasal secretions and allergic symptoms
- Phenylephrine relieves nasal blockage via vasoconstriction of inflamed nasal mucosa
- Low-dose formulation offers a favorable safety and tolerability profile when used judiciously
- Ideal for night-time use when symptoms can interfere with sleep
- Symptomatic improvement commonly observed within 3–5 days

When prescribed at recommended doses, the chlorpheniramine maleate-phenylephrine combination remains a trusted option for short term symptomatic relief in pediatric upper respiratory tract infections.

Reference: Jog P, Kumar YS, Bhadra B. Chlorpheniramine and phenylephrine in the management of common cold and allergic rhinitis in pediatric patients. *Int J Sci Study*. 2025 Feb;12(11).

Revisiting Rhinitis Medicamentosa: Examining the Evidence on Topical Nasal Decongestants



Well-designed clinical studies showed no evidence of RM, RC, or tolerance with short-term use of oxymetazoline or xylometazoline

Some people exceed the labeled duration of use; if RC or RM is suspected, it is manageable with appropriate care

Strategies to manage RC or RM



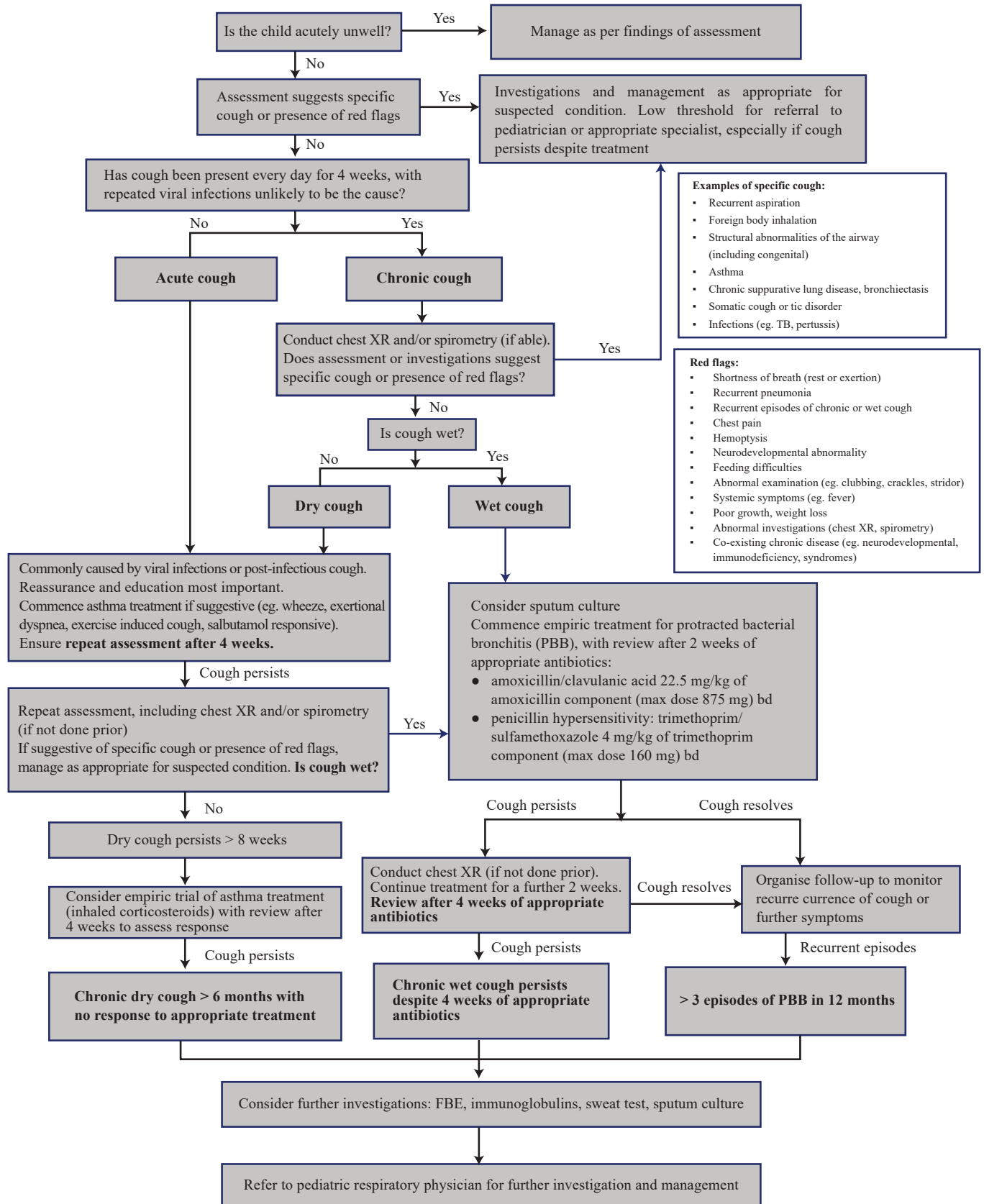
“Xylometazoline and oxymetazoline are highly effective at rapidly improving nasal congestion & have well-established safety profiles. Well-designed studies yielded no evidence of RM, RC or tolerance when used short-term at commonly recommended dosing and frequency.”



