

# What About The Children?

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## RESEARCH SUMMARY

### **Rooming-in Reduces Salivary Cortisol Level of Newborn**

De Bernardo, G., Riccitelli, M., Giordano, M., Proietti, F., Sordino, D., Longini, M., Buonocore, G. and Perrone, S. (2018)

*Mediators of Inflammation*, 2845352

It is perhaps self-evident that the process of birth is a stressful experience for the baby as well as the mother. Furthermore, infants are subject to a range of stressful and even painful experiences in the first days of life. There is increasing evidence that increased exposure to stress in the newborn period is associated with sub-optimal development of some parts of the brain; it is, therefore, important to discover how very young infants process stress and how they can be best protected from exposure to it.

In people of all ages, stressful situations lead to a cascade of biochemical reactions in the hypothalamus, pituitary and adrenal glands – known together as the hypothalamic-pituitary-adrenal (HPA) axis – and to increased secretion of the so-called ‘stress hormone’, cortisol. This can have a particularly marked effect in young infants as their HPA axis is still developing. Sustained high levels of cortisol are considered to be a risk factor for various metabolic difficulties including insulin resistance (which can lead to diabetes); for immune system deficiencies; and for destructive changes in some parts of the brain.

Many studies have used the concentration of cortisol in saliva, which can be measured easily, as a biomarker for levels of physiological or psychological stress. Some of these have been applied to young infants: for example, babies aged under three months show increases in salivary cortisol during and after painful medical interventions such as vaccination and the ‘heel lance’ that is regularly used to take blood for screening tests. This increase is lower in babies who are kept close to their mothers during the interventions and, indeed, close interactions between mother and baby reduce stress levels in both, throughout the period following birth.

The term ‘rooming-in’ is used to describe the practice of allowing mothers and babies to stay in the same room during their time in hospital, as opposed to caring for the babies in a nursery except during breast-feeding. If babies are roomed-in, they may be kept with their mothers for the whole time or only during the daytime (which is known as partial rooming-in).

A team of researchers led by Serafina Perrone of the University of Siena in Italy have tested whether there was a difference in stress levels, as measured through salivary cortisol, between infants cared for under full or partial rooming-in protocols. This study involved forty healthy, full-term infants born by elective Caesarian section to at least third-generation Italian parents between January and September 2016. Infants with

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mothers who smoked or who had suffered from certain diseases during pregnancy were excluded from the study. Twenty infants born in Villa Cinzia Hospital, Naples (the control group) were roomed-in between 7am and 9pm and kept in a nursery overnight; twenty born in the C.G. Ruesch clinic, also in Naples (the study group) were roomed-in throughout the day and night. A sample of saliva was taken from each infant on the third day of life by the same paediatric nurse, and two measurements of cortisol levels were made from each sample using the same standard procedure.

Statistical analysis of the cortisol levels, again using a standard procedure, showed that there was a significant difference between the two groups. The median level of salivary cortisol of the infants in the control group (partial rooming-in) was 488.5 ng/dl, whereas the median level in the study group (full rooming-in) was 258 ng/dl. The range of cortisol levels was also larger in the control group. There were no statistically significant differences in birthweight or gestational age between the groups.

Rooming-in after birth allows infants who are born in hospital to have the type of constant, close, intimate contact with their mothers that has been shown to promote optimum development of the HPA axis and other brain systems and to protect them to at least some extent from the adverse effects of stress during childhood and beyond. This study suggests that the beneficial effect is greater if the infants are kept with their mothers throughout the day and night. It is a small one, however, and Perrone and her team suggest that larger trials and follow-up studies will be needed to determine the size of the effect and the long-term benefits of full compared to partial rooming-in.

Dr Clare Sansom