

4. Low-Stress Birthing Environments

A new report, *Hormonal Physiology of Childbearing: Evidence and Implications for Women, Babies, and Maternity Care* (2015), synthesizes an extensive literature about hormonally-driven processes of parturition and the early postpartum period.

The following information is drawn from this report.

Stress at healthy levels (“eustress”) and its hormonal effects can benefit women and babies around the time of birth. However, women may experience maternity care facilities as excessively stressful in labor, birth and the postpartum period.¹ Unknown or hurried personnel, noise, unfamiliar or unsupportive language, lack of privacy, and separation from their newborn can contribute. This fact sheet summarizes the beneficial hormone actions of eustress, the benefits of lowering stress in the birthing environment through the lens of hormonal physiology, and practices that support beneficial hormonal physiology in conditions of stress.

Stress hormones during labor and birth:

- ▶ Short-term elevations in epinephrine, norepinephrine and cortisol occur in response to labor stress and pain.² In the right amount (“eustress”), the mother remains alert and focused.
- ▶ Short-term fetal elevations in epinephrine and norepinephrine also occur in labor. A surge of these catecholamine hormones in late labor protects the fetus from hypoxia and promotes neonatal transitions, including optimizing breathing, temperature, and glucose regulation. These hormones also promote newborn alertness, benefitting bonding and breastfeeding initiation.³
- ▶ In conditions of excessive maternal stress, elevation of epinephrine and norepinephrine may cause blood flow to be diverted away from the uterus and baby⁴ and toward the heart, lungs and muscles as part of the “fight or flight” response. Catecholamine elevation may also stall labor⁵ as an evolutionary mechanism to support flight or flight in the presence of danger. These stress responses may explain the common phenomena of slowing labor on admission to the hospital.⁶
- ▶ Other possible stress pathways that slow labor may include: elevations in beta-endorphins, which reduce central oxytocin; reduction in oxytocin by catecholamines; and inhibiting effects of stress on pulsatile oxytocin release.⁷
- ▶ Following birth, maternal and newborn stress and stress hormone levels drop quickly. Stress reduction is supported by elevations in calming and rewarding hormones, including oxytocin and beta-endorphins, promoted by maternal-newborn skin-to-skin contact.^{8,9}

Benefits of low-stress birthing environments:

- ▶ Creating a calm, relaxed, and emotionally supportive atmosphere for labor and birth may benefit labor progress by reducing excessive stress and catecholamines.
 - ▶ Lower levels of stress, for example through labor support,¹⁰ may help women cope well with labor pain, decrease the need for pharmacologic pain management, and reduce the hormonal interruptions of epidural analgesia.
 - ▶ Lower levels of stress may promote uterine blood supply, improving fetal and newborn well-being,⁵ especially of vulnerable babies.
 - ▶ Low levels of stress after birth, facilitated by uninterrupted mother-newborn contact, may promote breastfeeding and maternal-infant attachment, including by elevating oxytocin levels.⁸ Postpartum hemorrhage risks may be lowered.
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Access *Hormonal Physiology of Childbearing: Evidence and Implications for Women, Babies, and Maternity Care* (2015) by Dr. Sarah J. Buckley and related material, including individual fact sheets and the full set, at ChildbirthConnection.org/HormonalPhysiology.

Practices that support beneficial hormonal action, especially when unpreventable stress occurs and/or hormonal physiology is disrupted

In excessively stressful situations, childbearing women and newborns can benefit from support of physiologic processes as far as safely possible. Ways to foster these processes include:

- ▶ Provide labor support, such as doula care, to laboring women to reduce stress and its impacts.¹⁰
- ▶ Ensure early and uninterrupted maternal-newborn skin-to-skin contact. This may reduce stress hormones for both, and benefit newborn transition⁹ and breastfeeding initiation.¹¹ Oxytocin elevations¹¹ and stress hormone reductions may also reduce the risk of postpartum hemorrhage.
- ▶ Support the early initiation of breastfeeding, which also promotes the release of calming, rewarding hormones for mother and baby.

Precautionary Point: Both animal¹² and provisional human⁵ research suggest adverse effects of labor stress. Possible impacts include prolonged labor and fetal hypoxia, with increased morbidity and mortality in animal studies.^{12, 13} Slow labor and suspected fetal hypoxia are common reasons for labor interventions. Reducing stress in laboring women, as suggested above, may be a simple low-technology approach with substantial benefits, including reduced need for interventions.

Selected references – see report for additional documentation:

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