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| **ACDM** | **~ California College of Midwives ~**  **Characteristics of Clinical Competency** |
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**~ Maternal-Fetal Ejection Reflex ~**

**Designer Genes program a natural  �labor saving devise�,**

**the fruit of a physically and psychologically undisturbed**

**labor in a healthy mother**

There is a quantifiable biological difference associated with undisturbed spontaneous labor and birth. If one is fortunate enough to be present at a great many �undisturbed� labors, those �designer genes� for spontaneity can be observed as naturally advancing process that combines biological and psychological resources to make human parturition mechanically successful, physically tolerable for the childbearing woman and safe for the about-to-be born baby. It is accompanied by a dramatic increase in childbirth-specific hormones � endogenous oxytocins to stimulate uterine activity, beta endorphins (the source of the �runner�s high�) providing for naturally produced, internal (non-addictive) pain relief for the mother. Maternal hormones also trigger adrenal hormone production in the fetus to prepare it to breathe independently and maintain its body temperature after birth.

This innate potential of normal childbearing physiology for an expeditious labor and birth is central to the midwifery model of care. Understanding it goes a long way towards de-mystifying the normal practice of midwifery and giving it a useful context. It also reveals the problems that arise when trying to provide hospital-based care to this cohort of healthy women who, if undisturbed, will have labors graced by a truly �labor-saving� mechanism -- the spontaneous birth reflex.

In recognition of this phenomenon a French physician by the name of Dr. Michael O�Dont coined the term Fetal Ejection Reflex. Midwives add the word �maternal� to this term (maternal-fetal ejection reflex) to make it evident that the fetus does not, independent of its mother,  �eject� himself from her body but rather it is the mother who permits the freight train of spontaneous energy to run thru her for the purpose of safely (and sanely) liberating her baby from its temporary uterine home.

Dr O�Dont was attempting to identify the biological mechanism responsible for rapid, apparently easy &/or precipitous deliveries. It explains why after a short active labor a mother could give birth to an 11# baby in just a few pushes and without sustaining any significant perineal trauma.  The normal spontaneous birth reflex is the �physiological� process (biology + psychology) that makes birth mechanically successful, physically tolerable for the childbearing woman and safe for the about-to-be born baby.

The idea of a Maternal-FER implies an innate physiological mechanism similar to a slow motion sneeze, as if a reverse form of peristalsis was triggered. The cervix seems to melt away far faster and easier than expected (for example, a primipara >> 5cm to birth in 43 minutes!) and the reflexive nature of this mechanism efficiently overcomes the usual soft tissue resistance. The advantage of this momentum is the efficiency of abdominal muscles pressing the baby down and out *without being impeded* or countervailed by a great deal of muscle & soft-tissue resistance. Body structures (cervix and pelvic floor) that normally hold the baby in suddenly relax and open up, the fetus does a free-fall thru the birth canal, the pelvic floor melts way and in the blinking of an eye, the baby comes out crying lustily.

Historically speaking, this propensity of multipara mothers to have their babies �free-fall� through the birth canal is one of the attributes of physiological labor and delivery that gave the earliest obstetrician fits. Drs DeLee and Williams and their colleagues lamented that labors only came in two flavors � too fast and too slow. First-time mothers were so slooow � average labor (starting from 3+ cms) was said to be 15 to 20 hours in Dr DeLee�s 1924 edition of his obstetrical textbook. Then there were the grand multips not even in labor yet who had a sudden spontaneous rupture of membranes and the baby just �washed� out helter-scelder in some incontinent inappropriate place before the doctor can get his gloves on or perhaps, even before he arrives.   This element of unpredictability fueled medical efforts to control messy Mother Nature (i.e., physiology of parturition). For multips it seems only logical to bring them in to induce via AROM  so they wouldn�t deliver in your office or the parking lot.

A crucial facet of this normal birth reflex seems to be the psychological component, especially the psychological comfort of the mother with her situation. Michael O�Dont described this as creating psychological circumstances for the mother so she �feels secure and unobserved at the same time�. He observed that the birth attendant�s first responsibility is not to disturb the natural process. For many mothers her need to be undisturbed is balanced by an equally powerful need to be in the �right� place and have family members of great psychological importance, as well as the doctor or midwife present, before she can �permit�, at least at a subconscious level, that dynamic labor process to unfold. For those who prefer hospital care, these mothers must have arrived at the hospital before the Maternal-FER can complete itself. It does not seem to require the presence of the doctor as much as admission to the hospital and presence of the nursing staff.

