

Perception, Expression and Management of the Pain of Childbirth

Mary Christenson

A Senior Thesis submitted in partial fulfillment  
of the requirements for graduation  
in the Honors Program  
Liberty University  
Spring 2013

Acceptance of Senior Honors Thesis

This Senior Honors Thesis is accepted in partial fulfillment of the requirements for graduation from the Honors Program of Liberty University.

---

Cynthia Goodrich, Ed.D.  
Thesis Chair

---

Linda Gregory, M.S.N.  
Committee Member

---

Davis McGuirt, D.V.M.  
Committee Member

---

James H. Nutter, D.A.  
Honors Director

---

Date

## Abstract

In order to be a competent nurse on an American labor and delivery unit it is important to have an understanding of the pain of childbirth. This includes a thorough understanding of pain as a sensation and its manifestation during the birthing experience. An understanding of pain is useless, however, unless standardized pain assessment practices are used. The most accurate pain assessment is associated with a general understanding of cultural trends in pain perception and expression. Along with culture, other factors also influence how a woman senses and copes with the pain of labor. Anxiety is one of these influential elements and has a profound impact on the childbirth experience, which is why a well-rounded labor and delivery nurse has a diverse database of interventions for the stresses and discomforts of childbirth. This would include many of the increasingly popular alternative pain management methods. However, since pharmacological analgesics are the most frequently requested pain interventions in American labor and delivery units, nurses must thoroughly understand the method of action and potential complications of each of these medications as well.

### Perception, Expression and Management of the Pain of Childbirth

Every expectant mother is interested in the potential pain of childbirth. However, pain is a very diverse and subjective phenomenon. This literature review will highlight the objective and subjective aspects of its perception and expression while also taking into account an individual's cultural and social framework. A nurse working in an American labor and delivery unit must approach the pain of childbirth through this multifaceted perspective in order to provide effective pain assessment and management. Ultimately, pain experienced during childbirth is influenced not just by culture but by many other variables that could not be exhausted in one paper. However, any factor that complicates labor simply heightens the anxiety level of a childbearing woman. This anxiety has huge implications for the overall progression of labor. Therefore, a labor and delivery nurse is most effective if she is able to offer a diverse selection of methods for anxiety and pain management. These may range from alternative psychological coping mechanisms to more invasive pharmacological options. In summary, a competent nurse in this setting should develop a thorough understanding of the pain of childbirth in relation to its perception, expression and available management options (Lowdermilk, 2010).

### **Pain Sensation**

The pain experienced in labor is caused by mechanical, thermal or chemical stimulants that act on nociceptors of afferent neurons. The pain impulse then travels through one of two types of fibers on its way to the brain cortex. The first of these are unmyelinated and referred to as C fibers. The second kinds are the myelinated A-delta fibers which are utilized to transmit the sharp pain of contractions. Once the pain impulse

reaches the spinal cord's dorsal horn it has to cross a synapse through the use of neurotransmitters such as somatostatin, cholecystokinin, and substance P. Through the use of these neurotransmitters the pain impulse can leave the peripheral nerve and continue to travel towards the brain cortex via the spinal nerve. This is a common place to block or impede the impulse of pain during labor. The extent of pain elimination depends on how much of the spinal cord is blocked (Pillitteri, 2010).

Even though all women process the sensations of labor pain in this way, each woman can experience it differently. For example, a woman who has experienced dysmenorrhea throughout her lifetime will have increased prostaglandin concentrations. This means she is likely to experience greater pain than the average woman during labor due to excessive inflammation. In addition, a woman who is nulliparous experiences more pain than a multiparous woman during the beginning stages of labor since her body has never adjusted to this unique experience. A woman who has given birth previously has already developed a supple reproductive tract. However, this also means the baby's descent could be very fast and more painful than the gradual descent of a first-time delivery. The length of labor will also impact a woman's discomfort because a fatigued woman has a magnified perception of pain (Lowdermilk, 2010).

### **Progression of Pain Sensation in Labor**

The pain experienced in the birth of a child intensifies as a woman progresses through the different stages of labor. From the first signs of labor to the completion of full cervical dilation a woman is considered to be in the first stage of labor. In the early portion of this first stage, the woman's contractions start to come at regular intervals and the cervix dilates to three centimeters. The pain of each contraction is categorized as mild

to moderate and the intensity can be assessed by using an intrauterine pressure catheter. During the early part of the first stage of labor the pressure measured is approximately 25-40 mm Hg. The frequency of the contractions can be anywhere from every half an hour to every three minutes, and the timeframe is about 20-40 seconds (Davidson, 2012).

