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## Epidemiology

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### Correlation of umbilical cord blood haematopoietic stem and progenitor cell levels with birth weight: implications for a prenatal influence on cancer risk

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**We examined the relation with birth weight and umbilical cord blood concentrations of haematopoietic stem and progenitor populations in 288 singleton infants. Across the whole range of birth weight, there was a positive relation between birth weight and CD34<sup>+</sup>CD38<sup>-</sup> cells, with each 500 g increase in birth weight being associated with a 15.5% higher (95% confidence interval: 1.6–31.3%) cell concentration. CD34<sup>+</sup> and CD34<sup>+</sup>c-kit<sup>+</sup> cells had J-shaped relations and CFU-GM cells had a U-shaped relation with birth weight. Among newborns with  $\geq 3000$  g birth weights, concentrations of these cells increased with birth weight, while those below 3000 g had higher stem cell concentrations than the reference category of 3000–3499 g. Adjustment for cord blood plasma insulin-like growth factor-1 levels weakened the stem and progenitor cell–birth weight associations. The positive associations between birth weight and stem cell measurements for term newborns with a normal-to-high birth weight support the stem cell burden hypothesis of cancer risk.**

**Keywords:** birth weight; cancer risk; prenatal exposure; stem cell

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