 This phenomena is a constant �exception� to the rules of labor as expressed by Friedman�s Curve, which graphically represents labor as a linear process, inexorably slow, innately painful. Most importantly, this linear concept see labor and birth as solely dependent on incremental hard work and ability of the mother to tolerate the pain *rather than* using her internal resources to �facilitate� or surrender to her labor. The picture society has of so-called �normal� labor and delivery is one of incredible effort in which the mother labors with the kind of slow incremental progress reminiscent of climbing a rock face by hammering pinions into cracks and painfully pulling herself up again and again, fighting for every inch of forward motion. The maternal-fetal ejection reflex is almost the opposite of that expectation. While it is impossible to predict who will experience this "labor-saving" biological event, many birth attendants have observed that a calm or confident mother is more likely to do so than a fearful, anxious one who feels greatly unsure of herself or is starkly afraid of birth. While no caregiver can program mothers to experience this beneficial reflex, acknowledgement of the pysco-social/sexual nature of childbirth seems to help greatly to facilitate its appearance.

In an environment that is free of exaggerated fears of childbirth, the Maternal-FER appears to provide the �grace� that can only be matched in a medical setting through the use of epidural anesthesia. Often (but not always) the M-FER is further facilitated in domiciliary care by submerging the mother in deep water after she has reached 5cm dilatation and letting her and her husband or partner focus together with as few caregiver interruptions as possible ( FHTs q 30 minutes, minimum vag exams or manipulations). Dr O�Dont describes this as permitting the mother to feel secure and unobserved at the same time. Unfortunately this spontaneous birth reflex is easily disturbed and often (but not always) obliterated by medicalization during the intrapartum period.

The Maternal-FER appears to represent in parturition what sex researchers Drs Master and Johnson identified as the orgasmic plateau, that is to say a state of being during which an overriding internal mechanism triggers a series of discrete but perfectly timed and attuned events of physiology which fire off in domino fashion when the conditions are right. After reaching this point it seems to occur irrespective of the personal wishes of the individual so blessed. In the case of labor this means that even if uterine contractions seem painful or the mother is clearly anxious, the labor will none-the-less be briskly moving and soon culminate in a NSVD without anesthesia and often, without significant perineal trauma, perhaps even before the doctor or midwife arrives.

One theory explaining M-FER is the role of primitive brain in facilitating the spontaneous processes of labor and birth. This theory also identifies as negative the influence of the neo-cortex (dominance of the left-brain or �late for the train� mentality) and a host of institutionally-originating disruptions such as bright lights, loud noises, coming and going or milling about of unfamiliar people, unnatural, anti-gravitational positions and frequent disruptions provided by invasive procedures such as vaginal exams, catherizations, fussing with EFM belts, etc.  The �intensive care� nature of intrapartum nursing in hospitals means most women experiencing the exact opposite of �secure and unobserved� � all these nursing and medical ministrations and application of technology signal the potential for problems. They worry about themselves and their baby and feel very much like a bug under a microscope.

What interferes with a recognition of this discrete physiological event (M-FER) is that it so often follows anywhere from 4 to 48 hours of piddley prodromal labor or lengthy, even painful latent labor. For hospital births it may include both pitocin and epidural as a preamble to this physiologically fast-finish. A longish desultory phase distracts and derails us from appreciating what can only be described as an �order of magnitude� shift up, resulting in an active labor that is many times faster than normal. Because this rapid progress so often comes on the heels of a long, psychologically difficult latent phase, it is not necessarily perceived by either the mother or the midwife (and certainly not by the doctor!) as a �fast birth�.

Like a form of foreplay, this long latency process (�forelabor�) seems to set up the biological and social circumstances so that all the �elements for success�\*\* are simultaneously present (\*\*see addendum for list of crucial five). Latent labor gets everyone gathered, involved and geared up to attend to the biological and emotional needs of the mother and baby. The marriage of biology to psychology with its attendant association to sociology (the right people present and the wrong people not) is necessary for physiological function.