Once the cervix dilates to four centimeters, the woman enters the active part of the first stage of labor. Her anxiety typically increases. At this stage, contractions start to last for 40-60 seconds and have a moderate to severe intensity of pain that is measured as 50-70 mmHg of intrauterine pressure. The contractions are more frequent and come every 2-5 minutes. At the end of this phase of labor, the woman enters the transition phase which signals the end of the first stage of labor and the beginning of the second stage (Davidson, 2012).

During the transition phase, contraction intensity can be felt by the nurse upon abdominal palpation. The strength of the contractions are typically measured by an intrauterine catheter to be between 70-100mmHg. The discomfort is very severe and can manifest as a splitting or tearing sensation, low back pain, leg cramps or intense rectal pressure. The contractions last over a minute and come every 1-2 minutes. By the end of this phase, the woman's cervix is fully dilated to ten centimeters. This means the fetal head has descended to a point where she can begin to push (Davidson, 2012). This is the transition phase of labor where most women experience heightened anxiety. Many report feeling loss of control over their own bodies especially those women who do not receive prenatal education on how to tolerate the pain and contractions of labor. Studies show that this anxiety can also increase the perception of pain and impede the overall progression of childbirth (Pillitteri, 2010).

When the fetal head becomes visible and is surrounded by the introitus the woman experiences the most severe pain of labor which manifests as a burning quality in the perineal area. In this stage of labor, women who practiced how to push during prenatal preparation perform better and feel more in control of the delivery process than women who received no prenatal education. As the baby prepares to emerge from the vagina, it flexes its chin to its chest and rotates internally to fit through the pelvic cavity. The head then extends out of the birth canal. The shoulders rotate to fit through the pelvis and are expelled from the mother's vagina followed shortly by the trunk and extremities (Davidson, 2012).

The discomfort of labor is usually labeled as breakthrough pain at some point during the childbirth process. Primary breakthrough pain is defined as the level of intensity in which a woman decides the pain is no longer manageable and requests some form of intervention. It is not a specific time or stage of childbirth because each labor is unique and some women tolerate and manage the pain better than others. The pain may seem intolerable starting anytime depending on the woman's threshold for pain. Regardless of the onset, the healthcare providers involved aim to have the pain decreased to a tolerable level within one hour of request for relief. If this goal is not reached and the woman continues to feel overwhelmed by labor pain she is said to experience secondary breakthrough pain. At this point, the woman will typically report overall dissatisfaction with the labor experience due to poor pain relief. The most important asset a nurse has to prevent primary breakthrough pain from progressing to secondary breakthrough pain is frequent and thorough assessment of pain through standardized pain assessment methods (Akerman, 2010).

### **Standardized Pain Assessment**

The usual method of standardized pain assessment in American labor and delivery units is patient self-report. The verbal numeric rating scale is used which has patients rate their pain on the scale of one (for minimal discomfort) to ten (for the most severe pain ever experienced). However, since pain is a very subjective experience it is a hard thing to quantify. Because of the vast number of variables involved in pain perception, higher pain self-report values may not directly correlate with the most painful procedures or conditions. For this reason, it is important to take an individualistic approach to pain assessment. This is accomplished through the use of descriptive words that can provide a qualitative picture of pain such as “sharp”, “burning” or “tearing”. Since the progression of labor is marked by different types of discomfort, a quantitative and qualitative assessment of pain is essential in all labor and delivery units (Marco, 2006).

Good patient education is another important component of well standardized pain assessment. A study was done of emergency department patients given educational materials on proper pain self-report. One fourth of the patients reported their pain level as less severe after the educational intervention than beforehand. This prevented unnecessary narcotic administration to these particular patients. Likewise, on a labor and delivery floor, nurses must be clear in explaining the numeric pain scale before using it to dictate the administration and effectiveness of pain management interventions (Marco, 2006).

Ultimately, self-report and qualitative questions are very helpful, and although subjective, are accepted as reliable pain indicators. However, self-report is not the only

method of assessment. A more thorough pain assessment also observes the physiological response to pain. Vital signs can indicate the body's experience of painful stimuli. When tissue injury occurs the body's autonomic response is increased sympathetic nervous system activity and consequential release of catecholamines. The net result is elevated blood pressure, heart rate and respiratory rate measurements. Once baseline levels for these vital signs are obtained a labor and delivery nurse can monitor alterations to follow the ebb and flow of the woman's experience of pain. These combined methods help to formulate a more complete picture of the pain of childbirth (Janig, 2012).

### **Cultural Expression and Assessment of Pain**

In the end, there is no standardized way to accurately grasp the exact severity and perception of a patient's pain. This problem transcends the issue of childbirth and plagues the entire medical community. The subjective portion of pain perception is shaped by the unique backgrounds of both patients and their health care providers (Briggs, 2008). Therefore, in light of the increasing variability in cultural expression and perception of pain, it is important to assess how effective the current standardized pain assessment scales are in an increasingly diverse medical environment. The first step in fine-tuning the accuracy of pain assessment on labor and delivery units is cultural competence on the subject of pain (Cassisi, 2004).

