

## The Importance of Fever

Childhood fevers can be frightening, mostly because they are misunderstood. A fever is an increase in body temperature above the “normal range.” But the definition of “normal” can vary from person to person. Body temperature also varies with different levels of activity and at different times of the day. Medical texts differ in their definition of the highest “normal” body temperature, which can range from 98.6 to 100.4°F. It is generally accepted that a fever is defined as an “early morning temperature greater than 99°F or a temperature greater than 100°F at any time of the day.” REF: Harvard Medical School’s Inteilhealth. <http://www.intelihealth.com/IH/ihtIH/WSIHW000/9339/9991.html>

There are several causes of fever, but it is most commonly associated with dozens of different viruses, bacteria and parasites that cause upper respiratory infections, pneumonia, diarrhea, and urinary tract infections.

When infectious micro-organisms invade the body, it is fever that gets our attention. Yet, despite its universal recognition, little is known about how it occurs. The currently held view is that when an infectant enters the body, the body activates its innate immune responses, which include the release of a complex mediators with equally complex names: cytokines, pyrogenic molecules that including tumor necrosis factor alpha (TNF $\alpha$ ), interleukin (IL-1 $\beta$ ) and interleukin (IL-6). These substances signal the part of the brain called the hypothalamus to raise the body’s thermostat, which in turn leads to chills and shivering to increase the metabolic rate. Heat loss is minimized by restricting blood flow to the skin, giving it a pale appearance. Fever sufferers may lose their appetite and most feel lethargic, achy, and tired.

However, contrary to the reflex need to give an aspirin to make a fever stop, an elevated temperature can be an expression of the immune system working at its best. The number of white blood cells is increased and cascades of molecules to flood the blood stream, in rapid pursuit of the host’s invaders. Fever impairs the ability of bacteria and viruses to replicate, creating an inhospitable environment for the invading organisms. By turning up the heat, invading microbes cannot replicate and by definition, die off. Fever results in winning the war against a wayward microbe.

### Fever phobia

Fever is certainly one of the most common reasons that parents seek medical attention for their children. In 1980, a paper published by Barton Schmitt, MD contained the results of a survey in which 81 parents were asked their understanding of fever. All parents were inappropriately worried about low-grade fever, with temperatures of 102°F (38.9°C) or less. Most parents (52 percent) believed that fever with a temperature of 104°F (40°C) or less could cause serious neurological side-effects. As a result, almost all parents in the study treated fever aggressively: 85 percent gave anti-fever medications and 68 percent sponged the child with cool water temperatures far below 102°F (39.5°C). Their over concern was designated by Schmitt as “fever phobia.” REF: Am J Dis Child. 1980 Feb;134(2):176-81. “Fever phobia: misconceptions of parents about fevers.”

In 2001, a follow-up study was conducted to see if the trends in “fever phobia” had changed. The study sought to explore current parental attitudes toward fever and to compare these attitudes with those described by Schmitt in 1980. The results of the study were disturbingly worse than the fever phobia reported by Schmitt twenty years earlier:

Of the 340 caregivers who were interviewed, 56 percent reported that they were “very worried” about the potential harm that fever could cause to their children. Compared with 20 years ago, more caregivers listed seizure as a potential harm of fever, woke their children and checked temperatures more often during febrile illnesses, and gave anti-fever medications or initiated sponging more frequently for possible normal temperatures. Forty-four percent considered 102°F (38.9°C) to be a high fever, and 7 percent thought that a temperature could spiral out of control and reach temperatures greater than 110°F (43.4°C) if left untreated. Almost all of the caregivers (91 percent) believed that even a low-grade fever could cause harmful effects. The worst concerns listed were brain damage (21 percent) and death (14 percent.)

Strikingly, 25 percent of parents admitted giving anti-fever medications for fevers less than 100°F (37.8°C) and a full 85 percent would awaken their child to give fever medications. The survey revealed that 14 percent chose acetaminophen, and 44 percent opted for ibuprofen; however, both were given at too frequent dosing intervals. When it came to baths to cool children, 73 percent stated that they sponged their child to treat a fever. However, 24 percent sponged at temperatures less than 100°F (37.8°C) and nearly 20 percent used alcohol in a cool bath. REF: Pediatrics Vol. 107 No. 6 June 2001, pp. 1241-1246.