This represents a �systems� event (involving many different organs and emotive systems). This differer from the typical medical focus on a single physical organ (example the uterus) and/or a single non-mental function such as the progressive dilation of the cervix in labor. While the latter is the usual focus of obstetrical medicine it provides a poor foundation for physiological function. When this spontaneous birth reflex is present, the latancy period is sooner or latter abruptly replaced by an accelerating labor pattern. Primagravida go from 5 or less centimeters to delivery in under 4 hours. A multipara progresses from 4 or less centimeters (or if no vag exam, begin counting from when she was obviously prodromal/early latent labor) to delivery in less than 3 hours.  Unfortunately for most women, the fruit of the undisturbed labor is rarely seen in the modern hospital L&D.

The Maternal-FER offers hope to childbearing women that they can prevail in their goal of having a physiological labor and birth. Knowledge of their potential for being blessed by this labor-saving devise provides all of us with an antidote to the pathological fear of childbirth that has dominated the public dialogue for the last century.

**Five Elements of success for**

**�normal spontaneous vaginal birth�**



 1. Healthy Mother/normal pregnancy/spontaneous onset of labor at term

 2. Understanding the physiological and psychology of spontaneous labor and birth by both *parents and practitioners*

 3. Physiologically appropriate response by family and professional caregivers to the normal physical, biological and gravitational demands of spontaneous labor and birth

 4. Psychologically appropriate response by family and professional caregivers to the emotional and psychological needs of the mother to the normal stresses and painful sensations of labor and birth

 5. Willingness of the mother to accept pain of uterine contraction and the anxiety of not knowing how much harder the process may be or how much longer the process may take.

 �        the absence or severe dysfunction of any of these systems will generate symptoms that will ultimately require medical or surgical intervention which may incidentally lead to iatragenic and nosocomial complications.

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**Conservation of Maternal Effort**

**Through Right Use of Gravity**

Maternal mobility and an upright or vertical posture is important to the mechanics and the psychology of physiological labor and birth. It is importance to avoid all maternal postures that result in the childbearing mother lying on their back or bearing her body weight on her sacrum. During first stage lying on the back reduces uterine blood flow, makes uterine contractions more painful and cervical dilation less efficacious and leads to or contributes to fetal distress. During second stage it closes the bony aperture of the pelvis by 20-35% and increase soft tissue resistance resulting in "mattress" dystocia.

During the second stage (all stations above +3 or 4) the best progress and the least maternal effort is achieved when the mother is in a vertical posture. The most favorable accommodation of the irregularly shaped fetal head to the irregularly shaped maternal pelvis is achieved via a combination of maternal mobility (changes of position, walking) and the pelvic enlarging effects of a squatting or lunging positions, in which abduction of the thighs to the side and slightly back against the abdomen increases the intra-abdominal pressure while increasing the pelvic diameter.

**Management of Perineal Stage**: The concept of a "perineal stage" is a functional definition of the latter part of 2nd stage used by many midwives to describe the biological and psychological events from a +four station to the actual crowning of the baby�s head and delivery of shoulders. This is the last of the finally tuned biological events described as the "fetal ejection reflex" by French obstetrician Michael O�Dont.

At a certain time after the cervix is fully dilated the mother experiences a dramatic event in which the body simultaneous opens up (relaxes normal muscle resistance) while forcefully propelling her fetus downward. This reflexive surge efficiently overcomes the usual soft tissue resistance and takes advantage of momentum to press the baby down and out. While the example of gastric emptying (emesis) makes for an unpleasant analogy, in truth it shares the same biological chain of events, except going in the other direction. When the baby�s presenting part is quite low and the pressure of the advancing head triggers the same expulsive receptors as used to move the bowels. To the observer it reminds one of the gastric reflex commonly referred to as the "dry heaves" in which a sudden powerful contraction of the abdominal muscles occurs. A similarly powerfully abdominal contraction causes this dramatic bodily event (pushing) to occur -- often to the surprise of the mother herself.

In some multips the fetal ejection reflex is initiated long before the baby�s head presses on the perineum (perhaps as soon as the cervix approaches full dilation). The baby almost "free falls" through the birth canal and across the perineium in the matter of 1 - 3 pushes. However for most mothers there is more to this reflex that just the physical trigger of cervical dilation and pelvic floor pressure.  Of equally or even greater importance is the psychological component. While it is impossible to predict which mothers will and who won�t experience this "labor-saving" biological event, many birth attendants have observed that a confident mother is more likely to do so than a fearful, anxious one who feels unsure of herself. While no caregiver can program mothers under her care to experience this beneficial reflex, acknowledgement of the pysco-social/sexual nature of childbirth greatly helps.