### **European American Culture**

It is especially crucial for labor and delivery nurses to grasp the cultural trends in pain expression and coping strategies which vary across ethnicities. However, most demographics have so many distinct subgroups that this becomes a very difficult task. The European American group, for instance, is a very broad demographic. Many

distinctions in pain expression exist among the different European ethnicities. Italian Europeans are very vocal and emotional in their expression of pain. In contrast, their Scandinavian European counterparts often follow the stoic trends of Nordic culture and are more hesitant to vocalize discomfort (Cassisi, 2004). Another study found that when European Americans and African Americans were exposed to the same amount of painful stimulus the European Americans required six more milligrams per day of Morphine than the African Americans in order to feel that their pain was controlled. This would be an important factor to be mindful of while seeking to manage discomforts of these patients during labor (Briggs, 2008).

### **African American Culture**

Research also indicates that African Americans are typically very open in their expression of pain (Lowdermilk, 2010). Some studies suggest that the reason behind this finding can be traced back to historical healthcare disparities. These social theories postulate that past discrimination in symptom management resulted in compensatory increased verbalization of discomfort. In other words, a history of neglect led to exaggerated pain reports in an attempt to ensure health care providers noticed and were aware of their medical needs. Remnants of this ideology could be subconsciously integrated into the way African Americans approach self-report of pain today. This is just one explanation for the elevated report of pain by African American individuals as opposed to those of other ethnicities (Cassisi, 2004).

Another study found evidence that these consistently higher pain ratings could be attributed to more than just sociocultural influences. A research project involving African American, non-Hispanic Caucasian, and Asian participants was conducted on this

phenomenon. All subjects were exposed to the same painful stimuli but instead of simply recording pain ratings the researchers monitored a substance called diffuse noxious inhibitory controls which increase when a person is consistently exposed to pain. The increase in diffuse noxious inhibitory controls raises a person's threshold for and tolerance of pain. Out of the three ethnicities studied, African Americans had the smallest increase in diffuse noxious inhibitory controls. So the reason that African American's rate their pain higher than other ethnicities could be traced back to an innate biological disadvantage in the development of pain tolerance. This is an important factor to know as a nurse working with African American women during the acute pain of childbirth (Campbell, 2008).

### **Southeastern Asian Culture**

Southeastern Asian woman often persevere through intense pain before they verbalize their feelings and seek relief. Chinese women in particular are known to manage pain quietly with very little verbalization or reaction. They may even decline preliminary pain management offers as a sign of politeness. Therefore, a nurse may need to inquire twice before these women will accept relief measures (Lowdermilk, 2010). When compared to Caucasians of European descent, the Asian demographic has a higher threshold for pain. This must be attributed more to ethnic trends than physiological factors because similar sensation sensitivity was assessed prior to tests and variability in anxiety levels of the different participants were not statistically significant (Watson, 2005). Therefore, culturally competent care of a woman who follows these trends would require sensitivity to all inferences to pain since vocalization may be limited from this demographic.

The danger in not understanding cultural pain expression tendencies is poor accuracy in pain assessment. Nurses who are not aware of these differences will likely fall into the trap of ethnocentrism and assume that each patient perceives and expresses pain as they do. It is important to not only understand other cultures but have a full awareness of personal bias and perspective on pain as well. For instance, some recent research has pointed out that the common trend in high African American pain ratings may be due to simple cultural miscommunication. African Americans may use different descriptive words to report pain than European American patients. In a western and European based medical environment cultural bias can skew results in pain assessment and research (Cassisi, 2004). The importance of developing an awareness of personal perspective and bias cannot be emphasized enough. This introspection will help improve the accuracy and equality of pain assessment in every arena of healthcare including the obstetric one (Briggs, 2008).

It is important to foster awareness in regard to cultural differences. However, a nurse must not expect patients of certain demographics to respond to the pain of childbirth in the fashion typically displayed by others of their ethnicity. First of all, in the melting pot of America it is rare that any individual is associated with only one cultural background. Secondly, even those with strong ethnic ties can be shaped by the tides of acculturation. Living in the western focused culture of America molds many individuals' perception, habits, and beliefs. The perception and expression of pain is not exempt from this phenomenon (Cassisi, 2004).

The aforementioned are simple cultural guidelines that any labor and delivery nurse should know in order to be culturally competent. However, pain must still be

assessed on a patient by patient basis. Two women of the same culture may indeed experience and express pain differently. Therefore, the nurse's ability to assess a woman's cultural expression and perception will profoundly impact the accuracy of pain assessment and management. This is why it is essential for an American labor and delivery nurse to develop cultural competence through the awareness of researched cultural trends (Cassisi, 2004).

