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|   | **The Science & Safety of****Community-based Midwifery****and the Physiological Foundation of Evidenced-based Midwifery Care** |  |

  **Part II ~ Qualities of the Childbirth Experience &**

**Parameters of physiological Management**

**Qualities of Childbirth Experiences & its impact on Physiological Labor:** The quality of the childbirth experience as defined by the mother extends beyond the moment or manner of delivery and can affect the mother physically and physiologically for months or years, perhaps even becoming a pivotal point in her life. The cumulative effect of the events of childbearing in combination with other influences extend into the mother-child relationship and can profoundly effect the quality and satisfaction in that central and important fact of day to day parenting. Problems within the mother-child relationship can trigger a cascade of difficulties that not only negatively effect the individuals and their family but also the stability of the community and greater societal goals. While there is no immutable evidence that a good-parent-child bond prevents teen delinquency and violence, there is evidence that birth complications in combination with a fractured mother-child bond is a strong contributor to violent behavior in adolescents, especially boys [�Safety in Alternative Childbirth�, P. Schlenzka, 1999]. Therefore, **events that contribute to the fracturing of the mother-father-baby bond are to be avoided and those that protect and promote it are to be pursued and supported by society**. This is  "mother-friendly" maternity care [Coalition for the Improvement of Maternity Care, 1996].

**Non-erotic sexual nature of childbirth:** It is useful both the childbearing woman and the practitioner to acknowledge the non-erotic, but none-the-less sexual, nature of childbearing. Childbirth involves the same biological structures and includes many of the same physiological principles necessary for physiological function in both sexual and excretory biology. These principles include acknowledgement of the mother�s psychological need for privacy and her right to voluntariness in participation of persons and procedures that transgress the boundaries of her body or sexual psyche. It also includes freedom from performance pressures and arbitrary time constraints. Spontaneous biology is heavily influenced by psychological factors (both mental & emotional states) that are themselves an extension of normal reproductive sexuality.

**Quality of Care**: The childbearing woman has a right to that quality of care from her companions and her caregivers that does not disturb or interfere with normal physiology of spontaneous progress in labor & birth. In the absence of this quality of active hands-on support, which is the core of the traditional midwifery model of care, the mother will frequently need narcotic medications to manage pain and anxiety and secondarily the use of oxytocin to overcome the labor retarding effects of narcotics. Additional surgical interventions of episiotomy, forceps, vacuum extraction, cesarean section often represent the failure of the maternity care system (or individuals within it) to account for the influence of the mother�s psyche in regard to the physiological events of labor and birth. [Safety of Alternative Approaches to Childbirth; Peter Schlenzka, 1999]

**A socially appropriate environment** is one in which the mother feels unobserved and yet secure, with emotional support as necessary. This is the purposeful mechanism of midwifery care that addresses the mother�s pain, her fears, and privacy needs, so that labor can unfold naturally. It is also necessary to take into account the positive influence of gravity on the stimulation of labor, dilatation of the cervix and decent of the baby through the bony pelvis. Maternal mobility not only helps this process along but also diminishes the mother�s perception of pain (perhaps by stimulating endorphins). **To ignore the well-known relationship of gravity to spontaneous progress is to do so at the peril of mother and baby.** The complex interplay of the physical and the psychological are such a biological verity of childbearing that women have an undeniable right to have the maternity care provided to them be structured to address gravitational influences and the quasi-sexual nature of spontaneous labor and physiological birth. [*Safety of Alternative Approaches to Childbirth*; Peter Schlenzka, 1999]

