



Complex Child E-Magazine

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Recognizing and Treating Fevers in Children with Complex Medical Issues by Susan Agrawal

Fevers can be some of the scariest symptoms we see in our children, but they are also some of the most common ones. While pretty much every parenting book and website has general information on recognizing and treating fevers, I find that these recommendations don't always make sense when it comes to children with complex medical issues.

In this article, we will take a look at how to recognize a fever in your child and when you should consider treating that fever. Along with general recommendations, we will address fevers in children with temperature regulation issues, fevers in children with chronically elevated temperatures, fevers in children with seizures, and fevers in children who take daily medications that reduce fevers. Finally, we include a sample and blank Individual Fever Plan for your child.

Your Child's Normal Temperature

It is very important to know what your child's normal temperature is on a daily basis. Don't be surprised if "normal" is a range that varies during the course of the day. And "normal" may also be anywhere from 95F to 100F, depending on your child's age, her condition, how the temperature is taken, and the time of day. What is most important is not the exact number, but that you have a consistent way to take a temperature and a general knowledge of what is typical for your child. It may be helpful to chart your child's temperature for a few days, using the guidelines in the previous article on Normal Vital Signs.

What is a Fever?

While medical professionals define a fever as a rectal temperature greater than 100.4F, many children with medical issues don't follow normal temperature curves. For these children, a significant fever can also be classified as any temperature two degrees higher than normal. If your child normally runs around 96F, a temperature of only 98F may be significant. Similarly, if your child commonly registers 100F, a temperature of 101F may not be significant. It is the change from normal--and not the number--that is most important.

Some children, especially those who have complex medical issues or are very sensitive to temperature changes, can be remarkably sick with only a small change in temperature. For these children, a low grade temperature, one that is approximately one degree above the norm, may be extremely significant.

Other children may have a propensity to spike fevers, and even a temperature three degrees above normal may not be particularly significant for that child.

What is most important is to recognize what is normal and abnormal for your own individual child. Observing your child's temperature over several days while well and through a few illnesses should give you a good idea of what is typical and atypical for your child.

Typical Causes of Fever

The most common causes of fevers are viral infections. In the majority of cases, the child will have a cold, flu, or other virus that simply needs to run its course. These fevers, unless exceptionally high, are rarely dangerous.

Bacterial infections are less common, but may include strep throat, pneumonia, bronchitis, an internal or external abscess, gastroenteritis, a skin infection, a urinary tract infection, a tube or trach infection, meningitis, a central line infection, sepsis, and many other conditions. While bacterial infections may occur in tandem with cold symptoms in the case of strep throat, pneumonia, or bronchitis, in many cases the fever may be the only obvious symptom. A significant fever without any viral symptoms (runny nose, diarrhea, coughing, etc.) should be evaluated by a doctor unless you can clearly identify the source.

Many children with complex medical issues are prone to certain types of bacterial infections. Trach and G-tube infections are not uncommon and should always be suspected in children who have these devices. Similarly, in children with central lines, an infection of the central line is a common occurrence and one that should be immediately suspected. Children with voiding problems may be prone to urinary tract infections, while children with chronic lung problems may often get pneumonia.

If your child is prone to certain types of bacterial infections, make sure you know the symptoms for those particular types of infections. It may be helpful to set up a protocol for evaluating and treating fever specifically geared toward your child's typical infections.

Viral and bacterial infections are not the only causes of fever. Some children who have inflammatory or autoimmune diseases may have fevers regularly. Other children who do not regulate their temperatures well may get environmental fevers in response to being bundled, being in the sun, or being in a warm room. Children with significant autonomic

dysfunction may also get fevers as a part of their dysfunction, especially during crises. Finally, certain medications may cause fevers in some children.

It is important to recognize all the likely causes for fevers in your child to determine when a fever needs urgent medical treatment and when it is just a nuisance. At the end of this article is a blank Individual Fever Plan, along with a sample filled-in version, that can help you to sketch out likely causes of fever for your child.

When to Treat a Fever with Tylenol or Motrin

There are many schools of thought on whether you should treat a fever or let it run its course. Before making this decision, it is important to determine the suspected cause for the fever. If an elevated temperature is simply an environmental fever due to hot weather, treating with Tylenol or Motrin is of no use, and cooling the child down by undressing and applying cool packs is definitely the way to go. On the other hand, if a fever is part of an inflammatory disease, treating with Tylenol, Motrin, or more specialized medications may be the best possible thing to do.

When it comes to infectious fevers, the choice becomes more difficult. In general, fever is the body's response to infection, and fevers can actually help to speed up the healing process in some cases. If your child is reasonably comfortable and active, there is no reason to treat the fever, even if it is 102F or 103F. On the other hand, if your child is clearly uncomfortable and very sick looking, treating the fever may help him or her feel a whole lot better. In general, do not treat the "number" of the fever unless it is exceptionally high, above 104F. Instead, treat based on your child's comfort level and appearance.

There are certain children who are almost always treated for fevers, especially those with a seizure disorder or epilepsy who may have increased seizure activity due to fever. Children who have a history of rapidly rising fevers should also be treated.

Many families wonder if they should alternate Tylenol and Motrin in a child with a high or stubborn fever. In general, this is not necessary for most children and may actually be dangerous since the dosages and frequency of administration are easily confused. For some children, however, this may be helpful. Ask your doctor's opinion in regards to your specific child.

Finally, which is better, Tylenol or Motrin? There is no right answer to this question. Some children do better with one while others do better with the other. In any case, never give Aspirin or Aspirin-containing products, and stick to Tylenol if your child has a history of bleeding problems.

Fever in Special Circumstances

As mentioned earlier, there are certain conditions that require special attention when it comes to fevers. This section will discuss a few of these unique situations.