### **Anxiety and the Pain of Childbirth**

In addition to culture, the pain of labor is subject to the influence of several other factors as well. Anxiety, due to expectations of a very painful event can actually heighten an individual's overall experience of it. This is because anxiety elicits the release of extra catecholamines. These cause vasoconstriction, decreased blood flow to the uterine muscles, and excessive muscle tension. The net result of this is pain from ischemia and impaired contractions. An anxious woman is then likely to fall into an exhausting cycle of ineffective labor which will cause unnecessary fatigue and prolonged duration of discomfort. For this reason, women who enter childbirth with expectations of severe pain could suffer from heightened anxiety and are therefore more likely to have the exhausting and painful births they fear (Lowdermilk, 2010).

The body's stress response to labor differs depending on the type of stressful stimulus involved. The three main stress hormones triggered by the sympathetic nervous system during childbirth are epinephrine, norepinephrine and cortisol. The severe mental and emotional upheaval of childbirth stimulates cortisol secretion. This steroid hormone is typically associated with negative stressful stimuli. Epinephrine, on the other hand, is released during desired positive as well as unwanted negative stimuli and is also elevated

during labor. The actual impact and stress on a woman's physical structures and posture stimulates the output of the final hormone, norepinephrine (Alehagen, 2005).

These hormones are necessary to promote the activities of labor. However, if the woman is very anxious and hormones are released in excess she will have a more complicated and less efficient childbirth. Excessive epinephrine release has correlations with lost uterine effort and is known to impede the progression of childbirth.

Norepinephrine aids in uterine contractions. However, the extra stimulation from too much of this hormone can result in a poorly coordinated and less effective contraction pattern. (Alehagen, 2005). Cortisol is involved in the release of oxytocin which is one of the most critical hormones of childbirth related to contraction stimulation. This happens indirectly through stimulation of placental estrogen production which directly affects oxytocin release (Kamel, 2010).

A comparative study of these stress related hormones was done in two groups of women. One group consisted of women who labored using epidural analgesia and the other was composed of those who chose to labor with no analgesia whatsoever. The levels of cortisol, epinephrine and norepinephrine were drawn throughout labor to document the effect of epidural analgesia on their prevalence in the blood serum. One important finding of this study was that the women who labored naturally had markedly higher cortisol levels during the course of childbirth than those who utilized epidural analgesia. This is expected since they experienced the full brunt of the negative physical and emotional stress of childbirth. The clinical significance of this finding is that cortisol promotes other helpful pregnancy hormones such as oxytocin. Therefore, the suppression of pain through use of epidural analgesia will decrease cortisol release and subsequent

Oxytocin levels may decrease as a result. This could impede the speed and natural progression of childbirth (Alehagen, 2005).

### **Non-pharmacological Coping Mechanism**

Clearly anxiety and its role in subsequent excessive hormone release plays a huge role in a woman's pain perception as well as her overall performance in labor. For this reason, anxiety coping mechanisms can also play a major role in decreasing pain in a non-pharmacological and relatively risk free manner. A solid support system for women in labor is one intervention that is especially instrumental in calming anxiety (Iliadou, 2012).

Women who have this in place will have a more positive labor and hopefully a less severe experience of pain. One study outlined a recipe for the types of support women need in labor as well as who is best equipped to provide each one. The first type of support is emotional which can come from the nurse and the woman's family members. The second form is informational support. It is extremely important for the nurse and healthcare providers to keep women well informed on their progression and give anticipatory guidance on what to expect next (Iliadou, 2012).

The third type of support required is physical support. A labor and delivery nurse is best equipped to provide this through many methods of childbirth assistance. The final component of good labor support is advocacy. This is simply an impression the woman should get that the healthcare team is on her side and looking to create her ideal birthing experience. These interventions should all be priority in the mind of a nurse seeking to offer support and thereby decrease anxiety and its associated increase in the pain of childbirth (Iliadou, 2012).

One longstanding support tradition currently regaining popularity is the use of a doula. The meaning of this term comes from the Greek word used to describe “woman caregivers”. A doula is a trained individual who plays the role of an educated labor coach. This caregiver does not supply or apply any actual childbirth interventions but is trained in effective comfort strategies, therapeutic touch, and positioning suggestions to augment the process of childbirth (Hotelling, 2004). The individual is intended to be an addition to, not replacement of, a family member or partner already performing a supportive role. The clinical significance of doula practice is recent research which shows women who use them perform better in labor and have safer outcomes overall. Some of these improvements include quicker childbirth progression and delayed request for analgesia later in labor which allows for greater cervical dilation before medication administration. Therefore, this small support intervention can decrease the anxiety of women in labor and ultimately reduce the duration and severity of the pain of childbirth (Campbell, 2006).

