

Steroid injections for premature babies linked to mental health risk

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Steroid injections given to pregnant women before premature birth may increase the child's risk of later behavioural and emotional difficulties, a study has found.

Mothers who are expected to give birth prematurely are often given an infusion of glucocorticoids, which mimic the natural hormone cortisol. This treatment is vital for helping the baby's lungs mature, but the new research suggests it may also increase the risk of [mental health problems](#) including attention-deficit/hyperactivity disorder (ADHD). ADHD is the most common behavioural disorder in young people in the UK.

The study, by researchers at Imperial College London and the University of Oulu, Finland, is published in the journal *PLOS ONE*.

Cortisol is produced in the fetus in the late stages of pregnancy to help the lungs develop, preparing the baby for life outside the womb. Lung problems are common in premature babies, and can cause life-threatening breathing difficulties. Synthetic glucocorticoids, which replicate the effects of natural cortisol, are given in anticipation of preterm birth to reduce the risk of these problems.

There has been some concern that exposure to high levels of glucocorticoids in the womb might have harmful long-term effects on brain development. Scientists have previously established a link between stress in pregnancy and symptoms of ADHD in [children](#). As cortisol is produced as a response to stress, it has been suggested that cortisol may

be responsible for this link.

The researchers studied 37 children who were exposed to synthetic glucocorticoids before birth and compared them to 185 children who were born at the same gestational age but did not have glucocorticoid treatment. A much larger comparison group of 6079 children, matched carefully on pregnancy and infant characteristics, was also examined to confirm the findings.

The children who had the treatment had poorer scores on general mental health at ages eight and 16, and were more likely to show symptoms of ADHD.

Alina Rodriguez, the senior author of the study, Visiting Professor at the School of Public Health at Imperial College London, said: "There are a lot of studies that have found links between stress in pregnancy and effects on children's mental health, especially ADHD, and this might be related to cortisol.

"Synthetic glucocorticoids mimic the biological reaction when the mother is stressed, so we wanted to see if babies who were exposed to this treatment are affected similarly in terms of mental health outcomes.

"This study suggests there may also be long-term risks for the child's [mental health](#). Although this is the largest study so far to look at these risks, the number of children in our group who were exposed to [glucocorticoids](#) was still relatively small. More studies will be needed to confirm the findings.

"We would like to reassure parents that in light of all available evidence to date, the benefits of steroid treatment on immediate infant health and survival are well-established and outweigh any possible risk of long-term behavioural/emotional difficulties. Parents who are concerned that their

child may be affected by behavioural or [emotional difficulties](#) should in the first instance contact their GP for advice."

The participants were part of the Northern Finland Birth Cohort, a study that recruited women in early pregnancy in 1985-6 and gathered information about the health of the children at age eight and 16.

More information: N. Khalife et al. 'Prenatal Glucocorticoid Treatment and Later Mental Health in Children and Adolescents.' *PLOS ONE*, Friday 22 November 2013.
[dx.plos.org/10.1371/journal.pone.0081394](https://doi.org/10.1371/journal.pone.0081394)

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