Episode Book

EPISODE #6441

Why the Body Sets Its Own Thermostat High

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SYNOPSIS

A fever is not an uncontrolled overheat, but a deliberate adjustment of the brain's internal thermostat. This episode examines the biological purpose of elevated body temperatures, exploring how heat sharpens immune defenses while levying a steep metabolic cost. From pediatric intensive care studies to clinical trials in Malawi, the discussion untangles why standard guidelines advise reducing fevers even when research shows that treating them rarely improves or worsens illness outcomes.

TRANSCRIPT



Corn

Forty point four. That's the number that turned an ordinary Tuesday night in that flat into a ninety-minute vigil.



Herman

That's a number with real gravity, yes.



Corn

Hannah sent us this one. Ezra started daycare about two months ago, and since then he's been sick more or less continuously, which anyone who's had a kid in daycare will recognize as the toll booth at the entrance. Most of the fevers have been low-grade, but last night hit around forty point three, forty point four, and they got him checked remotely through Tyto, and the doctor's read was reassuring, everything looked fine, but the instruction that came home was bring the fever down. And Hannah's actual question isn't "what number is dangerous." It's "what is the fever for?" She's heard the crunchy version, that fever is part of the immune response and you shouldn't reflexively suppress it, and she's heard the standard version, paracetamol, bring it down, and she wants to know why they sound like opposite instructions.



Herman

It's a good place to get stuck, because both sides sound like they know what they're talking about, and they sort of do. The plan today: mechanism first, what's physically happening when a body runs a fever, then what the evidence actually says about treating versus not treating, and then the part that matters most at two in the morning, which is what to look at besides the number.



Corn

Start with the mechanism, because once you see it, half the fear evaporates on contact.



Herman

The one thing to nail down before anything else: a fever is not the body overheating. It's the brain resetting its own thermostat upward. The hypothalamus, which regulates temperature the way a house thermostat does, deliberately moves the set point up. And



Herman (continued)

once you hear that, everything you've observed at a sickbed makes sense in reverse.



Corn

The chills. The kid at thirty-nine degrees pulling the blanket tighter.



Herman

That's the tell. A child shivering under a blanket at thirty-nine is not cold. Their hypothalamus has decided the body should be at thirty-nine, and the shivering is the engine getting it there. Blood vessels constrict at the periphery to conserve heat, the muscles fire to generate it. The chills aren't a symptom of something going wrong. They're the furnace running.



Corn

So the kid feels cold because the body is forty percent of the way to a target it chose. It's like being homesick for a place you've never been.



Herman

That's... actually not a bad compression of it, no. The contrast that matters is with hyperthermia, which is the actual emergency version of being hot. In hyperthermia the set point hasn't moved, heat is just coming in faster than the body can dump it, a locked car in August, or heat production outrunning heat loss, malignant hyperthermia, certain overdoses. There the cooling is the treatment. In fever, cooling the body does nothing to the set point, which is why a tepid bath on a feverish toddler is fighting the thermostat. The body will simply shiver harder to defend the number its brain picked.



Corn

And the number itself, the one that made Hannah's stomach drop. Forty point four. What's the ceiling on this?



Herman

Fevers rarely exceed forty-one, forty-two. That's a hard-won ceiling, the body defends it. And there's no single agreed normal temperature either. Published upper limits of normal run from about thirty-seven point two to thirty-eight point three, depending on who you read and where the thermometer was. So the distance between "normal" and "Ezra's night" is smaller than the fear suggests.



Corn

Meaning forty point four is high on the fear scale and mid-range on the biology scale.



Herman

That's the tension in one line, yes. Whether the fear is calibrated is exactly what we're here to work out.



Corn

Walk me up the molecular chain, then. Something triggers it, and the thermostat moves. What's in between?



