

[close window](#)**Source:** <http://www.medicinenet.com>**Health Feature**

This article is from the WebMD

[Feature Archive](#)

Fetus to Mom: You're Stressing Me Out!

Fetus to Mom: You're Stressing Me Out

WebMD Feature

Dr. Calvin Hobel, a perinatologist in Los Angeles, has spent much of his career trying to document the effects of [stress](#) on [pregnancy](#) and to figure out how best to get pregnant women to relax. Not only does he see the importance clinically, but he's reminded of it daily.

Beginning with his 45-minute commute to Cedars Sinai Medical Center, Dr. Hobel watches women putting on makeup in their cars, wolfing down bites of breakfast ... and the clincher? Pregnant women who come to yoga classes to learn how to relax have to take a breather -- to answer cell phones they just couldn't leave behind.

Stress is such a familiar part of women's lives that many just squeeze a pregnancy right into all the hubbub. Even if women wonder whether it's bad for their developing fetuses, it's often hard to get a straight answer, mainly because most doctors don't know how much stress is too much -- or for whom.

But researchers, including Hobel, are getting closer to unlocking the mystery.

For one thing, a growing number of studies are confirming what used to be considered just an old wives' tale -- that stress really isn't good for pregnant women. It not only increases the risk of pre-term labor, but possibly a host of other problems for babies after birth.

Even more important -- and clearly more difficult to discern -- researchers are close to being able to predict who's most susceptible to stress and at highest risk for complications, such as pre-term birth. In fact, some say it won't be long before health-care providers have the tools to head off these problems before it's too late.

"Stress is a silent disease," says Dr. Hobel, director of maternal-fetal medicine at Cedars Sinai and a professor of obstetrics/gynecology and pediatrics at University of California, Los Angeles (UCLA). "Pregnant women need to be educated in recognizing when they have stress, the consequences and some of the simple things they can do to make a difference."

Throw Out the 'Blueprint'

Developmental biologists once thought fetuses were conceived with a "blueprint" from their parents' genes. As long as you gave the growing fetus the right nutrients and avoided harmful substances, this blueprint would develop into a healthy baby. That's not what experts believe anymore, says Dr. Pathik Wadhwa, assistant professor of behavioral science, obstetrics and gynecology at University of Kentucky College of Medicine.

"This view has more or less been completely turned upside down," says Dr. Wadhwa, who is co-editing a special issue of scientific papers on pregnancy and stress to be published in *Health Psychology* next year. "At each stage of development, the organism uses cues from its environment to decide how best to construct itself within the parameters of its genes."

Stress is an example of how a fetus responds to stimuli in the womb and adapts physiologically. "When the mother is stressed, several biological changes occur, including elevation of stress hormones and increased likelihood of intrauterine infection," Dr. Wadhwa says. "The fetus builds itself permanently to deal with this kind of high-stress environment, and once it's born may be at greater risk for a whole bunch of stress-related pathologies."

Pre-term births and low birth weight are among the most recognized effects of maternal stress during pregnancy, established over nearly two decades of animal and human research. Recent studies by Dr. Wadhwa and colleagues suggest that women who experience high levels of psychological stress are significantly more likely to deliver pre-term. Typically, one in 10 women delivers pre-term (before 37 weeks).

Pre-term babies are susceptible to a range of complications later, including chronic lung disease, developmental delays, learning disorders and infant mortality. There's even compelling evidence from epidemiological studies and animal research that babies who experience stress in utero are more likely to develop chronic health problems as adults, such as heart disease, [high blood pressure](#) and [diabetes](#).

Most recently, some studies are suggesting that stress in the womb can affect a baby's temperament and neurobehavioral development. Infants whose mothers experienced high levels of stress while pregnant, particularly in the first trimester, show signs of more [depression](#) and irritability. In the womb, they also are slower to "habituate" or tune out repeated stimuli -- a skill that, in infants, is an important

predictor of IQ.