**Psyco-social/sexual aspects of expulsive labor** -- creates maternal needs for privacy and a feeling of security which shares many of the same characteristics as the social norm for using the bathroom. These are brought into play by the strong expulsive sensation of 2nd stage in which many childbearing women are, quite naturally enough, convinced that they needs to have a bowel movement. Fear of soiling in public often means that the mother is triggered to use the muscle of her buttocks to hold back in the rectal area while simultaneously using her abdominal muscle in an attempt to push the baby down through the birth canal. This creates a push-pull war of sorts that works against the goal of expulsive labor.

**Facilitating the mother to push:** The goal is to help her push fully while she simultaneously relaxes the gluteal muscles of the buttocks. For many women in late 1st or early 2nd stage labor this is best addressed by suggesting she sit on the toilet for a minimum of 3-6 pushes, right when she first begins to feel "pushy". Sitting produces a body posture sharing many of the same characteristics of squatting. Supplying the mother with 3 or 4 inch prop under each foot helps her maintain good flexion and abduction of the thighs. This comfort measure also reduces the pressure on the under side of her thighs which if prolonged will interfere with circulation and contribute to vulvular edema.

Providing the mother with privacy in the bathroom except for the presence of her spouse or intimate family member and/or the midwife/L&D nurse addresses the intimacy needs of the situation. If there is justifiable concern about precipitous birth (a multip), the caregiver can monitor progress by placing a small mirror between the mother�s legs. By shining a flash light at the mirror while angling the mirror appropriately the perineum can be visualized to be certain that she does not inadvertently deliver while on the toilet.

**The creative use of gravity to shorten the 2nd stage reduces the stress on the baby and associated risk of fetal distress**. Use of physiological postures and acknowledgements of the psyco-social/sexual aspects of the mother�s experience also help reduce the number of times she must push and the actual quantify of body energy the mother must expend to give birth to her baby. When a mother pushes while lying in bed on her back she is bearing body weight on the maternal sacrum. This means she must overcome the deleterious forces of gravity which now work against her as the birth canal is a relaxed right angle aiming up towards the ceiling in this position.  This closes the pelvic aperture down by 1/5 to one 1/3 (equal to 1 to 3 cms). The aggregate of these forces means at the very least 1/2 hour, often an hour or more of extra pushing and increased time with expenditure of incalculable amounts of finite maternal energy for very little gain.

**Mothering the Mother by husbanding her physical Resources :** The pushing stage comes at the end of labor, when the mother had lost sleep and not eaten for many hours, suffers from fatigue and often is discouraged. It is unkind to ask her to do the hardest physical work ever required by our normal biology (especially if it is a first vaginal birth) under these sub-optimal conditions. The normal amount of psi (pounds pressure per square inch) required to give birth to a first baby is approximately 120 psi. The uterus on its own produces only about 80 psi, which means that either the mother must use abdominal muscles and gravity to provide the missing 40 psi or the caregiver must pull with forceps / vacuum device at that level of downward torque. When every drop of maternal energy is expended on pushing to baby down to the perineum, there is nothing left for her to use for the perineal stage -- that is to push the baby�s head and shoulders out and across the perineum. This sets up the situation for the otherwise unnecessary surgical intervention of episiotomy and its risks of bleeding, infection, prolonged postpartum pain, the need for narcotic medications and the disruption of bonding and breastfeeding that pain and drug use entails.

On those occasion when mothers are unable to be upright or out of bed due to a medical condition, side-lying is the physiologically appropriate position as the curve of Carrus is neutral to gravity with the mother on her side. While not as effective as upright positions, at the very least side-lying does not require the mother to work uphill against the forces of gravity.

**�catching� babies &  Side-lying moms:**  In a side-lying position, the mother�s upper leg can be held up by a family member or helper or it can be placed on a large pillow. In this position the caregiver sits on the bed next to the mother and in full contact with the small of the mother�s back and hips. If sitting to the right of the mother, the top (left) hand of the caregiver reaches across and to the side of the mother�s abdomen and down between her legs to the top of the baby�s crowning head, to maintain its flexion with the fingers. The lower  (right) hand is placed palm down on the perineum to lightly support it during the birth of the head and more firmly supporting it during the delivery of the shoulders. A good many times the head is born without causing a perineal laceration, while the shoulders and arms delivers a karate-chop to the perineum. The DeLee side-lying method is superb for managing the delivery of the shoulders, compound arms and the remainder of the baby�s body.