Herman

It's a chain of messengers. Something pyrogenic shows up, a virus, a bacterium, a bit of bacterial cell wall, and immune cells that detect it release signaling proteins called cytokines. The cytokines trigger prostaglandin production, and prostaglandins are what actually talk to the hypothalamus and move the set point. Donoso and Arriagada, who wrote a review of fever in critically ill children, describe it as a biological evolutionary response of normal adaptive character, from the host, to physiological stress. Which is a careful way of saying: this is not a malfunction. This is the body doing a thing it has done for hundreds of millions of years, on purpose.



Corn

You said careful. Where's the hedge in that sentence?



Herman

In the honest part, which is that the exact molecular mechanisms of how fever gets initiated are still not fully pinned down. The broad strokes are settled, the fine grain is still being argued about in journals. But "regulated, deliberate, ancient" is not in dispute.



Corn

Fine. Let's take the crunchy case at full strength, because Hannah's framing deserves it. The claim: higher temperature helps the body fight infection, so suppressing it reflexively is a mistake. Best version of that argument.



Herman

The best version is Wrotek and colleagues, a paper called "Let Fever Do Its Job," and the sentence that carries it is that the heat of fever augments the performance of immune cells, induces stress on pathogens and infected cells directly, and combines with other stressors to provide a nonspecific immune defense. Three separate mechanisms in one sentence.



Corn

Unpack them, because they're not the same claim.



Herman

They're not. First, immune cells perform better warm. Lymphocyte trafficking, neutrophil function, antibody production, several of these run measurably faster at febrile temperatures in the lab. Second, the pathogens themselves feel it. Many bacteria and viruses replicate best at thirty-seven, and a degree or two of extra heat is a genuine stress on them, on top of the stress of being attacked. And third, the interesting one, the stress-stacking. Fever combines with everything else the body is doing. The pathogen is being attacked by the immune system and simultaneously running a fever it didn't evolve to operate at. It's not that heat is a weapon on its own. It's that heat makes every other weapon slightly sharper.



Corn

My digestion works on the same principle, only slower and with more leaves.



Herman

I'll take that as an endorsement of slow processes generally. The caveat I have to attach, though, and it's a real one: this is mostly mechanistic and evolutionary reasoning. Lab measurements, first principles, comparative immunology. It is not trial data. Nobody has demonstrated in a randomized trial that a child whose fever you left alone clears their virus faster than a child whose fever you brought down. The mechanism is real, and the magnitude in a living toddler is not established.



Corn

Which is a strange place to stand. The defense is real, and nobody's shown that switching it off costs anything.



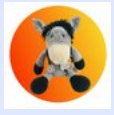
Herman

That's the strangest sentence in this whole literature, and it's worth saying slowly. The best available summary of the evidence on treating fever is that while fever evolved as a defense mechanism, treating it does not appear to improve or worsen outcomes. Both halves at once.



Corn

My entire worldview in one sentence, and it's about pediatrics.



Herman

You'll survive. Now the frame that I think reconciles the two camps, because it's the one nobody puts in the parenting forums. Fever has a metabolic cost. Peters and colleagues open their paper with six words I keep coming back to: fever improves pathogen control at a significant metabolic cost. Every degree of temperature costs oxygen and calories. The immune system at full throttle is expensive. Your heart rate goes up, your breathing goes up, you burn through energy reserves.



Corn

And a toddler's reserves are...



Herman

Small. That's exactly it. In a previously healthy, well-fed toddler, the cost is affordable. The body has margin, it pays the bill, it fights the fight. In a child who's already struggling, sepsis, intensive care, severe malaria, the same physiology that helps a robust host can tip a fragile one over the edge. The energy budget is already spent. That's why "let it run" is simultaneously the safest advice for a healthy toddler and the most dangerous advice in a pediatric ICU, and why the ICU literature reads like it comes from a different planet. It's the same physiology describing different regions of the same curve.



Corn

So Cajanding's line, the ICU review, the one about beneficial for host defense and survival but maladaptive and harmful if left unabated. That's not a contradiction, that's a budget statement.