"Who you are and what you're like when you're pregnant will affect who that baby is," says Janet DiPietro, a developmental psychologist at Johns Hopkins University. "Women's psychological functioning during pregnancy -- their [anxiety](#) level, stress, personality -- ultimately affects the temperament of their babies. It has to ... the baby is awash in all the chemicals produced by the mom."

The Womb Is a Busy Place

So, how does a mom's stress get passed onto her fetus? Researchers aren't exactly sure which stress responses play the largest role, but it's clear that when a pregnant woman experiences anxiety, her body produces chemicals that affect the baby, too. Her nervous system, for instance, stimulates the release of epinephrine and norepinephrine, stress hormones that constrict blood vessels and reduce oxygen to the uterus.

Since a very significant decrease in blood flow is probably necessary to compromise development of the fetus, Dr. Wadhwa says that another stress response is more likely to affect fetal growth and pre-term labor. That is, when pregnant women experience stress, particularly in the first trimester, the placenta increases production of corticotropin-releasing hormone (CRH), which regulates the duration of pregnancy and fetal maturation.

CRH is one of the most exciting recent scientific discoveries that could explain why women go into labor when they do. Called the "placental clock," CRH levels measured in the mother's blood early in pregnancy -- between 16 and 20 weeks - - can predict the onset of labor months later. Those with the highest levels will likely deliver prematurely, and those with lowest levels are apt to deliver past their due dates.

And it appears that stressful events occurring during the first trimester are most critical in signaling early labor. "That's very important because it used to be thought exactly the opposite -- that women become fragile as term approaches. Indeed, our data suggests that women become psychologically stronger," says Dr. Curt Sandman, professor and vice chairman of the department of psychiatry at University of California, Irvine.

Monitoring CRH levels and managing stress that early in pregnancy may have important implications in reducing pre-term delivery, says Dr. Christine Dunkel-Schetter, a professor of psychology at UCLA. Dr. Dunkel-Schetter is working on two studies (one with Drs. Wadhwa, Hobel and Sandman) to determine who is at highest risk for pre-term birth and what types of stresses are the biggest contributors.

"It appears we will be able to show that stress in pregnant women early in pregnancy leads to an early rise in CRH, which then leads to an early delivery," she says. "What we can't do yet is diagnose which women are most at risk. But

we're close, and very soon it will be appropriate for women to be asking their doctors if their level of stress should be assessed systematically."

What's Too Much ... and for Whom?

Tiffanie Pomerance of Los Angeles remembers when she was admitted to the hospital during her first pregnancy after a sonogram found that her cervix had started to dilate at 19 weeks. Doctors stitched her up but she started having severe contractions and was hospitalized. Everyone, including her husband and family, was worried.

"We just sat in the hospital room staring at the fetal monitor, looking at how many contractions I was having. We all thought I was going to lose the pregnancy," says Pomerance, 32. Her mother finally covered the monitor with a towel when Dr. Hobel explained that worries would exacerbate her condition. Sure enough, she started to notice that contractions got worse when she was more anxious.

In hindsight, Pomerance says her hectic lifestyle as a speech therapist -- working 12-hour days, dividing her time between three nursing homes and grabbing lunch while standing -- probably contributed to her problem in the first place. She slowed down considerably with her second pregnancy. Fortunately, she carried both babies to 35 weeks.

Like most women, Pomerance had no idea how much stress could put her over the edge. "I was under your everyday type of stress. I thought that I would do it all, plus work out every day at the gym. Now I tell anyone who's pregnant to slow down a bit."

That's what makes health providers so reluctant to emphasize the connection between stress and pregnancy problems. They say a lot of the differences come down to women's personalities and how they cope with stress. Besides, who wants to lay even more guilt and anxiety on a woman who is already stressed?

Dr. Dunkel-Schetter says she's hoping to nail down the biggest predictors of stress and devise a questionnaire that women could take, along with the blood test to measure CRH levels, to determine who's at highest risk. She says it appears that women who are constantly anxious or fearful may be most susceptible to problems during pregnancy.