**Conservation of Maternal Effort**

**Through Right Use of Gravity**

**Mobility, Upright or Vertical Posture**: Maternal mobility and an upright or vertical posture are important to the physiological mechanics of parturition and maternal psychology controlling her experience. It is important to avoid all maternal postures that result in the childbearing mother lying supine on her 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. At present 10% of CS are performed for fetal distress. During second stage this non-physiological position also 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, prior to presence of the fetal head on the perineum) 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 (+5) and delivery of shoulders. Midwives separate both the timing and the management of second stage into these two phases. Either one can be faster or slower than average, irrespective of the alacrity of the other. Midwifery management style differs quite dramatically depending on where exactly the mother is in the spectrum of progress, from the first tentative pushes at 9-10 cms to the last expulsive effort which crowns the baby�s head. For first time mothers the perineal stage is often a rather slow process of stretching out the perineum via a series repeated pushes over the course of 15 to 45 minutes. Gravity is still physiologically useful and for some, it may be absolutely essential if episiotomy and operative delivery are to be avoided.

Other laboring women (often but not always multiparas) may experiences a dramatic change in status after the cervix is fully dilated as the mother�s body appears to simultaneous opens up (relaxing 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 an unpleasant analogy, in truth it shares the same biological chain of events, except going in the other direction. To the observer it reminds one of the "dry heaves" in which a sudden powerful contraction of the abdominal muscles occurs. When the baby�s presenting part is quite low, the pressure of the advancing head triggers the same expulsive receptors which triggers a bowel movement. The powerfully abdominal contraction suddenly causes this dramatic bodily event (pushing) to occur -- often to the surprise of the mother herself.  This is the last act in a phenomenon characterized by Dr. Michael O�Dont as the �fetal-ejection� reflex (additional definition and expanded discuss on this topic appears at the end of this essay).

In some multips the fetal ejection reflex can be initiated long before the baby�s head presses on the perineum and even before the cervix is fully dilation. For these mothers the baby almost "free falls" through the birth canal and across the perineum in the matter of 1 - 3 pushes. However for most mothers there is more to the initiation of this reflex that just the physical trigger of cervical dilation or pelvic floor pressure. Of equal or greater importance is the psychological component. While it is impossible to predict which mothers will and 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. While no caregiver can program mothers under her care to experience this beneficial reflex, acknowledgement of the psycho-social/sexual nature of childbirth greatly helps.

**Psycho-Social/Sexual Aspects of Expulsive Labor** ~ creates a 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 they need to have a bowel movement. Fear of soiling in front of strangers often means that the mother unconsciously uses 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 Physiological Pushing:** 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 encouraging her to sit on the toilet for a minimum of 6 or more pushes, right when she first begins to feel "pushy". Sitting on the toilet produces a body posture which shares 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 holding a small mirror between the mother�s legs. The perineum can be visualized to be certain that she does not inadvertently deliver while on the toilet by shining a flashlight between her legs while angling the mirror appropriately.

**The creative use of gravity shortens the 2nd stage, reduces the stress on the baby and associated risks of fetal distress**. Use of physiological postures and acknowledgements of the psycho-social/sexual aspects of the mother�s experience also help reduce the number of times she must push and the quantify of finite energy that 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 that now work against her as the birth canal is a 60 degree right angle aiming up towards the ceiling in this position. Bearing her body weight in this position closes the pelvic aperture by 1/5 to 1/3 (equal to 1 to 3 cms), making it harder for even an average sized baby to fit. The aggregate of these forces means extra pushing at the very least 1/2-hour, often an hour or more and increased 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 has 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 uterine force, expressed as 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 or a vacuum extraction 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. For some mothers, operative vaginal delivery or Cesarean surgery may be required to �rescue� her from this iatragenically-arising complication. Cesarean surgery doubles the maternal mortality, makes her �high risk� in future pregnancies and dramatically increases the risk of placenta previa and percreta, which can be fatal.

**Delivery Positions:** On those occasions when mothers are unable to be upright or out of bed the side lying posture is the most physiologically appropriate position, as the curve of Carrus is neutral to gravity with the mother on her side. This position might be indicated because of a medical condition, epidural anesthesia, maternal preference to give birth in bed, or high parity mothers who are better managed with a slower, more controlled delivery. While not as gravitationally effective as upright positions, at the very least side lying does not require the mother to work uphill against the forces of gravity. In addition to space-sparring aspects of side lying, some practitioners believe this position may reduce the incidence or severity of shoulder dystocia as the weight of the mother�s upper leg serves to help �bow� the pelvis (always made flexible by the hormones of pregnancy), making it wider from front to back and therefore providing more room for the shoulders which present either obliquely or in an A-P diameter of the pelvis.