Herman

Both halves are true at once, and which half dominates depends on who's paying. That's the reconciliation Hannah's looking for. The crunchy camp and the doctor on the Tyto call are both describing real physiology. They're just standing at different points on the income curve.



Corn

There's a threshold dispute buried in there, though. It's not just "treat or never treat."



Herman

Right, and this is where the pro-fever people are actually more specific than they get credit for. Singh, Kishore and Singh wrote a commentary objecting that guidelines recommending antipyresis at thirty-seven point eight to thirty-nine degrees are concerning, because thirty-nine is a temperature that boosts protective responses. Their complaint is not "never treat." It's "you're treating too low." The disagreement between the camps isn't ideological, it's a calibration argument. Where's the dial set.



Corn

And is there any trial evidence on where the dial should be set?



Herman

Barely any, and what exists is small. Peters and colleagues ran a pilot in UK pediatric intensive care, randomizing a hundred children to permissive treatment, treat only at thirty-nine point five and above, versus restrictive, treat at thirty-seven point five and above. It was explicitly a feasibility study, checking whether the trial could even be run, whether staff would comply with the thresholds, whether parents would tolerate it. They didn't set out to answer the outcomes question, and nobody had before them. The mean maximum temperature in the restrictive arm over the first forty-eight hours, for what it's worth, was thirty-eight point four.



Corn

So in the group being treated at a lower threshold, the fever got held around thirty-eight four. The thermostat won the argument anyway.



Herman

Largely, yes. And the feasibility framing matters, because the population you'd most want to randomize to answer the outcomes question is exactly the population it's hardest to randomize. Nobody wants their sick child assigned to the "we'll wait" arm by a coin flip.



Corn

Except someone did exactly that, somewhere.



Herman

Once, notably, in central nervous system malaria. Birbeck and colleagues in 2024 randomized over two hundred and fifty children in Malawi, ages two to eleven, to aggressive scheduled acetaminophen plus ibuprofen versus as-needed acetaminophen at thirty-eight point five and above. That's the population where the metabolic cost calculus flips, where fever and seizures are known risk factors for neurologic damage, and it's the only place you find a genuine outcomes trial. The exception that tells you who "let it run" is actually safe for. Not them.



Corn

So before we get into the evidence, let's define terms, because a fever is not just being hot.



Herman

Correct, and it matters, because if you think fever is being hot, you cool the child. If you know fever is a raised set point, you give an antipyretic that lowers the set point. Two different interventions, aimed at two different things.



Corn

Good. Because Bruce has been holding that question since the start of the segment. Bruce: Sorry, I've been nodding along for months but I'm stuck right at the start. What actually is a fever, is it like when you leave a pie in the oven too long and it just gets hot, or is the body doing it on purpose somehow?



Herman

The body does it on purpose, Bruce. The pie is a different case. The pie has no opinion about its temperature. The child's brain has chosen a number and will defend it.



Corn

I'll be honest, Herman, I admire the patience it took to explain the pie distinction after the twenty minutes we just spent on it.



Herman

Thirty years of pediatrics, Corn. You meet every version of the question.



Corn

Then let's spend those thirty years properly. Hannah's real question, once you strip the physiology away, is what the clinical goal actually is when your toddler is at forty point four at midnight. And I don't think it's "get the number down."



Herman

The modern clinical position, and this is the bit that surprises both camps, is more comfortable than either expects. A 2025 review by Bianchi and colleagues frames fever as a regulated physiological host defense mechanism, not a disease, and states the primary



Herman (continued)

therapeutic goal is improving the child's overall comfort, rather than simply normalizing body temperature. Read that twice, because it's not the crunchy position and it's not the suppress-it position. It's a third thing. Treat the child, not the number.



Corn

The doctor on the Tyto call said "bring the fever down."



