

# Growth-restricted babies and asphyxia: Cardiovascular impacts

November 9 2023

---



Credit: CC0 Public Domain

The health effects of fetal growth restriction (FGR) can last a lifetime, and the latest research from Hudson Institute is showing just how pervasive those effects can be on the cardiovascular system.

In two major studies, researchers have found that:

- Being growth-restricted in the womb increases the risk of future cardiovascular disease (CVD) with changes in the [cardiovascular system](#) that can be detected even as early as days to weeks after birth, even if the usual measures of cardiovascular health might not indicate it;
- The cardiovascular impacts from [birth asphyxia](#) could be even more damaging on babies born growth-restricted.

Recent research by Dr. Beth Allison and her team, published in the *American Journal of Physiology-Heart and Circulatory Physiology*, showed that an increased risk of future cardiovascular disease may be set even before growth-restricted infants are born.

Ph.D. student Charmaine Rock said this means a new approach is needed to monitoring the ongoing health of people born with FGR.

"We compared lambs born with FGR to fully-developed lambs and found that those with FGR had rounder hearts, which can affect the way the heart functions and ability for their [blood vessels](#) to dilate, which can change delivery of blood to the organs," she said. "What was really interesting was that we could detect these changes at the [cellular level](#) when the usual measures of cardiovascular disease showed nothing out of the ordinary."

## **Impact of birth asphyxia on growth restriction**

The Hudson Institute of Medical Research team also examined whether exposure to perinatal asphyxia presented greater risks to those born growth-restricted than those who were not. The results were good and bad.

"Contrary to our hypothesis, we found that those born growth-restricted maintained [blood flow](#) to the [brain](#) for longer and needed fewer chest compressions during resuscitation," Dr. Allison said. "This suggests that preterm growth-restricted infants may be physiologically more resilient to perinatal asphyxia than other infants. However, we also found that during recovery from asphyxia there was an overshoot in blood flow to the brain, which may increase the risk of brain damage in those born growth-restricted and preterm."

This pre-clinical study showed for the first time that being born growth-restricted impacts response to a second insult—in this case, asphyxia.

Dr. Allison believes the outcomes of this study have resulted in more questions.

## **Antenatal care of growth-restricted babies deserves investigation**

Dr. Allison said, "Firstly, does the different response to asphyxia protect growth-restricted infants? We now know they are likely to maintain blood flow to the brain for longer—and also show a greater increase in [blood](#) flow to the brain after birth—but we remain unclear as to whether this protects the brain from damage.

"Second, we clearly show that growth restriction leads to a different response to asphyxia. So, does that make it more likely that doctors will fail to notice this serious and potentially life-threatening event in growth-restricted babies?"

Dr. Allison believes her research focuses attention on the special care that our smallest babies—those born growth-restricted—need in their first days and weeks.

"This research is the first to show the impact of asphyxia on the cardiovascular hemodynamic changes that occur in growth restriction," she said. "It is clear that this area of antenatal care deserves more investigation."

**More information:** Matthew Oyang et al, Cardiovascular responses to mild perinatal asphyxia in growth-restricted preterm lambs, *American Journal of Physiology-Heart and Circulatory Physiology* (2023). [DOI: 10.1152/ajpheart.00485.2023](https://doi.org/10.1152/ajpheart.00485.2023)

Charmaine R. Rock et al, Cardiovascular decline in offspring during the perinatal period in an ovine model of fetal growth restriction, *American Journal of Physiology-Heart and Circulatory Physiology* (2023). [DOI: 10.1152/ajpheart.00495.2023](https://doi.org/10.1152/ajpheart.00495.2023)

Provided by Hudson Institute of Medical Research

Citation: Growth-restricted babies and asphyxia: Cardiovascular impacts (2023, November 9) retrieved 27 April 2024 from <https://medicalxpress.com/news/2023-11-growth-restricted-babies-asphyxia-cardiovascular-impacts.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.