

# Healthy, full-term babies use a different stress hormone than their mother

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A University of Calgary researcher has identified how a steroid hormone may indicate infant distress during labour and delivery. The study, published by *PLOS ONE* this month, suggests that a full-term, healthy baby preferentially secretes a different stress hormone than its mother does. That stress hormone, corticosterone, has not been previously studied in human development.

"Fetal corticosterone, which is related to cortisol, could serve as a biomarker of fetal stress," says study lead author Katherine Wynne-Edwards, PhD, Jack Manns Professor of Comparative Endocrinology. Wynne-Edwards worked with clinical obstetrician/gynecologist Heather Edwards on the study.

"Since cortisol is found in much higher concentrations than corticosterone, it has received greater attention as an indicator of stress in both mothers and newborns."

In this study, investigators compared the concentrations of hormones in the umbilical cord to assess the hormones added to the circulation by the baby. Corticosterone increased during labor and delivery at a significantly greater rate compared to cortisol, although overall [cortisol levels](#) were still higher. As fetal stress increased, so did corticosterone concentrations.

Investigators analyzed umbilical cord blood samples from 265 healthy deliveries. Corticosterone concentrations varied according to the delivery

- compared to infants delivered by Caesarian section, vaginally delivered infants synthesized greater concentrations of corticosterone. When Caesarian delivery occurred because the baby's head was too large to pass through the [birth canal](#), which was expected to be a stressor on the baby, the highest corticosterone concentrations were seen. Meanwhile, intervention to strengthen maternal contractions did not increase corticosterone concentrations.

"Newborn corticosterone synthesis might be the basis for a signal to the mother that the baby is in distress, and might also indicate that a previously unsuspected developmental transition from preferential corticosterone synthesis to preferential cortisol synthesis occurs in early life," Wynne-Edwards said. "If so, then [corticosterone](#) might be an important biomarker of adrenal function in premature infants that is not yet studied or understood."

Provided by University of Calgary

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