Herman

He did, and under this framing that's comfort-directed care. A feverish child at forty point four is miserable, and relieving misery is a legitimate goal with cheap, safe tools. But here's what happens in transmission: the parent hears "bring the fever down" as "the number is dangerous," which it almost certainly wasn't, and the fear and the medicine arrive in the same sentence. The advice is fine. The fear it smuggles in is the part the literature spends decades trying to dismantle.



Corn

Fever phobia.



Herman

Named phenomenon. And it's measurable. There's an Israeli study, a hundred caregivers at a tertiary pediatric emergency department, Elkon-Tamir and colleagues, that found caregivers commonly believed fever can cause brain damage and epilepsy. Being referred by the child's own pediatrician did not reduce that belief. About thirty-one percent said they'd give antipyretics to a comfortable child at thirty-eight or below. And the one that stops me every time: seventy-four percent believed teething could cause fever.



Corn

Seven in ten, walked past their pediatrician on the way to believing that.



Herman

Beliefs that survive routine contact with clinicians. The authors called for aggressive educational interventions and then added the sting, that the need may extend to the education of clinicians too. It's not just parents carrying the phobia.



Corn

Which loops back to the strongest claim in the Bianchi review, the one that answers Hannah's "what do I watch besides the number" directly.



Herman

Fever height and response to antipyretics are poor predictors of illness severity. Sit with what that's claiming. The two things a parent fixates on at midnight, how high the number is and whether it came down after the medicine, are statistically close to noise for the thing the parent actually fears, which is "is my child seriously ill." A fever that drops a degree after paracetamol tells you the paracetamol worked. It does not tell you the child is fine. A fever that doesn't budge tells you the set point hasn't moved yet. It does not tell you the child is deteriorating.



Corn

That's the most counterintuitive fact in pediatrics and it's stated flatly in the guideline.



Herman

Stated by NICE, the UK guideline for fever in under fives, in almost exactly those words. Which takes us to the one place the number does matter, and it's the answer to whether babies and toddlers differ from adults. Under three months of age, a temperature of thirty-eight or above is a high-risk group for serious illness. That's the threshold where the number alone gets you seen, the same night. Three to six months, thirty-nine or above puts you at least at intermediate risk. Then, and this is the line I want Hannah to have on the fridge, in children older than six months, do not use height of body temperature alone to identify those with serious illness.



Corn

So the number is decisive for exactly six months of a human life, and then it retires.



Herman

It retires as a triage instrument. Ezra is around sixteen months, so he's been on the far side of that line for most of his life. The number's job is done; something else takes over.



Corn

What takes over. This is the practical core.



Herman

The traffic-light system. NICE replaces the thermometer with the child's appearance and physiology. Red signs: pale, mottled, ashen or blue skin. No response to social cues. Not waking, or not staying awake if roused. A weak, high-pitched or continuous cry. Grunting. Breathing above sixty per minute. Moderate to severe chest indrawing. Reduced skin turgor. A bulging fontanelle. Any one of those is the child saying see a doctor now, whatever the temperature reads.



Corn

And on the other end, green. What does well look like?



Herman

Normal colour. Responds to social cues. Content, or smiles. Stays awake, or wakes quickly. Moist membranes. The ordinary baby. And the amber band in between holds things like rigors, dry mucous membranes, poor feeding in an infant, reduced urine output, capillary refill of three seconds or more.



Corn

Run Hannah's night through that. Ezra at forty point four.



Herman

From what she described, a child checked remotely, examined, lungs and ears looked at, reassured, Ezra drinking and, I'd guess, miserable but responsive. That's amber at worst, and the amber is the fever itself. The same child at thirty-eight point two who is mottled,



Herman (continued)

grunting and won't wake is red. The number inverts. The behaviour is the instrument, and the thermometer is a supporting document.



Corn

The thermometer is an appendix. Kept out of tradition, rarely read.



