CALIFORNIA BIRTH DEFECTS MONITORING PROGRAM

# *Major Stressful Life Events & Birth Defects*

Does stress cause birth defects? Although stress is very common, research about its potential effects in pregnancy poses significant challenges. Individuals experience and report stress differently. And it's physical effects are not yet well understood.

This report by the California Birth Defects Monitoring Program focuses on a definable subset of stress: major disruptive life events. Over 2000 mothers of babies with and without birth defects were interviewed about their pregnancies and the interval just before conception. Questions covered a broad range of topics including diet, illnesses, medications, drugs, alcohol, tobacco, occupation, and hobbies.

## STRESSFUL LIFE EVENTS RAISE RISK

Women were asked about 3 stressful life events occurring in the month before conception and the first 3 months of pregnancy *(see box at right)*.

- At least 1 major event was reported by 27% of the mothers whose babies did not have birth defects.
- Stressful life events were 30% to 50% more common among mothers whose babies had any of the birth defects studied: serious heart defects, neural tube defects, oral clefts, and limb defects.
- The difference was not driven by other known risk factors for birth defects such as obesity, smoking, or binge drinking.
- The study did not examine possible lifestyle changes or coping behaviors that may have influenced risk.
- Because this study looked at only 3 stressful life events, *results cannot be generalized to stress in other situations*—whether from a different major event, chronic stress, or the stress of daily life.

### HOW COMMON IS STRESS?

Mothers of infants without birth defects answering "yes" to these questions for the month before conception and the first 3 months of pregnancy:

- Did anyone close to you die during this period? . . . . . 12%
- Were you or was anyone close to you separated or divorced? . . . . . 14%
- Did you or anyone close to you lose a job during this period? . . . . . 8%

State of California

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## HOW MIGHT STRESSFUL LIFE EVENTS BE LINKED TO BIRTH DEFECTS?

The mechanisms by which stressful life events might influence prenatal development are not yet well understood. They may include:

- Physical effects. Stress is known to cause physiological changes which may alter blood flow to the uterus. Corticosteroids are a substance released by the body during stress; corticosteroid-containing medications may be linked to oral clefts.
- Behavior changes. Stressful life events may reduce healthy activities such as eating a nutritious diet or taking multivitamin supplements containing folic acid. Or, stress may trigger risk-raising behaviors like cigarette smoking or binge drinking.
- Shared underlying cause. Stressful life events may be a marker for other risk factors rather than being directly linked to birth defects risk. For example, low socioeconomic status—a risk factor for some birth defects—may predispose an individual to life events such as job loss.

## CONFIRMATION UNDERWAY

A single study cannot prove an association; it must be confirmed and clarified with additional research. At least 2 other population-based studies to date have linked birth defects and major stressful life events. The California Birth Defects Monitoring Program has begun further studies to investigate a broader range of stressful life events.

## COMPREHENSIVE STUDY DESIGN

This report draws on a population-based interview study that tested a number of hypotheses about possible causes and risk factors.

## SHOULD WOMEN BE CONCERNED ABOUT THE EFFECTS OF STRESS?

Pregnant women experiencing disruptive life changes should keep these points in mind:

- While stressful life events are common, the vast majority of women who experience these events deliver babies without birth defects.
- We don't yet know why birth defects and stress are associated.
- While stressful life factors may be uncontrollable, women can reduce birth defects risk—for example, by taking vitamin supplements containing folic acid and avoiding harmful behaviors like smoking or drinking.

- Participants: Interviews were conducted with mothers whose infants/fetuses had conotruncal heart defects (207), neural tube defects (265), oral clefts (662), limb anomalies (165) as well as infants without birth defects (734). Over 75% of mothers contacted agreed to be interviewed. All deliveries occurred in 1987-1989.
- Diagnostic information: Abstracted from hospital medical records, including surgical and autopsy reports.

*REFERENCES:*
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