The advantage of having a doula is that a woman receives continuous support throughout the entire progression of labor. A nurse cannot usually give continuous support to any one woman in a labor and delivery unit without neglecting responsibilities to other patients. This concept of continuous support is one of the main facets of the Bradley and Lamaze approaches to childbirth. The proponents of this perspective on birth stress that childbirth has only recently become a hospital supervised event. Only a few decades ago it was common for women to give birth in a non-medical environment with continuous support from local women or family members with birthing experience. Since this no longer naturally occurs in most American communities, the Lamaze and Bradley

strategies both promote the utilization of doula services and enhanced partner training and involvement. Their research shows good support decreases the use of risk laden analgesia. Therefore, ensuring a proper support system is in place may be a pregnant woman's best course of action for prophylactic pain management (Hotelling, 2004).

Religion plays a role in determining how an individual approaches the subject and experience of pain. Some religious individuals view pain as punishment from their deity or as a necessary and symbolic part of the childbirth process (Briggs, 2008). The idea that increased earthly suffering results in a better afterlife is promoted by some belief systems as well. Views like these would impact a patient's view on and preferences in pain management. These ideals are much more common in the less westernized and industrialized places of the world where supernatural and spiritual worldviews are most prevalent. Therefore, it would be important for western labor and delivery nurses to be mindful of and inquire after the religious ideologies and perspectives on pain held by some non-western patients (Lovering, 2006).

Religion may also be a totally risk free and natural tool to find meaning in and control over pain. A woman in labor may enter the labor experience with more confidence and peace if she uses spiritual coping mechanisms and feels that God will help her in the delivery. In one study, Briggs states that religious women could grasp that the pain held purpose. These women were not as overwhelmed by the discomforts of labor due to a deep trust and dependence on a higher power that could help them through each stage. In other words, since religion is proven to increase self-efficacy and therefore any woman with religious affiliations should be encouraged to utilize this powerful and effective coping mechanism (Briggs, 2008).

Hypnosis and guided imagery techniques are also shown to decrease the stress of the childbirth experience by inducing relaxation. A comparative study of women who attended self-hypnosis classes as opposed to regular prenatal preparation courses found a statistically significant difference in requests for analgesia. Of the self-hypnosis participants, 59% of them endured childbirth with no analgesia compared to 1.4% of those with regular prenatal education. In addition, the pain threshold seemed to be elevated in hypnosis patients explaining lower analgesic use (Toumaire, 2007).

Hydrotherapy is another non-pharmacological approach to decreasing labor pain. Research shows that immersion in warm water for at least an hour during labor is statistically correlated to less muscle tension, lower pain rate reports, and decreased requests for pharmacologic analgesia. The relief occurred on average within fifteen minutes of immersion and therefore is considered a relatively fast acting intervention. The risks of this pain management technique are minimal but dehydration should be avoided through the administration of ice chips and hyperthermia averted by maintaining suggested water temperatures of 35-37 degrees Celsius. Less research has been done on the use of showering as opposed to full body immersion in warm water but some of the same benefits are thought to correspond since they are very similar activities. Some research suggests that showering in warm water may provide the added advantage of utilizing gravity to facilitate the descent of the fetus through the birth canal (Stark, 2011).

Another alternative therapy effective in managing the pain of childbirth is ice massage. The use of a ten minute massage with an ice ball at a specified spot on the palm called the point of Hegu has a statistically significant impact on the pain level of women in labor. The ice massage reduced perception of intensity of pain during the full force of

the active phase of labor. The relief was experienced immediately and had a lasting impact for up to thirty minutes. The duration of the effects exceeded comparative studies of women using regular acupressure techniques at the same point on the hand during the same stage of labor. Research suggests that prolonged massage may lead to lengthening pain relief as well. This alternative therapy is inexpensive and virtually risk free. It is therefore a great suggestion for a nurse to offer women searching for alternative management of pain (Hajiamini, 2012).

Numerous other alternative therapies are used to decrease the pain and anxiety of childbirth. Some of these include acupuncture, transcutaneous electrical nerve stimulation (TENS), aromatherapy, music therapy, and herbal remedies. The effectiveness and safety of these interventions has not been proven by evidenced based research. Hydrotherapy, massage and emotional and physical support persons are very instrumental in augmenting the coping ability of women during the pain of childbirth. Since most of these are noninvasive and relatively safe, a labor and delivery nurse should develop a wealth of knowledge on non-pharmacological interventions that can be utilized before more invasive and risky pharmacological measures are implemented or offered (Toumaire, 2007).

### **Pharmacological Management of Labor Pain**

The American healthcare system was forged on the western and European ideals of medicine. A biomedical view of illness and bodily processes is more commonly accepted and shared by individuals raised under western influences. Due to the process of acculturation, many of those with non-western backgrounds have embraced this framework as well. A person with a western biomedical perspective observes bodily

process and seeks to use the latest scientific knowledge and technology to procure the best outcome and experience. The biomedical viewpoint of labor infers that it is beneficial to the woman and the course of the birthing process that pain be eliminated as much as possible (Lowdermilk, 2010).