Herman

One supporting use it does have. NICE says fever lasting five days or more should prompt assessment for Kawasaki disease, though explicitly not for predicting serious illness generally, duration doesn't do that either. It's a specific flag for a specific rare condition.



Corn

Hannah's list of candidate fears included dehydration and febrile seizures. Adjudicate them.



Herman

Dehydration first, because it's the legitimate practical worry with a hot, fast-breathing child. The assessment signs are the ones you'd already watch for, prolonged capillary refill, abnormal skin turgor, an abnormal respiratory pattern, a weak pulse, cool extremities. In practical terms: is the child weeing, and are the lips and mouth moist. A toddler at forty degrees who's drinking is financing his own defense. The one who's stopped drinking is where the night starts needing a plan.



Corn

And seizures.



Herman

Febrile seizures hit two to five percent of children, so roughly one in twenty to fifty, which makes them common enough that every parent knows a family it happened to. And they are frequently perceived by caregivers as a life-threatening event, that's from the



Herman (continued)

emergency medicine literature, which tells you the perception gap is itself a clinical problem. Most are brief, most don't cause lasting harm.



Corn

The question hiding underneath: does giving antipyretics prevent one.



Herman

The honest answer is that the direction of effect is contested. Hashimoto and colleagues ran a systematic review and meta-analysis in 2021 on exactly that question, whether antipyretics prevent febrile seizure recurrence, and the prior consensus had long been that they don't, with some newer evidence arguing otherwise. I wouldn't promise a parent either direction with confidence. What I'd say is: don't dose on a schedule out of fear of a seizure. Dose for misery.



Corn

Which is a strange instruction to give a frightened parent. "The medicine is for comfort, not safety, and the safety is in watching, not dosing."



Herman

It is strange, and it's why the communication problem is arguably harder than the physiology problem. Herman pause. There's one more thing NICE says that I think is the kindest sentence in the guideline. Reported parental perception of a fever should be considered valid and taken seriously by healthcare professionals. The guideline is holding two truths at once: the number isn't the signal, and the parent's concern is. You don't get to dismiss the worry just because the thermometer's fine.



Corn

No, the thermometer's wrong more often than we've said anything about yet, actually.



Herman

That's a whole can of worms, the measuring end of this.



Corn

Later. First, close the loop on the night. Because there's a version of Hannah's story where the scary number was the system working.



Herman

That's where I'd land it. Forty point three, forty point four sits below the ceiling that fevers rarely cross. A sixteen-month-old with two months of daycare behind him is running an exactly-advertised immune campaign against the full catalog of respiratory viruses the setting provides. The fever was expensive, deliberate, and almost certainly doing its job. The fear was real and the fear was also, to first order, the number being bigger than expected. The child was the instrument, and the instrument read fine.



Corn

The one thing I'd still want a parent to take from the Tyto doctor's instruction, though: "bring it down" as comfort care is defensible. As safety care, it's unsupported.



Herman

And nothing we've said touches the genuine red flags. Mottled, grunting, unresponsive, under three months with any fever, those override everything. The calm follows the triage, not before it.



Hilbert

The infrared tympanic is the only one worth having in that house, Herman. You said thermometer and left it at that. Under four weeks it's axillary electronic, and from four weeks to five years the guidance allows axillary electronic, chemical dot, or infrared tympanic. Forehead chemical strips are unreliable and the guidance says clinicians shouldn't use them.



Herman

Which is exactly the hierarchy, yes. Corn, you were circling that.



Corn

I was going to get there. Slowly.



Hilbert

You were getting there like you get everywhere. The strips are the piece that bothers me. The one method the guidance flags as unreliable is the one stocked at the pharmacy checkout, at child height, next to the batteries. Somebody decided that. I went round to my neighbour's on Sunday with my tympanic and her strip and did the same ear twice, four times, alternating. Herman, you'd have enjoyed the discipline of it. The strip read low by most of a degree every time, and she's still using it, because it came free with something.