#### **“Fever Phobia Revisited: Have Parental Misconceptions About Fever Changed in 20 Years?”**

The study also revealed that nearly one quarter of those surveyed alternated the use of acetaminophen and ibuprofen during their child’s febrile illness. This is a common practice despite a lack of evidence to support the efficacy and safety of this practice. A study by Mayoral et al in May, 2000 reported that 50 percent of pediatricians surveyed stated that they advised parents to alternate acetaminophen and ibuprofen using various regimens despite being no evidence to support this protocol. REF: Pediatrics Vol. 105 No. 5. May 2000, pp. 1009-1012. “Alternating Antipyretics: Is This an Alternative?”

Troubling, yet not surprising, was that 46 percent of caregivers listed doctors as their primary resource for information about fever. When obtaining a history about a child’s illness, pediatric health care providers often are quick to ask about the importance and value of an elevated temperature. Discharge instructions to parents after a visit with the physician often include calling or returning if the child’s temperature rises beyond a certain level or if a fever persists. But placing emphasis on the child’s temperature without providing information about when a fever should be of concern and allowing a fever to persist to aid the body in healing heightens anxiety and serves to perpetuate fever phobia.

Caregiver anxiety about fever may be heightened by the lack of knowledge regarding the importance of fever in illness. In fact, fever phobia is most likely fostered by the medical community itself. When doctors tell parents to give medication when a temperature rises above a certain level, say 101°F, many parents automatically assume that a fever is “dangerous” at that level. The result is to give children

drugs to keep them from harm. In reality, the purpose of anti-fever methods is to provide comfort as the body fights off the infection. If doctors were clear about this, there would be a lot less “fever phobia” around.

Confirming the problem with misinformation about fever, May and Baucher published a study in *Pediatrics* revealing that instructions given to parents about the management of fever are often dismally incomplete and lack consistency. The study which reviewed information given to parents during sick-child visits, found that 10 percent of providers almost never discussed the definition of a “high fever”; 25 percent almost never discussed the dangers of fever, and sadly, a full 15 percent almost never discussed the reasons for fever, assuming that parents understood the importance of fever. REF: *Pediatrics*. Vol 90. Issue 6, pp. 851-854, 12/01/1992. “Fever phobia: the pediatrician’s contribution.”

If parents understood the importance of fever and how to appropriately support their child during a fever, parents would acquire a comfort level with caring for an ill child. They would rid themselves of unnecessary stress, unnecessary doctor and emergency room visits and most of all, their child would benefit from infection-fighting fevers. The concern of parents about fever is not justified but is understandable without appropriate information. Health education to counteract “fever phobia” should be a part of routine medical care for children.

### **When is fever harmful?**

In addition to the beneficial effect of fever on the immune system, it is important to note that the body has a way to protect itself from excessively high temperatures. Many parents are unaware of this process and believe that temperatures will continue to rise to potentially lethal levels if left untreated. In the absence of overwhelming factors, such as extreme dehydration and unsafe circumstances, such as being locked in a closed automobile, a normal children’s temperature will not rise out of control to potentially lethal levels. Therefore, it is exceedingly rare for a child’s temperature to exceed 107°F (41.7°C) in the event of a routine infection.

The fear most parents have about a high fever—defined as a sustained temperature of greater than 104°F for several days—is the concern about developing seizures. A febrile seizure manifests as abnormal jerking movements all over the body without evidence of central nervous system infection. Febrile seizures occur most commonly in children between the ages of three months and five years of age and usually last five minutes or less). About 3 percent of all children experience a febrile seizure sometime during childhood. Febrile seizures occur most commonly due to a sudden rise in temperature and not due to a prolonged fever, unless the child is dehydrated.

This susceptibility is not well understood. Of those children who have a first-time febrile seizure, about one-third experience a recurrence. Risks for recurrence are elevated for children who experienced the first seizures at age 16 months or younger, and who have a family history of febrile seizures. In general, 30 to 40 percent of children who have had a febrile seizure are likely experience one more. If a child has had two febrile seizures, there is a 50 percent chance that an additional episode will occur at some time in the future. Although frightening, febrile seizures are almost always benign. Nonetheless, if a child experiences a febrile seizure, it is important to seek medical attention immediately. In addition, if your

child is under six months of age or if an older child has had a fever of more than 104°F for more than four or five days, a healthcare provider needs to be consulted.

