Treatment of pediatric fever
Are acetaminophen and ibuprofen equivalent?

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Clinical question
Is acetaminophen or ibuprofen superior for the treatment of pediatric fever?

Evidence
A meta-analysis and recent randomized controlled trial provide some guidance.

• Meta-analysis of 10 trials (N = 1078) of ibuprofen (5 to 10 mg/kg) versus acetaminophen (10 to 15 mg/kg): ibuprofen was superior at 2, 4, and 6 hours; and at 4 to 6 hours, approximately 15% more ibuprofen patients had fever reduction (number needed to treat = 7).

• PITCH randomized controlled trial (N = 156, aged 6 months to 6 years) comparing ibuprofen (10 mg/kg every 6 to 8 hours), acetaminophen (15 mg/kg every 4 to 6 hours), or a combination of both: - For time without fever in the first 4 hours, the combination was superior to acetaminophen by 55.3 minutes (P < .001) but was not superior to ibuprofen.
  - Ibuprofen and the combination cleared fever faster.
  - The combination reduced fever time in the first 24 hours (acetaminophen 4.4 hours more [P < .001], ibuprofen 2.5 hours more [P = .008]).
  - Overdose was reported in 33 children (21%).

- The authors recommended ibuprofen:
  — ibuprofen was superior to acetaminophen;
  — the combination was only slightly better on a few outcomes than ibuprofen alone; and
  — there was a possible risk of excess dosing with the combination.

Context
Some debate surrounds the use of antipyretics:

• There is no evidence that fever itself is harmful (theorized that it might be part of the immune response).³

• Antipyretics do not seem to prevent febrile seizures.⁴

• There is no evidence that treating fever in mild infections is harmful (unless overdosed).

• If fever is treated, the goal should likely be comfort⁵ (although no studies have investigated comfort in fever).

Adverse effects of ibuprofen compared with acetaminophen:
• asthma—no increased risk or perhaps slightly lower⁶ (possible slight increase with acetaminophen⁷);
• Reye syndrome—no increased risk⁸,⁹
• gastrointestinal and renal effects—no evidence of risk,¹⁰ but the Canadian Paediatric Society advises against ibuprofen if a child is not “drinking reasonably well”¹¹; and
• systemic reaction—no evidence of risk.⁷

Bottom line
The appropriateness of treating pediatric fever is controversial and should be discussed with parents. If clinicians are going to recommend a treatment, they should know that ibuprofen offers superior fever reduction with no increase in adverse events.

Implementation
Providing pamphlets about fever management can reduce parental anxiety and decrease emergency visits.¹⁰ Although the evidence for patient information leaflets is generally poor,¹¹ pamphlets about pediatric infections seem to work if they are reviewed during the clinical encounter.¹² Therefore, reviewing the Canadian Paediatric Society handout² with parents to explain fever management might be helpful, but the pamphlet could be altered to encourage ibuprofen use with appropriate dosing regimens.

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References

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