Corn

What did she say when you told her it read low?



Hilbert

That it matched her mother's readings from years ago, so she trusts it. I gave up. Herman, in your whole pediatrics career, forty years of this, two decades of parents arriving with strips, and you never once said the word tympanic on this program until today. I've been at that desk listening. You people say thermometer like there's only one.



Herman

In my defense, I've spent forty years saying "the ear one" because tympanic gets you a blank stare. Corn, did you catch that four readings per ear detail. That's a man who controls for order effects at a neighbour's kitchen table.



Corn

I did. He was alternating devices to cancel drift, Herman. Nobody asked him to.



Hilbert

Also, Corn, that cough two turns back needs cutting, it's on your track. I'll take it out. The neighbour's strip read thirty-seven point eight on a child who, on the tympanic, was thirty-eight point six. Her own tympanic is in a drawer somewhere, still in the box, because the strip is "faster."



Corn

Faster and wrong. The accuracy you get for free.



Herman

And the gap matters precisely where Hannah lives. Thirty-eight point six is a number you act on in an infant under three months. Thirty-seven point eight on the strip is "probably fine." The unreliable device isn't a rounding error, it sits right across the one age band where the number is decisive.



Corn

The band where the strip is most likely to be used, because that's who the checkout display is aimed at.



Herman

That's... Actually a ugly intersection. The device fails exactly where its failure is most consequential.



Corn

Which raises the question neither of us can close: the trials. We said nobody's established that treating ordinary childhood fever improves or worsens outcomes, and the reason isn't that the question was asked and came back null. It was mostly never asked. The population you'd need to randomize is the population no ethics committee will hand you,



Corn (continued)

and the strongest outcome data come from CNS malaria, where the calculus is already inverted. So parents are making a comfort decision at two in the morning on evidence that doesn't exist, and the guidelines have quietly noticed and quietly pivoted to comfort, without announcing that the pivot was forced by an absence.



Herman

That's the honest shape of it. The pivot to comfort isn't a discovery that treating is harmful. It's a discovery that nobody ever showed it helps, plus a recognition that misery is real and cheap to relieve.



Corn

I keep thinking about the sentence you'd have told parents if you'd had unlimited consultation time. Not "the fever is dangerous," not "the fever is fine." Something like: your child's body chose this number, it has a budget for it, the number itself told you almost nothing, and the child is the readout.



Herman

I'd have shortened it, but yes. And the shorter it got, the more the parent heard.



Corn

My version would be one word and they'd hear nothing at all.



Herman

Your version would take six days and be correct on day four.



Corn

Released on day six, missed by everyone. Herman, before we land: what's the open question you'd want answered before the next daycare fever?



Herman

Whether the metabolic-cost framing can be made practical. Right now the budget idea lives in ICU papers and malaria trials, but the insight underneath it, that a robust host can afford the fever and a struggling one can't, is exactly the calculation a frightened parent is implicitly making with no data. If anyone ever works out how to estimate a child's reserve at the bedside, the whole crunchy-versus-clinical argument resolves into arithmetic. Until then: treat the misery, watch the child, respect the number only in the first six months, and take the parent's worry seriously even when the thermometer is boring.



Corn

And check what the thermometer actually is. Free with something, reading low, aimed at the one age band where low is dangerous. As Hilbert's neighbour proved without knowing it.



Herman

That, and my sympathies to every parent standing in the pharmacy aisle holding a forehead strip. Production this episode came, as ever, from Hilbert Flumingtop, who is the only man I know who runs a controlled comparison on a neighbour and reports it flat.



Corn

If you want more of this, try episode fifty seventy-five, Monitoring a Warm Toddler Without Losing Your Mind; episode eight sixty-three, The Cognitive Load of Crisis; and episode sixty-two thirty-two, Daycare Germs. This has been My Weird Prompts. If tonight's number has you standing in a dark hallway deciding things, leave us a review on the way out, it helps.



