

Early life environment as an indicator of health; outcomes and prevention

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Cardiovascular disease (CVD) currently affects over 3.7 million Australians. The seminal work of Sir Prof David Barker showed that individuals born small due to intrauterine growth restriction (IUGR; birth weight < 10th centile for gestational age), not low genetic potential, have an increased risk of death from cardiovascular disease. He and others found that small individuals are at increased risk of hypertension, a risk factor for CVD, however, he also found that small individuals have an increased risk of left ventricular hypertrophy, the main predictor of poor cardiovascular outcomes. In a sheep model of IUGR, we have shown that IUGR results in left ventricular hypertrophy, in the absence of hypertension, before birth and persists after birth. Here we show the molecular changes that occur in the heart of the IUGR and that it is possible to reverse these effects with interventions in late gestation and during the periconceptual period. This work provides evidence that we may be able to improve the cardiac health of IUGR individuals by acting early in life.

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