Cardiovascular and metabolic outcomes of offspring born small or early : the Raine study

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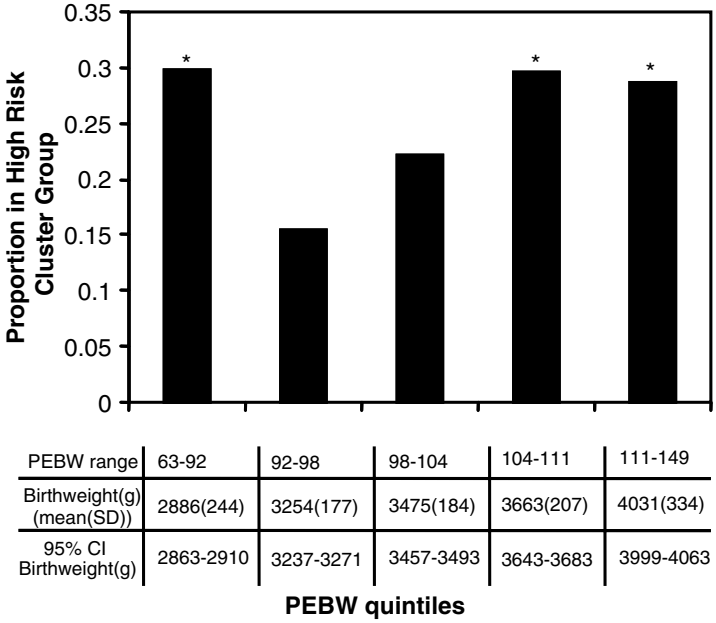
Extensive epidemiological evidence confirms that being born small is associated with increased cardiovascular and metabolic risk. Increasingly it is understood that it is suboptimal *in-utero* environment that is the precursor for fetal programming.

The West Australian Pregnancy Cohort (Raine Study) recruited 2900 pregnant women in 1989-1990. Two thousand and eighty six neonates were born. The offspring have been followed up at birth, 1, 2, 3, 5, 8, 10, 14 and 17 years of age. Blood pressure was measured at each follow up. Fasting blood samples were taken at 8, 14 and 17 years. From this longitudinal prospective study, we have investigated the role of early life factors on increased cardio-metabolic risk. Specifically we have investigated the role of low birth size, high birth size (Huang *et al.*, 2006), maternal obesity, maternal obstetric complications, childhood growth trajectories (Huang *et al.*, 2011), lifestyle, (O'Sullivan *et al.*, 2010; Ambrosini *et al.*, 2010) genetic and epigenetic influences upon these outcomes.

The conglomeration of influences upon increased cardio-metabolic risk (Huang *et al.*, 2009) in this contemporary Australian population cohort, indicate that, in addition to low birthweight, many other suboptimal in-utero and early postnatal conditions increased cardiovascular risk. We have confirmed in this population, that there is a U shaped relationship between birth size and cardio-metabolic risk (Figure) (Huang *et al.*, 2007).



Proportion in the high metabolic risk cluster in different birth size quintiles.
**p<0.05 compared to 2nd birth size quintile. (Huang et al., 2007)*

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