Typically a health professional who holds this view would encourage the use of pharmacological pain management. This is controversial because the use of medications comes with a great deal of risk factors despite the obvious benefits. Ultimately, each woman is different and has the right to dictate her own pain management in labor. These personal opinions and choices should be respected and supported by all medical staff (Lowdermilk, 2010). Women who choose to cope with labor through pharmacological pain management have several options to pick from. Some of these include systemic analgesics, regional nerve blocks, and local anesthetic blocks (Davidson, 2012).

A systemic analgesic provides great pain relief but there is danger of fetal harm because it can cross the placental barrier and transfer from the maternal blood to the fetus. If the fetus is hypoxic, increased amounts of analgesia travel to the brain due to high blood volume flow to this area during stress and increased permeability of the blood-brain barrier during delivery. For this reason, before a systemic analgesic is administered certain requirements for both the mother and fetus must be met. The mother must be stable and have no contraindications to the drug being administered. The fetus must have a heart rate higher than 110 beats per minute (bpm) but lower than 160bpm. A fetal non-stress test must reveal a positive result which means accelerations during fetal movement are observed and documented. In addition to these findings, the fetus must have good variability in its heart rate with no sign of decelerations (Davidson, 2012).

Systemic analgesics are most efficient when administered intravenously. The woman's blood pressure and heart rate should be assessed before and after administration and the fetal heart rate monitored regularly as well. Some systemic analgesics are sedative. The main purpose of these drugs is to allow a woman who is not progressing out of the latent phase of the first stage of labor to rest and relax. Some sedatives used in labor include barbiturates, benzodiazepines and H1-receptor antagonists. These medications are very ineffective pain medications and can at times even make the pain feel more severe. It is very dangerous to administer these drugs if the mother is in active labor. Babies born in this situation are still somewhat sedated and can suffer from respiratory depression (Davidson, 2012).

Other common systemic analgesics used for labor are opioids including Stadol, Sublimaze, Nubain, and Demerol. These medications interfere with the pain translation of the spinal cord by acting on neurons in the gray matter of the brain. The greatest risk associated with these medications is newborn respiratory depression and sedation after birth. If a baby is born with these problems an antidote drug such as Narcan can be given. This particular antidote is an antagonist to the actions of Morphine. It works by replacing the narcotic at opiate receptors. For this reason, Narcan should be available as a safety protocol in all labor and delivery rooms (Davidson, 2012).

In addition to systemic analgesics, women also have the option to use a regional nerve block. In America, this is one of the most frequently requested forms of anesthesia and analgesia during the birthing process. Instead of having an effect on the entire body the drug is administered through either an epidural or spinal route to a specific region. These drugs can be used for analgesic purposes or to produce complete loss of sensation

below the point of injection. Regional nerve blocks work by inhibiting the innervation of painful impulses through the stabilization of cell membrane potential. In this way, impulses sent from the lower extremities cannot reach the brain due to an inability of cells in that region to depolarize. A general rule in the administration of these medications is to give the smallest and weakest dose that will still be effective in order to avoid the dangerous systemic complications as much as possible (Davidson, 2012).

A few typical non-lethal side effects of local anesthetics include itching, dizziness, retention of urine in the bladder and gastrointestinal upset. In severe cases, cardiovascular side effects such as sudden blood pressure and heart rate decline can occur along with maternal respiratory depression. If an error occurs and a woman is given an inappropriately large dose of a local anesthetic toxicity may ensue. Other errors include incorrect placement of injection in the arachnoid, subarachnoid or intravenous spaces. A mistake like this could also lead to toxicity and medullary suppression. The medulla controls vital functions including breathing, blood pressure and heart rate so ultimately there is potential for complete collapse of the woman's circulatory system (Davidson, 2012).

Unfortunately, this reaction can begin less than sixty seconds after drug administration so each woman must be observed and assessed carefully throughout the entire process. In order to prepare for an emergency situation, a woman has an intravenous catheter placed before administration of a local anesthesia or analgesia. In case of cardiovascular collapse the woman is intubated and receives cardiopulmonary resuscitation along with supplemental intravenous fluids. In cardiovascular collapse, the woman's life is at stake as well as that of the unborn fetus due to its dependence on the

maternal vasculature's delivery of oxygen. For this reason, an emergency cesarean section delivery is usually necessary (Davidson, 2012).

