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## Hyperthermia and Pregnancy

The information below will help you determine if your prenatal exposure to hyperthermia or fever represents an increased fetal risk. With every pregnancy, all women have a 3 to 5 percent chance to have a baby with a birth defect.

### Hyperthermia

#### *What is hyperthermia?*

Hyperthermia refers to an abnormally high body temperature. A person's normal body temperature averages about 98.6°F. In pregnancy, a body temperature of at least 101°F can be of concern. However, most studies have not shown a concern until your temperature reaches 102°F or higher for an extended period of time.

#### *What can cause hyperthermia?*

Hyperthermia most often occurs from a fever due to illness. Extremely heavy exercise or prolonged exposure (longer than 10 minutes) to heat sources such as hot tubs, very hot baths, or saunas can also raise body temperature.

#### *What effect does hyperthermia in early pregnancy have?*

Some studies have shown an increased risk for birth defects called neural tube defects (NTD) in babies of women who had high temperatures early in pregnancy.

Studies have suggested there may also be an increased risk for miscarriage. Possible associations between high fever and birth defects such as heart defects and abdominal wall defects have been suggested. However, most studies did not find these results. The potential risk for these problems is small.

It is important to know what caused your fever during pregnancy. Risks may be associated with the cause of the fever, such as rubella infection, rather than from the fever itself. Please discuss any concerns you may have with your health care provider.

#### *What is a neural tube defect?*

Neural tube defects occur when the spine or skull does not close properly. About 1 to 2 out of every 1,000 births has a neural tube defect. An opening in the spinal column is called spina bifida. The majority of babies with spina bifida grow to adulthood. The most severe open skull defect is called anencephaly. Infants with anencephaly have a severely underdeveloped brain and usually die at or shortly after birth.

Babies with spina bifida may need surgery to close the opening. While spina bifida can be of varying severity, most children will have some degree of paralysis and may have problems with walking and with bowel and bladder control. Some children with spina bifida may also develop hydrocephalus or "water on the brain". The very mildest form of spina bifida is covered by skin and causes no major problems.

#### *When does the neural tube close?*

The neural tube (which forms the spinal cord) is completely closed by the beginning of your 6<sup>th</sup> week of pregnancy (dating from the first day of your last menstrual period). After the neural tube has closed, a neural tube defect cannot occur. Therefore, if your high temperature occurs after the 6<sup>th</sup> week of pregnancy, the neural tube has already closed. Then, your pregnancy is not at an increased risk for this birth defect due to the hyperthermia.

#### *I am 5 weeks pregnant and have a high fever. Can this hurt my baby?*

There may be an increased risk for a neural tube defect if a woman has a fever of 101°F or higher for an extended period of time during the first 6 weeks of pregnancy. It is not possible to determine the exact risk. With an illness like the flu, it is often hard to separate the effects of a high temperature from the other effects of an illness. You should contact your health care provider if you have a fever during pregnancy.

***What testing is available for neural tube defects during my pregnancy?***

Neural tube defects are detectable during pregnancy through a combination of ultrasound and alpha-fetoprotein (AFP) screening at approximately 15 - 20 weeks. AFP screening is a blood test that measures the level of AFP in the mother's blood. This screen can detect 80 - 90% of fetuses with open neural tube defects. Skin-covered neural tube defects are hard to detect during pregnancy.

Elevated levels of AFP in maternal blood indicate an increased risk for neural tube defects and suggest a need for further diagnostic testing, such as amniocentesis or a targeted ultrasound exam. Please talk to your health care provider if you have questions about these prenatal tests.

***I have a fever of less than 101°F and am pregnant. Is there a risk to my baby?***

A temperature below 101°F does not appear to increase the risk for birth defects above that seen in any pregnancy. However, you should discuss with your health care provider whether the illness causing your fever poses a risk.

***I have been using the hot tub and sauna. Is this a risk during my pregnancy?***

Hot tub or sauna use during pregnancy should be limited to less than 10 minutes. This is because it may take only 10 to 20 minutes in a hot tub or sauna to raise your body temperature to 102°F. You may not even feel uncomfortable at this temperature.

Although sauna use alone has not been as strongly associated with an increased risk for neural tube defects, the same safety measures are recommended. If you were in a hot tub or sauna for a long period of time early in pregnancy, you may want to talk with your health care provider about ways to detect neural tube defects during pregnancy.

After 6 weeks of pregnancy, normal hot tub and sauna use does not appear to increase the risk for birth defects. However, you should still be careful to limit your use to 10 minutes or less and not get overheated or dehydrated.

***Will using my electric blanket or heated waterbed during pregnancy increase the risk for hyperthermia?***

Electric blankets and heated waterbeds are not likely to raise your body temperature enough to increase the risk for neural tube defects. Although one recent study showed no increased risk, concerns have been raised, but not confirmed, that use during

pregnancy may increase the risk for pregnancy loss or low birth weight.

***Can ultrasound hurt my baby?***

The use of ultrasound has not been associated with adverse pregnancy outcomes. Ultrasound uses sound waves to create an image of a fetus on a screen. Although this procedure can slightly increase body temperature, even a lengthy ultrasound exposure is unlikely to increase your body temperature significantly.

May 1998  
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