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Prenatal stress and the programming of the HPA axis.

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There are several independent prospective studies showing that a wide variety of forms of prenatal stress can have long-term effects on the behavioural and cognitive outcome for the child. Animal studies have shown that prenatal stress, as well as affecting behaviour, can also reprogram the function of the HPA axis in the offspring. However, the effects on the HPA axis are very variable depending on the nature of the stress, its timing in gestation, the genetic strain of the animal, the sex and age of the offspring and whether basal or stimulated HPA axis responses are studied. There are also several recent studies showing long-term effects of prenatal stress on basal cortisol levels, or cortisol responses to stress, in humans. The designs of these studies differ considerably, many are small, and the effects on outcome are also varied. There is little evidence, so far, that altered function of the HPA axis in the child mediates the behavioural or cognitive alterations observed to be associated with prenatal stress.