By far, the most popular type of pain relief used in American labor and delivery units is the lumbar epidural block. If the medication is administered continuously it can be titrated to the specific amounts desired during each stage of labor. For instance, healthcare providers can adjust infusion rates during and second stage of labor to allow the laboring woman to feel pressures and sensations that fuel the urge to bear down and push in the last stages of childbirth. The negative aspect of choosing a continuous infusion is that the total duration of the labor process typically increases (Davidson, 2012).

A serious danger of epidural block is hypotension which can cause the heart rate of unborn fetus to decrease in variability and display late decelerations which indicate fetal distress due to insufficient blood flow and oxygen. One prophylactic intervention to decrease this risk is the infusion of intravenous fluids before and after administration. Other simple measures a nurse can utilize if mild hypotension occurs include turning the woman on her left side and adjusting the bed to the Trendelenburg position. If the body does not regulate blood pressure on its own, epinephrine can be administered which acts as a vasoconstrictor. A spinal block is very similar to an epidural block except it is more consistent in effective management of pain since medication directly enters the spinal fluid. Hypotension is still the main dangerous adverse effect of this intervention as well (Davidson, 2012).

Some anesthesia is used exclusively for the stretching and burning perineal pain of the second stage of labor. A pudendal block interferes with these painful sensations

which arise from the pudendal plexus of the sacral nerves. The downside of this type of pain management is that it has no effect on discomforts associated with uterine contractions. However, there is also no risk of maternal hypotension involved and pudendal blocks rarely impede the progression or duration of labor. These medications are administered through a transvaginal or transperineal approach (Davidson, 2012).

Pharmacological management and non-pharmacological support measures both include risks to the welfare of a woman in labor and her unborn child. Some women cope well through simple comfort measures, encouragement and support. Other women, especially those who are unprepared for labor, can be overwhelmed by the stress and pain of delivery. The danger in this is that the body's response to pain and stress includes catecholamine release and hyperventilation. Both of these can decrease the flow of blood and oxygen to the unborn baby. In this scenario un-medicated childbirth is not necessarily the safest choice. Ultimately, it is important to honor the autonomy of each woman and her right to dictate the details of the childbirth experience which includes pain management interventions (Davidson, 2012).

A labor and delivery nurse must also be mindful of the fact that the pain of childbirth is unique from other acute pains related to injuries or the chronic pain of long-term disease. Some cultures view the mastery of this labor discomfort as a positive spiritual accomplishment or even a small step towards self-actualization. The pain also differs because the woman knows it will come to completion at the birth of her baby. This event gives her hope to look forward to and a goal to distract her from the agony of the moment. The anticipation of a new child is something that those is acute pain from

other causes cannot use as a coping mechanism. For this reason, the pain of childbirth must be assessed in light of its unique quality (Callister, 2003).

### **Conclusion**

Pain is a part of childbirth. It is transmitted in a predictable fashion along afferent neurons and through the release of pain related neurotransmitters. This pain of labor is unique from other tissue injuries in that its severity, location and quality shift as the woman moves from one stage to another. The typical assessment of this pain by an American labor and delivery nurse is done through a standardized numerical self-report scale. However, effectiveness in truly grasping and documenting the pain of childbirth is questionable due to the numerous factors that impede accurate pain assessment. One of the important factors a labor and delivery nurse must be aware of is the cultural context of pain. This is only accomplished through a thorough knowledge of major cultural trends in pain perception and expression. While fostering awareness of these factors, the importance of individualizing pain assessments and transcending cultural bias remains of highest importance.

Besides culture, the level of anxiety a woman experiences leading up to and during the childbirth experience has a huge impact on actual childbirth pain perception and experience. The physiological reasons for this phenomenon are important to understand and anticipate. The labor and delivery nurse can take great strides towards pain relief through anxiety reduction methods such as promotion of strong support systems and coping mechanisms.

Other non-pharmacological methods have been proven by evidence based research to reduce the anxiety and pain of childbirth as well. The benefit of developing a

thorough understanding of these techniques lies in having low-risk, noninvasive alternatives to offer women during childbirth to hopefully delay or even eliminate the need for more dangerous interventions. However, the most common form of pain management used by women on American labor and delivery floors today is pharmacological. Therefore, it is of utmost importance for nurses to thoroughly grasp the mechanism of action and potential complications of medication used. An American labor and delivery nurse can develop a well-rounded practice by utilizing and mastering this information on the perception, expression, and management of the pain of childbirth.