Herman

See you tomorrow, Corn.



Corn

See you tomorrow.

SOURCES

What the research for this episode read before the script was written. Primary sources first.

1. **NICE NG143, Fever in under 5s: assessment and initial management, recommendations chapter (items dated 2007 [primary]**

   2022) .
   https://www.nice.org.uk/guidance/ng143/chapter/Recommendations

2. **Wikipedia, Fever, last edited 2026-10-18.**
   https://en.wikipedia.org/wiki/Fever

3. **Wrotek S, LeGrand EK, Dzialuk A, et al. Let fever do its job: The meaning of fever in the pandemic era. *Evolution, Medicine, and Public Health*, 2021.**

   https://pubmed.ncbi.nlm.nih.gov/33738101/

4. **Bianchi M, Costa M, Cardinale F, et al. Optimizing pharmacological management of the febrile child. *Expert Opinion on Pharmacotherapy*, 2025.**

   https://pubmed.ncbi.nlm.nih.gov/41267639/

5. **Cajanding RJM. Current State of Knowledge on the Definition, Pathophysiology, Etiology, Outcomes, and Management of Fever in the ICU. *AACN Advanced Critical Care*, 2023.**

   https://pubmed.ncbi.nlm.nih.gov/38033217/

6. **Donoso A, Arriagada D. Fiebre y terapia antipirética en el paciente con sepsis en la unidad de cuidados intensivos: actualización. *Bol Med Hosp Infant Mex*, 2018.**

   https://pubmed.ncbi.nlm.nih.gov/30084440/

7. **Peters MJ, Woolfall K, Khan I, et al. Permissive versus restrictive temperature thresholds in critically ill children with fever and infection: a multicentre randomized clinical pilot trial. *Critical Care*, 2019.**

   https://pubmed.ncbi.nlm.nih.gov/30845977/

8. **Tan E, Braithwaite I, McKinlay CJD, et al. Comparison of Acetaminophen (Paracetamol) With Ibuprofen for Treatment of Fever or Pain in Children Younger Than 2 Years. *JAMA Network Open*, 2020.**

   https://pubmed.ncbi.nlm.nih.gov/33125495/

9. **Tan E, McKinlay CJD, Riley J, et al. PIPPA Tamariki. *Lancet Child & Adolescent Health*, 2026.**
   https://pubmed.ncbi.nlm.nih.gov/41616793/

10. **Birbeck GL, Seydel KB, Mwanza S, et al. Acetaminophen and Ibuprofen in Pediatric Central Nervous System Malaria: A Randomized Clinical Trial. *JAMA Neurology*, 2024.**

    https://pubmed.ncbi.nlm.nih.gov/38857015/

11. **Hashimoto R, Suto M, Tsuji M, et al. Use of antipyretics for preventing febrile seizure recurrence in children: a systematic review and meta-analysis. *European Journal of Pediatrics*, 2021.**

    https://pubmed.ncbi.nlm.nih.gov/33125519/

12. **Chen B, Tao E. Immunological mechanisms and prevention strategies for febrile seizures in children. *Frontiers in Immunology*, 2026.**

    https://pubmed.ncbi.nlm.nih.gov/42500652/

13. **Eilbert W, Chan C. Febrile seizures: A review. *JACEP Open*, 2022.**
https://pubmed.ncbi.nlm.nih.gov/36016968/

14. **Elkon-Tamir E, Rimon A, Scolnik D, et al. Fever Phobia as a Reason for Pediatric Emergency Department Visits. *Rambam Maimonides Medical Journal*, 2017.**
https://pubmed.ncbi.nlm.nih.gov/28178434/

15. **Singh S, Kishore D, Singh RK. Potential for Further Mismanagement of Fever During COVID-19 Pandemic. *Frontiers in Medicine*, 2022.**
https://pubmed.ncbi.nlm.nih.gov/35308547/