



MotherToBaby

Medications & More During Pregnancy & Breastfeeding
Ask The Experts

Fact Sheet

by the **Organization of Teratology Information Specialists (OTIS)**

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Critical Periods of Development

In every pregnancy, a woman starts out with a 3-5% chance of having a baby with a birth defect. This is called her background risk. This fact sheet talks about the critical periods of development and types of birth defects that can result from exposures at different stages of pregnancy. This information should not take the place of medical care and advice from your health care provider.

What are critical periods of development?

Each part of the baby's body forms at a certain time in pregnancy. During this time, the body part is very sensitive to damage caused by medications, alcohol or other harmful exposures. We call this specific time the "critical period of development" for that body part.

Does the risk of certain types of birth defects change throughout pregnancy?

Yes, the risk depends on what body part is developing at the time of exposure. Once a body part has formed, it is no longer at risk to develop major birth defects, but some exposures could still affect its growth and function.

The chart on the next page shows the critical periods of development for different parts of the body. The chart starts from the time of conception when the egg and sperm join. The weeks listed on the chart are the "embryonic age" or "fetal age" of a pregnancy. Note that this is different from a common way of dating a pregnancy called "gestational age." Gestational age begins with the first day of a woman's last menstrual period. This day is usually two weeks before a baby is conceived. This means that you can change gestational age to embryonic/fetal age by subtracting two weeks. For example, 12 gestational weeks (since the day of your last period) is the same as 10 fetal weeks (since the first day of conception).

The dark bars on the chart show when each part is most sensitive to harmful exposures and at risk for major birth defects. Birth defects are typically classified as "major" if they cause significant medical problems and need surgery or other treatment to repair. Heart defects, spina bifida, and clubfeet are examples of major birth defects.

The light bars show periods when the parts are still at risk to develop minor birth defects and functional defects. "Minor" birth defects by themselves do not cause significant medical problems and usually do not require treatment or surgery. Minor birth defects can be variations of normal. Wide-set eyes, large ears and certain birthmarks are examples of minor birth defects. Both major and minor birth defects are physical, structural changes. However, "functional" defects change how a part of the body works without changing its physical structure. Intellectual disability and hearing loss are both examples of functional defects.

The chart also shows the location of the most common birth defects that can occur during each week. In general, major defects of the body and internal organs are more likely to occur 3-12 weeks after conception. Minor and functional defects including those affecting the brain are more likely to occur later in pregnancy.

“Medication A.” You read that Medication A increases the chance for heart defects. This means that babies may have a higher chance for major heart defects *if* their mothers’ take this medication during the heart’s critical period of development. We know that the heart’s critical period of development is from 3 to 6 embryonic weeks. This means that using this medication in the third trimester *cannot* cause a major heart defect. You should always talk to your health care provider before starting or stopping any medication.

References:

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