

Hormones of Pregnancy, Labor, and Postpartum

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Pregnancy

- hCG (human chorionic gonadotropin) doubles every two days for the first ten weeks of pregnancy. It regulates estrogen and progesterone till placenta is fully developed. Leads to frequent urination and morning sickness. Suppresses immune function, to ensure mom's immune system will not fight off the 'foreign invader' (i.e. the baby). So mom may develop more colds and is more susceptible to food-borne illness.
- Progesterone: keeps placenta functioning and uterine lining healthy; inhibits smooth muscle contractions; relaxes uterus, walls of blood vessels, stomach, bowels (leads to heartburn, indigestion, constipation and a bloated feeling); causes fatigue, heavy sweating and acne; stimulates secretion of relaxin.
- Estrogen: increases growth of the uterus, maintains uterine lining, promotes breast growth, triggers fetal organ growth, increases blood flow. Also, contributes to breast tenderness, increased vaginal mucus, skin pigmentation, water retention, the blushing "glow" of pregnancy, and stuffy noses.
- Relaxin: relaxes muscles, joints, and ligaments, especially in pelvis, softens cervix. Limber joints = unsteady joints - moms may feel unsteady on feet, especially when combined with weight gain and shift in center of gravity.
- Oxytocin: in late pregnancy, oxytocin receptors increase in preparation for labor. Oxytocin aids nutrient absorption, reduces stress, makes mom sleepy.
- Hormone fluctuations can lead to mood swings, and the elevated hormone levels causes a magnification of emotions (what would have upset her just a little bit in the past now leaves her in tears, etc.)
- Applying this information within the context of prenatal yoga: Pregnant women are often troubled by all the common discomforts of pregnancy. Understanding the hormonal reasons for those discomforts, and what the benefits are for the baby can be reassuring. So, in a yoga class, if a student shared "I'm so tired of having a stuffy nose all the time", you might say "it is hard... but that's due to all the estrogen in your body, which is doing a great job of helping your baby's organs to grow." Or, if a student said "My heartburn and constipation are really bad", you could offer tips for managing these things, but also say "Yeah, progesterone helps all your smooth muscles relax - that helps your uterus stay relaxed so you don't have preterm labor. But it relaxes everything else at the same time, and I know those side effects can be hard."

Labor

- Oxytocin. Also called the "Tend & Befriend" hormone, or the "Collect and Protect" hormone, or simply "the Love hormone." Causes rhythmic uterine contractions, increases length and strength of contractions. It increases when someone feels safe, loved, protected, nurturing, and "at home". Also increases with skin-to-skin contact, nipple stimulation, and love-making, especially with orgasm. Decreases in unfamiliar environments, and with fear, anxiety, and related release of catecholamines.
- Endorphins. Natural opiate: relieve pain and cause euphoria. Secreted with stress, duress, and pain, but also during pleasurable activities like sex, pregnancy, birth, breastfeeding, exercise - also called "the runner's high". Secreted during social contact: Just seeing the face of a loved one can cause a surge. Oxytocin enhances the response to endorphins. Decreases if the mother is given artificial opiates - narcotic pain meds, whether in an IV or an epidural.
- Catecholamines (adrenaline, cortisol, other stress hormones). Also called "Fight or Flight" hormone. Increases fear, anxiety, and pain. In first stage, slows labor. In second stage, can

speed delivery. (In moderate levels, can be beneficial in second stage, as it gives mom a burst of energy to push, and means baby will be alert and ready to nurse at birth.) Increases with fear, anxiety, hunger, cold, unfamiliar environment. Can be decreased by helping the environment feel safer for mom, and helping mom feel supported.

- Applying this information within the context of prenatal yoga: When considering whether or not to use pain medication in labor, women often don't know about the hormones of labor, and how they influence the process. Discussing these ideas with students might help them understand the process: In an un-medicated labor, if mom feels safe and supported, interruptions are minimized, and she's allowed to go into the "zone" of labor, she will be awash in oxytocin and endorphins which help her to manage the pain of labor. There will be times - we call them hurdles - when labor intensifies, and pain breaks out over the top of the relief these hormones were providing. If mom's support team can help her manage through another 4 or 5 contractions (~ 20 minutes), then often the endorphins will catch up to the pain, and again help her manage the intensity. Ways to help her past these predictable hurdles when everything feels too hard: eating or drinking something for a quick blood sugar boost, a change of scenery or activity, a bath, creating a safe, soothing environment, talking about her fears, and helping her feel loved and protected.

Postpartum

- Oxytocin. Responds to infant's suckling to drive the milk ejection reflex - the release of breastmilk. Enhanced by skin-to-skin contact and eye contact. For baby, oxytocin increases learning - baby is quiet, alert, attentive after nursing.
- Endorphins. Mom and baby both get them while breastfeeding. Creates pleasure and mutual dependency. Reduces pain.
- Prolactin. Promotes breastmilk production. Causes relaxation and sleepiness in mom during nursing. Increases with skin-to-skin contact with the baby. Increases the mother's patience with the drudgery of child care. Prolactin decreases testosterone levels in mothers and co-habiting fathers, and creates a desire to protect and nurture the baby. Prolactin also decreases libido for mom and partner. It directs permanent rewiring of brain to favor caregiving behaviors (once you learn to act like a parent, you will *always* act like a parent), allowing parents to put their children first. In dangerous situations, a man who is not a dad will protect himself; a dad will protect others; fathers release prolactin in response to intruders, childless males do not.
- Applying this information within the context of postpartum yoga: All of the postpartum shift in hormones causes mood swings - reassure new moms that it's perfectly normal to have days when you find yourself crying "for no reason" and then moments later, you're elated from just looking at your baby. These hormones can also lead a mom to feel unfocused and forgetful - 'mommy brain' or the 'postpartum haze.' Reassure moms that it's OK that they're not thinking quite as well as they usually do... they're not permanently 'stupid', it's just that right now their body and brain are placing such a high priority on baby care, that the other things need to slide a bit.

Resources: Childbirth Connection and Sarah Buckley have put together a fabulous collection of resources on the hormones of the perinatal period. They have info for clinicians if you want all the medical details. For clients, refer them to the booklet "Pathway to a Healthy Birth" at <http://transform.childbirthconnection.org/reports/physiology/> or print the poster for your classroom (it's more readable if you can print it 11x17" or bigger.) <http://childbirthconnection.org/pdfs/CC.NPWF.HPoC.Poster-Bleed.Women.2015.pdf>