**Protecting the Physiology of Birth ~ Side-lying moms, preference of European Midwives and American obstetrical icon, Dr. Joseph DeLee:**  In a side-lying position, the mother�s upper leg can be held by a family member or assistant or placed on a large pillow. Some mother�s prefer to hold their upper leg in a flexed position with their own hand but usually it is helpful to have stabilizing support.

Of historical note, this is the position recommend and illustrated by Dr. DeLee. Illustrations in his 1924 obstetrical text show the practitioner sitting to the right of the mother (with the mother facing away from the practitioner). The caregiver sits on the bed next to the mother, lightly touching the small of her back, or on a stool or chair next to the bed. It is important to be at the same level as the mother in order to have a clear view and easy reach. Most midwives prefer to simply sit on a stool or low chair next to the mother�s bed, slightly more toward to the south of the mother. The rolling stool used by physicians in hospital births is particularly convenient, as one must be sitting at the same level as the mother in order to appreciate the benefits of this technique and to avoid back strain.

Flexion of the fetal head is maintained by the practitioner by placing the fingers of the top (or left) hand lightly on the crowning head of the baby. If sitting on the bed, at the mother�s back, this can easily be accomplished by reaching over and across the mother�s abdomen to the top of the baby�s head. If sitting on a stool slightly toward the foot of the bed, flexion is maintained by simply reaching up between the mother�s legs with the left hand. The practitioner�s lower (or right) hand is then placed, palm down, on the perineum (the web of skin between the finger and thumb of the hand matching exactly the web of stretched perineum). In this fashion the caregiver lightly supports the perineum during the birth of the head and continues to support it during the delivery of the shoulders.

One of the tactical advantages of this side lying position is the easy access one has to the perineum during the delivery of the shoulders. When the mother delivers while lying on her back, the already delivered head of the baby obstructs the practitioner�s view and access during the birth of the shoulders. Also the medical model teaches students that they must use both hands to place traction on the baby�s head in order to deliver the shoulders when the mother is in a lithotomy position, thus leaving no hand free to guard the perineum. In a side-lying position, this active �delivery� via traction on the head is unnecessary, as the curve of Carus is not obstructed by �mattress dystocia� when the mother is not bearing weight on her sacrum. With the birth canal unobstructed, the normal expulsive force of the mother �delivers� the baby�s shoulders, taking advantage of the normal physiological mechanism created by the curve of Carus. This means that the posterior shoulder delivers first, followed by the upper shoulder, which pivots around the public bone as soon as the posterior shoulder is free.

As every practitioner can attest, the baby�s head often delivers without causing any perineal lacerations, only to have the shoulders and a compound arm/s delivers a karate-chop to the perineum. The DeLee side-lying method is superb for managing the delivery of the shoulders, as it offers a successful method to control for compound arms, thus reducing or eliminating a lot of unnecessary perineal trauma.

**~** **Maternal-Fetal Ejection Reflex ~**

**the fruit of a physically and**

**psychologically undisturbed labor**

**in a healthy mother**

�Designer genes� for spontaneous birth programs a natural  �labor saving devise� into human reproduction, resulting in a phenomenon referred to here as the �Maternal-Fetal Ejection Reflex.

There are quantifiable biological differences associated with undisturbed spontaneous labor and birth. If one is fortunate enough to be present at a great many �undisturbed� labors, those �designer genes� of the human species 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.  A great many of these women will, if undisturbed, enjoy labors graced by a truly �labor-saving� mechanism -- the spontaneous birth reflex. A large percentage of this same cohort of women, when confined by the physical and psychological restraints of modern hospital care, will have a vastly different and much less satisfactory, less spontaneous course of intrapartum events.

