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## **Evaluating the Child with Fever**

By Peter Fysh, DC

Fever is a symptom and not a disease. It is the body's normal response to infections, a response which stimulates the immune system by releasing and activating white blood cells and interferon.

A fever in the range 100 to 104°F is not harmful and is most commonly simply due to the body responding to a viral pathogen. Less frequently, fever may be due to bacterial causes.

### **Definition of Fever**

Fever in children is defined as: Rectal temperature over 100.5°F (38°C), or oral temperature over 99.5°F (37.5°C), or an axillary temperature over 98.6°F (37°C).

The body's temperature normally fluctuates during the day in the range from 97.5 to 99.5°F. Temperature is normally lowest in the morning, upon awakening.

Elevated temperature is most commonly due to overheating the body and can be due to exercise, too much clothing, hot weather, a hot bath, and after eating. Recent studies have recorded elevated temperatures in infants after being bottle or breast-fed.

Studies have also shown that teething in infants does not cause fever.

### **Guidelines for Evaluating Fever**

Most fevers due to viral causes range from 101 to 104°F and last for two to three days. Symptoms usually occur only when the fever reaches 102°F.

Fever causes no harm until it reaches 107°F. At this point brain damage can occur. Most fevers, however, remain below 106°F.

According to Schmitt's study (1980), most parents incorrectly think that a temperature of 104 to 106°F will cause brain damage to occur, or that if a fever is untreated it will rise higher. As a result, inappropriate treatment is frequently employed, such as sponging the child or providing medications to reduce the fever.

A small percentage of children (four percent) will develop febrile convulsions due to a rapid rise in body temperature. This type of fever is generally harmless.

Medications most frequently used to reduce fever are of the antipyretic variety, typically acetaminophen. Antipyretic medication can reduce the temperature by 1 to 2°C within several hours, but will only be effective for low-grade fevers.

A child with any of the following signs and symptoms should be evaluated immediately:

-- An infant under two months with a fever of 101°F or higher. -- Any child with a fever over 104.2°F. -- A child with febrile convulsions. -- A feverish child who is difficult to awaken. -- A child who is unable to swallow and is drooling saliva. -- A child with a stiff neck or one who cries when moved or touched.

In all cases children with fever of 106°F and above should be referred for medical evaluation.

Children with fever frequently respond to spinal adjusting by a rapid reduction in fever symptoms.

Following an adjustment, usually to the upper cervical spine, it is not uncommon to have a temperature of 104°F, which may have persisted for three to four days, drop to 99°F within 30 minutes.

Children with fever up to 105.6°F should be followed closely. It is recommended that parents be requested to take two hourly temperature recordings for the remainder of the day and report the child's status within 12 hours. An elevated, unchanged or fluctuant temperature should be re-evaluated promptly.

### **Thermometers**

Glass thermometers have been used for many years. They have the advantage of being relatively cheap and the disadvantages of being hard to read and slow to record, requiring two minutes for a rectal temperature, three minutes for oral temperature, and five minutes for axillary temperature readings.

Single-use clinical thermometers consist of a disposable mylar strip which contains a temperature scale that changes color to indicate the recorded temperature. These are for oral use and record the temperature within one minute. They have the advantages that they are relatively cheap and cannot be damaged by children

biting on the thermometer.

Digital thermometers record temperatures with a battery-operated heat sensor. They are more expensive than the previous options but have the advantage of being more accurate than glass thermometers, according to a study in Consumer Reports, January 1988, and that they require only 30 seconds to record the temperature.

Infrared tympanic thermometers read temperatures by means of an infrared beam directed into the ear, toward the tympanic membrane. The accuracy of this type of thermometer is equal to rectal temperature. The major advantage of this instrument is the speed of temperature recording, which is one second, while the major disadvantage is the price, at approximately \$100.

Liquid-crystal temperature strips applied to the forehead have been tested and found to be inaccurate for clinical purposes. Likewise, temperature sensitive pacifiers will likely miss fevers in many children.

## **Conclusion**

Fever is a symptom and not a disease. Fever is a common occurrence in children and is mostly associated with viral infections. Frequently, parents suffer from "fever phobia," i.e., they become highly anxious when their child develops a minor fever. Parents should be assured that fever is almost a condition of normality and is the body's way of turning on the immune system in response to the many pathogens with which their children come into contact. The task for the doctor is to evaluate the fever according to the criteria presented above and to determine if the body is managing the situation normally, or if external assistance is required.

## *Reference*

Schmitt BD: Fever phobia: Misconceptions of parents about fever. Amer J Dis Child, 134:176, 1980.

*Peter N. Fysh, DC*  
*Sunnyvale, California*

Editor's Note:

Dr. Fysh is currently conducting pediatric seminars. He may be contacted at (408) 720-8042.

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