Abbreviations: RM: Rhinitis medicamentosa; RC: Rebound congestion

Reference: Hagen M, Varbiro G, Montanari E, et al. Revisiting rhinitis medicamentosa: examining the evidence on topical nasal decongestants. *J Pharm Pract*. 2025 Jan 13:08971900251350510.

A Stepwise Approach on the Diagnosis and Management of Cough in Children



Reference: Royal Children's Hospital Melbourne. Cough [Internet]. [cited 2026 Jan 12]. Available from: https://www.rch.org.au/clinicalguide/guideline_index/cough/

Role of Calcium in the Foundation Years: From Infancy to Adolescence

From Infancy to Adolescence: Why Early Calcium Adequacy Matters

Calcium plays a central role in skeletal development, particularly during the foundation years from infancy through adolescence when rapid bone growth and mineral accretion occur. Inadequate calcium intake during these critical windows may compromise peak bone mass, increasing long-term risks of fractures, rickets, and osteoporosis.

Calcium in Early Life: High Demand, High Efficiency

Infancy represents the most calcium-efficient phase of life. Balance studies demonstrate that infants retain, on average, ~40% of consumed calcium, reflecting intense skeletal mineralization during the first six months of life. Importantly, calcium absorption during this period is influenced more by bioavailability and dietary matrix than by absolute intake alone. Isotopic studies suggest that calcium intakes in the range of 240–400 mg/day support optimal absorption with minimal losses in infants.

Transition Phase: Complementary Feeding and Calcium Loss

During this phase, dietary factors rather than physiological demand become major determinants of calcium balance. Suboptimal retention during late infancy and toddlerhood may impair bone mineral accrual at a time when linear growth remains rapid.

Early Childhood: Sustaining Positive Calcium Balance

Between 2 and 4 years of age, calcium absorption efficiency gradually declines compared with infancy, increasing reliance on adequate intake to maintain positive calcium balance. Balance and isotope studies underscore the role of supportive nutrients including vitamin D and phosphorus in sustaining calcium retention during this period. Failure to maintain positive calcium balance in early childhood may limit bone mineral content before the onset of later growth spurts.

Adolescence: Peak Bone Mass Is Built, Not Recovered

Although adolescence represents a second major window for bone accretion, evidence suggests that calcium deficits accumulated during early life are difficult to fully compensate later.

Peak bone mass is the cumulative result of calcium adequacy across infancy, childhood, adolescence—not a single life stage.

Reference: Shertukde SP, Cahoon DS, Prado B, et al. Calcium intake and metabolism in infants and young children: a systematic review of balance studies for supporting the development of calcium requirements. *Adv Nutr*. 2022 Oct 2;13(5):1529-53.

Important:

- Calcium requirements in children are **dynamic and age-specific**, driven by growth velocity and absorption efficiency.
- **Bioavailability and dietary composition** strongly influence calcium retention, especially in infancy and early childhood.
- Early calcium inadequacy may have **irreversible consequences** on peak bone mass.
- Optimizing calcium nutrition during the foundation years is a **long-term investment in skeletal health**.



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Pediatric Orthopaedic
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26 February–01 March 2026; Chandigarh, India

Theme: Pediatric orthopedics and clinical updates for child health practitioners

RCPCH Conference 2026

11 May–13 May 2026; Birmingham, England and online

Theme: Celebrating RCPCH at 30: Reflecting on the Past, Inspiring the Future