In recognition of this phenomenon Dr. Michael O�Dont, a French obstetrician, coined the term Fetal Ejection Reflex. Midwives added 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.

**Maternal-Fetal Ejection Reflex Defined**: 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 dilates faster and easier than expected as the reflexive nature of this mechanism efficiently overcomes the usual soft tissue resistance (for example, a primipara progressing from 5cm to birth in 43 minutes!). 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 back suddenly relax and open up, the fetus does a free-fall thru the birth canal, the pelvic floor melts way and within a few pushes the baby is born.

Historically speaking, unpredictable nature and timing of childbirth, combined with this propensity of multipara mothers to have their babies free-fall through the birth canal, are the very  attributes of physiological labor and delivery that disturbed the earliest obstetricians. Doctors DeLee and Williams and other contemporary 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. At the opposite end of the spectrum were the grand multips who appeared to not even be in active labor just a few minutes before their babies were born. With little or no preamble the mother often experienced spontaneous rupture of membranes and the baby washed out helter-skelter in some inconvenient or 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., the spontaneous physiology of parturition). For multips it seems only logical to bring them in to induce via AROM so they wouldn�t deliver in the doctor�s office or the parking lot of the hospital.

**Psychological Factors**: A crucial facet of this normal birth reflex seems to be the psychological component, especially the psychological comfort of the mother with her situation. Dr. 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 � a concept to be defined by the mother but which usually includes the presence of psychologically-importance family members. Usually (but not always) the doctor or midwife must also be present before she can �permit�, at least at a subconscious level, that dynamic labor process to unfold. For those who planned on hospital care, the mother 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 L&D nursing staff.

This phenomenon 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 portrays 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 oneself up again and again, fighting for every inch of forward motion and constantly subjected to excruciating pain. The maternal-fetal ejection reflex is almost the opposite of that expectation of hard-fought incremental progress and overwhelming pain. 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 psycho-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 by submerging the mother in deep water after she has reached 5cm dilatation and encouraging her and her husband or partner focus together while limiting the caregiver interruptions to as few as possible (FHTs q 30 minutes, minimum vag exams or manipulations), thus permitting the mother to feel both secure and unobserved. Unfortunately this spontaneous birth reflex is easily disturbed and often (but not always) obliterated by medicalization and/or hospitalization during the intrapartum period.

**Sexual Nature of Physiological Parturition**: 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 natural 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. In the case of labor this means that even if uterine contractions seem painful or the mother becomes anxious, the labor will continue briskly on and soon culminate in a NSVD without anesthesia and often, without significant perineal trauma, perhaps even before the doctor or midwife arrives.

**Neo-Cortex ~ the Place where Mind Meets Body**: 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�. The routine nursing and medical interventions and application of technology often triggers the childbearing woman feels very much like a bug under a microscope.

**Recognition of the M-FER:** What interferes with a recognition of this discrete physiological event is that it so often follows anywhere from 4 to 48 hours of non-progressive or prodromal labor or a lengthy painful latent labor. It is during this warm-up phase that most women who plan on a hospital birth find themselves admitted to L&D. This usually starts the medico-legal clock and if progress cannot be documented within a few hours they will be given pitocin and usually require epidural anesthesia. This will either derail or obscure the physiologically fast-finish. In community-based care, midwives often see a longish desultory phase and are derailed 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 perceived by either the mother or the practitioner 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 �five elements for success� are simultaneously present. Latent labor gets everyone gathered, involved and geared up to attend to the biological and emotional needs of the mother and baby. This warm-up phase is neither a waste of time or something to be rushed along.  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 and is part of the process of �self-assembly� that is unique to living systems.

This represents a �systems� event (involving many different body organs and mental or emotive systems). This differs 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 latency period is sooner or latter abruptly replaced by an accelerating labor pattern. Primagravidaes go from 5 or less centimeters dilatation 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-Fetal Ejection Reflex 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.

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