"Stress can be lots of things," she says. "What you'll see in the literature (are) these lists of life events -- 'Did somebody die? Did you lose your job?' But those events are not what's leading to early delivery. What I see in our work that's leading to early delivery is being a generally anxious person ... for instance, a lot of fear about the pregnancy and delivery."

But she says it's a continuum. "Low levels of anxiety we all know and feel -- sometimes more, sometimes less," says Dr. Dunkel-Schetter. "The highest level is somebody who has panic attacks or is extremely fearful of many things, and it's

probably the case that the higher you are on this continuum, the more risk to your physiology in pregnancy."

Personality traits that might account for some women being better able to handle stress include optimism, self-esteem, a feeling of control over one's life, emotional suppression or expression, and hostility, says Dr. Wadhwa.

So, What's a Mother To Do?

Dr. Hobel worked in France with one of the first obstetricians to successfully reduce pre-term births. The program he devised included work leaves as early as 24 weeks into the pregnancy and nurse-midwife home visits to help women handle psychosocial stress. He started a similar program for 12,000 women in Los Angeles in the 1980s; pre-term births dropped 21% at a time when pre-term birth rates were increasing in the city and nationally.

"I think our whole approach to comprehensive prenatal care today is sort of messed up -- a lot of the focus is on the wrong things," says Dr. Hobel. "We measure a woman's blood pressure, her uterine size, listen to the baby's heart tones, but no one asks how things are going with her life."

The big question, he says, is finding the right interventions. He and Dr. Dunkel-Schetter believe some of those components include the usual methods to reduce stress, including biofeedback, guided imagery and yoga. But what may be equally important are a woman's support network and providing enough information about prenatal care and the pregnancy to ward off worries.

And it's clearly a matter of teaching women how to relax, a foreign concept for many. "No one is telling them that they should look at what they're doing," says Dr. Hobel. It might mean taking Wednesdays off and work Saturdays instead, just to break the fatigue of a week's work; or making sure to take time for breakfast and frequent meals.

"Sure, I think there are some super women that can deal with stress, but if you really study them, you'll recognize that they've got some built-in mechanisms, something about the way they're dealing with their lives, that makes a difference," says Dr. Hobel. "Pregnancy itself is a real stress on the body."

Dr. James McGregor, a professor of obstetrics at the University of Colorado Health Sciences Center, uses another type of test to predict pre-term labor. It's a saliva test that measures another hormone, estriol, which can give up to three-weeks notice of the onset of labor. He's even called employers when it indicates a patient needs to kick back a little.

Sometimes, he says, it's hard to persuade pregnant women themselves that they may need to slow down if they're feeling stressed. "Actually everybody knows it, but we kind of deny it," says Dr. McGregor. "Stress comes under the heading of an old wives' tale, but in this case, it happens to be true."

What Is Your Stress Level?

Here are some questions to assess your level of stress during pregnancy, developed by Dr. Calvin Hobel, director of maternal-fetal medicine at Cedars Sinai Medical Center in Los Angeles. For each question, answer "yes," "sometimes" or "no." If you answer "sometimes" or "yes" to three or more questions, says Dr. Hobel, you may have sufficient stress to warrant some form of counseling or intervention. Consult your health-care provider.

1. I feel tense.
2. I feel nervous.
3. I feel worried.
4. I feel frightened.
5. I have trouble dealing with problems.
6. Things are not going well.
7. I cannot control things in my life.
8. I am worried that my baby is abnormal.
9. I am concerned that I may lose my baby.
10. I am concerned that I will have a difficult delivery.
11. I am concerned that I will be unable to pay my bills.
12. I live apart from my partner or spouse.
13. I have extra-heavy homework.
14. I have problems at work.
15. Have you and your partner or spouse had any problems?
16. Have you been threatened with physical harm?

©1996-2005 [WebMD](#) Inc. All rights reserved.

Last Editorial Review: 1/30/2005 11:12:21 PM

© 2009 MedicineNet, Inc. All rights reserved.

MedicineNet does not provide medical advice, diagnosis or treatment.

[See additional information](#)

[close window](#)