

# DES VOICE

Action

A Focus On Diethylstilbestrol

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## Additional Health Problems Possibly Linked to DES

### Associations found in both DES Daughters and DES Sons

"Medical Conditions Among Adult Offspring Prenatally Exposed to Diethylstilbestrol," Rebecca Troisi et al, *Epidemiology*, Vol. 24, No. 3, May 2013.

#### Reviewed by Fran Howell

Analysis of health information from DES Daughters and DES Sons found a higher incidence of diabetes, cardiovascular disease, coronary artery disease, heart attack, high cholesterol, hypertension, osteoporosis and bone fractures, which may be associated with prenatal DES exposure. The new findings were published in the journal *Epidemiology* by researchers with the National Cancer Institute DES Follow-up Study.

Participants in the Study complete questionnaires on a five-year cycle. Information was taken from responses to the 2001 and 2006 surveys provid-

ed by 5,590 women and 2,657 men in matched cohorts of DES-exposed and unexposed individuals. All have medical record confirmation of prenatal DES exposure, or non-exposure.

The questionnaires asked participants if they had been diagnosed with any "serious medical conditions that required hospitalization, surgery or long-term treatment." Those who answered in the affirmative were then provided

a list of specific conditions: adult-onset diabetes, high cholesterol, hypertension, coronary artery disease, myocardial infarction (MI; heart attack), stroke, osteoporosis, and fractures. For analysis the categories of stroke, coronary artery disease and MI were combined to create the cardiovascular disease (CVD) category.

An open-ended question for re-

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*Higher incidence percentage in women and men prenatally exposed to DES, compared to those not exposed, for the following conditions:*

Condition	DES-Exposed
Diabetes	21%
High Cholesterol	12%*
Hypertension	14%*
Coronary Artery Disease	18%
Myocardial Infarction	28%
Stroke	55%
All CVD	27%*
Osteoporosis	24%
Fractures	30%

*\*Difference between exposed and unexposed is statistically significant (i.e., unlikely to be due to chance) but doesn't prove DES was causal.*

### **Additional Health Problems**

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porting additional information relating to other unlisted conditions was included on the forms, also.

Researchers took into account additional risk factors for the medical conditions being studied. They found, "Exposed women were younger, had more years of education, and were less likely to smoke than the unexposed, but the two groups were similar in body mass index (a measure of fatness) and alcohol intake. Frequency of general physical examinations in the past five years was slightly lower in the exposed women. Exposed and unexposed men were similar to each other in demographic and lifestyle characteristics."

Also, according to maternal pregnancy history for the group of DES Daughters and Sons who developed diabetes or high blood pressure, none of their mothers were prescribed DES for those particular medical conditions.

The researchers found associations between DES and the health issues under study, "generally were weaker in

the men compared with the women," although they noted the incidence of stroke and osteoporosis turned up higher in exposed than unexposed men.

While the condition of cardiovascular disease and its risk factors such as hypertension and high cholesterol, along with diabetes and osteoporosis appear greater in DES Sons and Daughters than in the unexposed cohort, only a few of the associations could not be explained by the role of chance, including high cholesterol, hypertension and all cardiovascular disease. The increase in incidence did not differ by the DES exposure. For several other health outcomes related to DES, not part of this study, dose and timing do matter.

### **Big Picture Understanding**

Both nationally and internationally, researchers are studying the role that endocrine disruptors may play in human health, particularly regarding cardiovascular disease. So this study, which suggests an association between DES and CVD, is important. And, as is

often the case in DES and all research, additional study is needed. In particular, it will be important to verify the details of the disease and its diagnosis.

Scientists have begun to see mounting evidence that indicates concentrations of persistent organic pollutants, like dioxin, DDT and PCBs, in humans may be linked to increased risks for diabetes and cardiovascular diseases. Therefore, this research finding regarding the endocrine disruptor DES and its association with those health issues is telling. It's the first study associating DES exposure with these adverse health effects.

The connections made between prenatal DES exposure and adult onset of disease will keep the matter in front of researchers working to unravel the mysteries of how prenatal environmental exposures affect human health.

Scientists on this study say they plan to continue following the health of participants, both DES-exposed and unexposed, as they age into the time when diabetes, and cardiovascular disease and its risk factors become more prevalent.