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Fever Management in **Pediatric Population**

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Current Antipyretics and their Safety in Children



Dr. Kheya Ghosh Uttam

MBBS, DCH, DNB (Pediatrics)

Associate Professor

Institute of Child Health, Kolkata

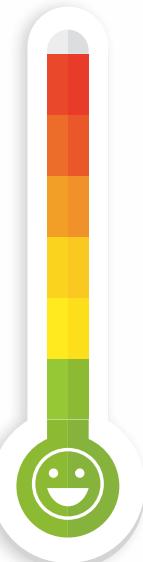
Woodlands Multispeciality Hospital, Kolkata

Overview

- Fever itself is not a disease but rather a symptom of an underlying condition
- Most pediatricians consider a temperature above 100.4°F (38°C) as a sign of a fever.

Importance of managing fever

- Reduce discomfort and improve overall well-being
- Prevent complications associated with high fever
- Promote adequate hydration and rest



Importance of antipyretics

- To make children more comfortable and to relieve the parents' anxiety
- Provide symptomatic relief without treating underlying cause of fever
- Appropriate use of antipyretics is a crucial aspect of fever management in children

Paracetamol: Commonly used first-line antipyretic

- **Paracetamol:** Considered as first-line choice for the treatment of fever, according to national and international guidelines and recommendations
- Included in the List of Essential Medicines for Children of the World Health Organization (WHO).
- Preferred over ibuprofen because:
 - Ibuprofen diminishes the protective effect of prostaglandins in the stomach
 - When used for prolonged periods, ibuprofen may result in gastritis

Parameters	Paracetamol	Ibuprofen
Dosing interval	4 hours	6 hours
Safety considerations relevant to specific patient groups	Preferred in children with gastrointestinal infection	Risk of gastrointestinal irritation
	Preferred in patients at high risk of gastrointestinal bleeding	Risk of gastrointestinal bleeding: Potentially serious
	Preferred in children with chicken pox	Risk of severe cutaneous complications in patients with varicella or herpes zoster
	Preferred in children who are dehydrated or with pre-existing renal disease or multiorgan failure	Risk of renal toxicity

Mechanism of action of paracetamol

Inhibits the production of prostaglandins in the central nervous system

Prostaglandins being vital in regulating body temperature

No significant inhibition of prostaglandin outside CNS

Helps to lower fever and alleviate associated symptoms

Paracetamol is not associated with side-effects as seen with aspirin and other NSAIDs, such as platelet dysfunction and gastrointestinal bleeding

Recommended dosage

- **In children:** 10 mg/kg/dose
- Approved in pediatric patients from birth including those with dehydration
- **Age wise dose of paracetamol syrup (120 mg/5 ml) in infants:** 10 mg/kg body weight
- Recommended doses and frequency of administration of paracetamol syrup (120 mg/5 ml) as per age is as follows:



Age group	Dose	When
6 weeks - 6 months	2.5 mL	
6 - 24 months	5 mL	In case of fever*, following vaccination and 4 – 6 hourly thereafter, if needed
2 - 4 years	7.5 mL	
4 - 6 years	10 mL	

Paracetamol is not recommended in children weighing <2 kg

It is preferred to consider weight rather than age for deciding the paracetamol dosage

Maximum four doses in 24 hours with a gap of at least four hours between two doses

*Axillary temperature > 38° C/100.4°F or child feels hot to touch.

Safety profile and safety tips

- To ensure the safe use of paracetamol in children, it is crucial to follow these safety tips:
 - Use appropriate measuring devices, such as oral syringes or dosing cups, to ensure accurate dosing
 - Do not exceed the recommended maximum daily dose of paracetamol
 - Educate parents and caregivers about the importance of reading and following product labels and instructions.

Fever Not Responding to Front-Line Antipyretics



Dr. Balasubramanian Sundaram

MBBS, MD, Diploma in Child Health (DCH)
Pediatrician
Chennai

Overview

An ideal drug for symptomatic relief should fulfill below criteria for fever management:

- Have a short duration of action, allowing for frequent administration based on the patient's needs
- Since fever can often rise within 4 hours of the previous dose, a short-acting antipyretic is recommended
- Short-acting antipyretics can be safely repeated every 4-6 hours, ensuring timely and effective control of fever
- Paracetamol is an excellent choice in this regard as it aligns perfectly with these requirements.

Paracetamol remains the front-line antipyretic

- Ibuprofen may lead to dyspepsia, nausea, vomiting and at times gastrointestinal bleeding

- Nimesulide has a disadvantage of long duration of action and small therapeutic window, increasing the risk of easy overdosing, leading to adverse effects

- Considering its similar effectiveness in reducing fever but better tolerability profile, paracetamol should be the first drug of choice as an antipyretic when used appropriately with age-adapted formulations

- Paracetamol:
 - Has wide therapeutic window
 - Has short duration of action
 - Can be repeated every 4-6 hourly
 - Hypersensitivity is very rare
 - Can be considered safe in right dose even in liver diseases.



Refractory fever

- In this the patient's fever does not adequately respond to frontline antipyretics
- Defined as a poor response to an antipyretic agent or fever recurrence before the next pharmacological dose
- Associated with parental panic and anxiety in addition to discomfort to the child.



Fever control not responding to front-line antipyretics

Fever control not responding to front-line antipyretics can present a challenge in patient management

Understanding the causes, conducting a thorough evaluation, and implementing appropriate management strategies are crucial in such cases

The management approach involves addressing the specific cause, considering add-on antipyretics, and utilizing supportive measures like tepid sponging

Management considerations

- During the febrile process, dehydration occurs; hence adequate hydration should be maintained with fluid intake
- Identify and treat the underlying causes
- If a patient does not respond to the front line antipyretic, such as paracetamol, the addition of another class of antipyretic medication may be suggested
- For paracetamol, dosing not to exceed 75 mg/kg/day
- Supportive measures should be used to enhance fever control
- Tepid sponging with water at 28–30°C can be done to reduce the temperature after medication is administered
- Use of ice-cold water for sponging is not recommended in fever
- However, tepid sponging should not replace the use of appropriate antipyretic medications and is typically used as an adjunctive measure.



Parents and caregivers counseling

- It is essential to counsel parents about various causes of fever and also reassure them since most often fever is a self limiting symptom which by itself is mostly benign
- Adequate information must be provided to them on the correct antipyretic therapy particularly stressing on the need to give the right dosage
- Safety & preference to paracetamol for symptomatic treatment of fever safely must be adequately stressed

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The Tasty Treat... Meant...
in Pyrexia...



P-100

Drops
Paracetamol 100 mg/ml

P-120

Suspension
Paracetamol 120 mg/5ml

P-250

Susp/Tabs
Paracetamol 250 mg

P-500

Susp/Tabs
Paracetamol 500 mg

P-650

Tabs
Paracetamol 650 mg

P-250 MF

Suspension
Mefenamic Acid 100 mg & Paracetamol 250 mg/5ml

Offers
Micronized
Paracetamol



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SIDCO Garment Complex, III Floor, Guindy, Chennai - 600 032 www.apexlab.com

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