

Mothers who smoke and give birth preterm more than triple their CVD risk

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Mothers who smoke and have a preterm birth more than triple their risk of cardiovascular disease (CVD), according to research in more than 900 000 mothers published today in the *European Journal of Preventive Cardiology*. The risk of maternal CVD increased in a dose response relationship with the number and severity of preterm births.

"Smoking and preterm birth synergistically increase maternal [cardiovascular disease](#) risk."

Lead author Dr Anh D. Ngo, research fellow at the University of Sydney at Royal North Shore Hospital in New South Wales, Australia, said: "Smoking and preterm birth are established risk factors for maternal CVD. Fertility treatment is pushing up rates of preterm birth and smoking in pregnant women remains high, so knowledge of the impact of these conditions on CVD is important for prevention efforts. This is the first study to evaluate whether smoking and preterm birth synergistically increase [mothers'](#) CVD risk."

The study linked the perinatal records of 902 008 mothers during 1994 to 2011 with mothers' subsequent hospital admission for CVD or death from CVD. Analyses were conducted to compare the risk for CVD among mothers classified according to smoking and preterm birth.

The researchers found that both smoking and preterm birth were independently and significantly associated with the risk of CVD in affected mothers. Mothers who smoked and had a preterm birth had a

3.35 greater risk of CVD than non-smokers with term births, which was 29% greater than adding the risks of only smoking or having a preterm birth.

Dr Ngo said: "Smoking and preterm birth synergistically increase maternal [cardiovascular disease risk](#). When these two conditions coexist in the same individual, they interact to produce a joint effect on maternal CVD risk that is 29% greater than the sum of effects when they act alone."

The researchers also discovered that CVD risk was even greater in smoking mothers with more severe or recurrent preterm births. In smoking women, the risk of CVD was 3.83 times greater with an extremely preterm birth (20-33 weeks gestation) and 3.18 times greater with a moderately preterm birth (34-36 weeks gestation), compared to non-smoking mothers with term births. Smoking women had a 4.47 greater risk of CVD with two or more preterm births and a 3.2 greater CVD risk with one preterm birth, compared to non-smoking mothers with term births.

Dr Ngo said: "Our research shows for the first time that smoking and preterm birth interact to create a greater CVD risk than either risk factor on its own. One explanation could be the stress of caring for a preterm infant which may lead to unhealthy behaviours such as smoking, which increases the likelihood of future preterm births. Stress itself causes metabolic disorders, atherosclerosis and ultimately CVD."

"Our findings have numerous implications for CVD prevention," added Dr Ngo. "Smoking women who seek assisted reproductive technology should be counselled about their risk for preterm birth and CVD in later life so that they can make an informed decision."

"Smoking women who stop smoking when planning to get pregnant will

receive dual protection," continued Dr Ngo. "They will avoid the increased risk of having a preterm birth and they will avoid the elevated risk of getting cardiovascular disease when they reach an older age. Smoking mothers who have already had a preterm birth should quit smoking if they haven't already done so and go for periodic CVD screening."

Dr Ngo said that doctors should always encourage smokers to quit but especially women planning a pregnancy. "Doctors should take into account the joint effects of [smoking](#) and preterm birth when assessing a woman's CVD risk," he said. "Doctors should also consider the need for preventive therapy to timely control for biological disorders preceding CVD such as hypertension and dyslipidaemia when these occur."

Dr Ngo concluded: "Women who smoke and have a [preterm birth](#) more than triple their risk of cardiovascular disease. More efforts are needed to persuade and support women to kick the habit. These efforts will have positive effects for both mothers and their babies"

More information: Interaction of maternal smoking and preterm birth on future risk of maternal cardiovascular disease - a population-based record linkage study. *European Journal of Preventive Cardiology*. 2015; DOI: [10.1177/2047487315593836](https://doi.org/10.1177/2047487315593836)

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