Children with Seizures

When a child has seizures or epilepsy, any illness can lower the seizure threshold and make seizures more likely. Because fevers in particular tend to make children more susceptible to seizure activity, children with a history of seizures must have their fevers treated more aggressively.

In general, fevers should be treated with Tylenol or Motrin in children with a history of seizures. Be careful, however, not to administer other cold medications or combination medications since these, too, may lower the seizure threshold.

In some cases, fever may also lower the concentration of anti-seizure medication in the blood, allowing breakthrough seizures to occur, especially in the case of phenytoin. It is particularly important to try to reduce fever in these children.

Any child with a history of seizures should have a plan in place in case increased seizures occur during a fever. This plan should include both fever-reducing medication and the ability to stop breakthrough or serious seizures using medications like Diastat.

Children with Temperature Regulation Problems

Many children with neurological or metabolic disorders have difficulty regulating their temperatures. In these children, who may spike a 101F fever just from sitting outside in the heat for ten minutes, it is very important to be able to recognize and treat environmental fevers. It is equally important to be able to recognize when a fever is not an environmental fever and an infectious cause may be likely.

Each child has a different level of tolerance for bundling and heat. Some children may need their environments kept very cool to prevent fevers, while others may do fine as long as they are not exposed to heat, such as a sunny 80F day. It is important to know your child's individual limitations.

Some children may benefit from ongoing cooling techniques, such as wearing a cooling vest or sleeping with a cold stuffed animal. These techniques should be implemented as preventatives.

If a child does get an environmental fever, it is most important to remove the child from the heated environment immediately. This may mean bringing a child inside, placing the child in the shade, or undressing the child. Once the child is in a cooler environment, you may attempt to cool down the child. Make sure not to be too aggressive, as rapid cooling can be very dangerous for children. Allow the child to slowly cool down, using cool washcloths or a tepid bath if needed, over a period of an hour or longer.

When children do not regulate their temperatures, it can be very hard to determine when a fever signifies an infection. Any persistent fever that continues despite a cool environment should be presumed to be infectious.

Children with Chronically Elevated Temperatures

Some children, especially those with autoimmune and inflammatory diseases, run fevers on a daily basis. These fevers may be continuous or may be likely to occur at certain times of the day. It is important to establish what is a normal pattern for your child by creating a fever diary over a week or several weeks.

In these children, moderate fevers due to illness may not be easily detectable. Temperatures usually will rise with a significant infection. Any variant from the norm, especially when other symptoms are present, should be evaluated carefully.

Children Who Take Fever-Reducing Medications Daily

Some children take medications like Tylenol, Motrin, or Aspirin daily, and others may take stronger medications like NSAIDs or Sulfasalazine. These medications, all of which reduce fevers in a child, may make it difficult to determine when a child is truly sick. In most of these children, a fever will not occur with a mild or moderate illness, and an increase in temperature may only be apparent in serious infections. Similarly, a slight elevation in temperature may be very significant for these children. Any significantly elevated temperature (two degrees or greater) should be evaluated quickly and thoroughly, as it may indicate a serious infection.

Any variation from the norm, even a slight variation, should be considered important, especially if it is coupled with other symptoms.

Children with Autonomic Issues

In addition to having problems regulating temperatures, children with autonomic issues may see fevers occur during body processes that normally would not affect temperature. For example, some children with autonomic dysfunction have a rise in temperature whenever they stool. Other children have autonomic crises whenever their bodies are stressed and these crises may include a sudden rise in temperature. In most of these cases, the temperature returns to normal once the event or crisis has passed. The temperature rise is usually also coupled with other autonomic symptoms, such as a fast heart rate, that may help you to determine the cause.

In these children, short-lived fevers are not likely to be caused by infection, though they may be exacerbated by infection. Any fever that persists, however, should be considered significant and likely caused by infection.

When to Call or Visit Your Doctor

The following are guidelines for calling or visiting the doctor:

- Any fever in a newborn under two months
- Any high fever in an infant two months to a year old
- Any fever over 104F or five degrees above your child's norm
- Any significant fever that lasts for more than three days
- Any fever two degrees above your child's norm if your child has a central line or dialysis catheter
- Any fever with extreme lethargy, irritability, or mental status change
- Any significant fever without obvious cold/viral symptoms

Sample Individual Fever Plan

Name of Child: Karuna

Child's Normal Temperature: 97.5

Patterns of Fever or Important History:

Gets environmental fevers, autonomic fevers. History of rapid onset sepsis with high fever. Takes two fever-reducing medications daily. Has difficulty regulating temperature.

Likely Fevers:

Cause	Symptoms	Treatment
Viral infection, cold, flu	Fever, runny nose, cough, vomiting, diarrhea	Tylenol to prevent seizures
Urinary Tract infection	Fever, cloudy urine, difficulty urinating, vomiting	Urine sample for testing, oral or IV antibiotics as needed
G-tube infection	Fever, redness at site, discharge	Culture site, topical and oral antibiotics as needed
Central line site infection	Fever, redness at site, discharge	Culture site, topical and oral antibiotics as needed
Central line infection or Sepsis	High fever, high heart rate, high/low blood pressure, irritability	Follow sepsis protocol, emergency medical care is needed, blood cultures and IV antibiotics
Environmental fever	Being in the sun or heat, overdressed, flushed	Get into cool environment, cool down
Autonomic fever	Sudden fever with other autonomic symptoms	Wait for crisis to pass or follow Crisis Protocol
Bacterial Abscess (Gut)	Persistent fever, pain especially with stools, sick-looking	CT scan of abdomen/pelvis, surgical drainage as needed
Pneumonia or other bacterial infection of respiratory tract	Fever, respiratory distress, need for extra oxygen	Chest X-ray, oral or IV antibiotics