How best to treat a fever: home management

### So, what can you do at home?

**1. Encourage drinking lots of water.** Fever increases fluid loss, and dehydration cause fevers to remain high. Often, children with fevers do not feel thirsty, or by the time they do want something to drink, they're already dehydrated. Keep offering water or an electrolyte-based drink. Every drop and teaspoon counts. Small, frequent sips are often best, especially if the child feels nauseated. If necessary, use a plastic medicine dropper that can be readily purchased at the drug store to gently insert water into your child's mouth.

**2. To dress lightly or bundle up?** The answer depends on your children's perception of temperature – follow her cues. If your child looks pale, shivers, or complains of feeling chilled, bundle her in layers of breathable fabrics but be sure that the layers are easily removed. If the fever is low-grade, dress her snugly and give warm liquids to assist the body's fever production. If he complains of being too hot, use light close and sheets for comfort.

**3. Starve a fever?** Children with fevers generally don't have much appetite and it is much more important to remain hydrated than to consume foods. Let your child determine when and what she wants to eat. Try light foods such as chicken broth or Cream of Wheat cereal for calories and easy digestion.

**4. Avoid white, refined sugar.** It has been documented that refined white sugar can suppress the immune system. In a study reported in the American Journal of Clinical Nutrition as far back as 1977 reported the adverse that sugar has on the immune system. Blood was drawn from subjects and the activity of the white blood cells that neutralize viruses and bacteria was observed and calculated. The white blood cell activity was calculated before and after subjects were given various doses of sugar: 6, 12, 18 and 24 teaspoons, respectively. Each subsequently higher dose of sugar created a corresponding decrease in the activities of the subject's white blood cells. The group that had consumed the largest amount of sugar had essentially no functioning white blood cells within an hour after consuming the sugar. The immunosuppression occurred for up to two hours after consuming that sugar, but the adverse effects of no blood cell activity persisted in some instances for up to five hours. REF: Am J Clin Nut 1977;30:613 "Depression of lymphocyte transformation following oral glucose ingestion."

### Why is this important?

White blood cells eliminate viruses and bacteria that invade our defenses. Without the efforts of these cells, susceptibility to infection is increased and recovering from infection can be stalled. Therefore, do not offer children with fevers Coca-Cola, 7-Up, or Ginger Ale for an upset tummy and ice cream to soothe a sore throat. Unaware, these hefty doses of sugar can further drag down the immune system at a time when it needs to be at its strongest.

## To medicate or not to medicate?

A rule of thumb when treating a fever is “First, do nothing,” meaning that observation is a better choice than running for the medicine cabinet. Is your child drinking fluids well? Urinating at least once every eight hours or wetting at least eight diapers per day? Does your touch console her? Is he attempting to play? If the answer to these questions is yes, this is probably not a serious illness, despite the number on the thermometer.

Medications for fever can act as a screen. Here are some pros and cons regarding giving your child over-the-counter medication to ease a fever:

The good news: Medications such as acetaminophen *might be* used for comfort. If your child feels miserable because of a fever, a trial of one or two doses can be given as a “screening test.” If your child looks and acts much better within a short period of time, it is likely that the infection is not a serious one. He may be more likely to drink fluids, nibble food, and sleep if he is a little more comfortable. This means keeping the fever around 100 or 101°F.

The not-so-good news: Several studies have shown that by suppressing the fever, the body needs a longer time to recover.

- In a study of children with chickenpox, acetaminophen prolonged itching and the time to scabbing compared to placebo treatment. REF: J Pediatr 1989; 114:1045-1048. “Acetaminophen: more harm than good for chickenpox?”
- A study of adults found that aspirin and acetaminophen suppressed production of the patient’s antibodies and increased cold symptoms, with a trend toward longer viral shedding and prolonged symptoms. REF: J Infect Dis 1990; 162:1277-1282. “Adverse effects of aspirin, acetaminophen, and ibuprofen on immune function, viral shedding, and clinical status in rhinovirus-infected volunteers.”

## The bottom line

Use anti-fever medicines sparingly [if at all] when your child suffers discomfort from a fever over up to 104°F (40°C). Ask yourself whether you are administering the fever-reducing medicine to make your child more comfortable or to decrease your own anxiety. Drug-free approaches can go a long way toward helping your child feel better. If the situation does not seem urgent, consider a trial of echinacea tea, lavender oil, Vitamin D 5000-50,000IU/day and Vitamin C (10mg per pound) before you pull out the fever drugs.

Source:

<http://drtenpenny.com/the-importance-of-fever/>