## References

- Alehagen, S., Wijma, B., Lundberg, U., Wijma, K., (2005). Fear, pain and stress hormones during childbirth. *Journal of Psychosomatic Obstetrics and Gynaecology*, 26(3), 153-153. Retrieved from <http://search.proquest.com/docview/197719355>
- Akerman, N., & Dresner, M. (2009). The management of breakthrough pain during labour. *CNS Drugs*, 23(8), 669-679. Retrieved from <http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=0b822048-eceb-4b64-b579-d9d443a04d52%40sessionmgr111&vid=5&hid=127>
- Briggs, E. (2008). Cultural perspectives on pain management. *Journal of Perioperative Practice*, 18(11), 468. Retrieved from <http://search.proquest.com/docview/217746813?accountid=12085>
- Callister, L. C. (2003) Cultural influences on pain perceptions and behaviors. *Home Health Care Management and Practice*, 15(3), pp. 207-211. Retrieved from <http://hhc.sagepub.com/content/15/3/207>
- Campbell, C. (2008). Diffuse noxious inhibitory controls (DNIC) in African Americans, Asian Americans and Non-Hispanic Whites. *Journal of Pain*, 9(4), 62-62. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304395909001328>
- Campbell, D. A., Lake, M. F., Falk, M., & Backstrand, J. R. (2006). A randomized control trial of continuous support in labor by a lay doula. *Journal of Obstetric, Gynecologic, and Neonatal Nursing : JOGNN / NAACOG*, 35(4), 456-464. Retrieved from

<http://search.ebscohost.com.ezproxy.liberty.edu:2048/login.aspx?direct=true&db=rzh&AN=2009253599&site=ehost-live&scope=site>

Cassisi, J. E., Umeda, M., Deisinger, J. A., Sheffer, C., Lofland, K. R., & Jackson, C.

(2004). Patterns of pain descriptor usage in african americans and european americans with chronic pain. *Cultural Diversity & Ethnic Minority*

*Psychology, 10*(1), 81-89. Retrieved from

<http://psycnet.apa.org/journals/cdp/10/1/81>

Craven, C. (2010). Pushing for midwives: Homebirth mothers and the reproductive rights movement. 56-57. Philadelphia, PA: Temple University Press.

Davidson, M. R., London, L. L., Ladewig, P. A. (2012) *Maternal-Newborn Nursing and Women's Health* (9<sup>th</sup> ed.), 634-662. Upper Saddle River, NJ: Pearson

Hajiamini, Z., Masoud, S. N., Ebadi, A., Mahboubh, A., & Matin, A. A. (2012).

Comparing the effects of ice massage and acupressure on labor pain reduction.

*Complementary Therapies in Clinical Practice, 18*(3), 169. Retrieved from

<http://www.sciencedirect.com/science/article/pii/S1744388112000412>

Hotelling, B., Amis, D., & Green, J. (2004). Care practices that promote normal birth #3:

continuous labor support. *Journal of Perinatal Education, 13*(2), 16-22. Retrieved from

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1595190/?tool=pmcentrez&rendertype=abstract>

Iliadou, M. (2012). Supporting women in labour. *Health Science Journal, 6*(3), 385-391.

Retrieved from

<http://search.proquest.com/docview/1029935437?accountid=12085>

- Jänig, W. (2012). Autonomic reactions in pain. *Pain, 153*(4), 733-735. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0304395912000577>
- Kamel, R. M. (2010). The onset of human parturition. *Archives of Gynecology and Obstetrics, 281*(6), 975-982. Retrieved from <https://www.jazanu.edu.sa/Administrations/sfc/Documents/med/%D8%B7%D8%A8The%20Onset%20of%20Human%20Parturition.pdf>
- Lovering, S. (2006) Cultural attitudes and beliefs about pain. *Journal of Transcultural Nursing, 17*(4) ,389-395. Retrieved from <http://tcn.sagepub.com/content/17/4/389>
- Lowdermilk, D.L.,Perry, S.E., Cashion, K. (2010) *Maternal Nursing* (8<sup>th</sup> ed.) 21, 285-287, 388-389. Maryland Heights, MO: Mosby Elsevier.
- Marco, C. A., Marco, A. P., Plewa, M. C., Buderer, N., Bowles, J., & Lee, J. (2006). The verbal numeric pain scale: Effects of patient education on self-reports of pain. *Academic Emergency Medicine, 13*(8), 853-853. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1197/j.aem.2006.04.020/abstract>
- Pilliteri, A. (2010) *Maternal and child health nursing* (6<sup>th</sup> ed.) (pp. 398-399) Philadelphia, PA: Lippincott Williams and Wilkins.
- Stark, M. A., Craig, J., & Miller, M. G. (2011). Designing an intervention: Therapeutic showering in labor. *Applied Nursing Research : ANR, 24*(4), 73. Retrieved from [http://www.appliednursingresearch.org/article/S0897-1897\(11\)00056-5/abstract](http://www.appliednursingresearch.org/article/S0897-1897(11)00056-5/abstract)
- Tournaire, M., & Theau-Yonneau, A. (2007). Complementary and alternative approaches to pain relief during labor. *Evidence-Based Complementary and Alternative Medicine 4*(4), 409-417. Retrieved from

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2176140/?tool=pmcentrez&rendertype=abstract>

Watson, P. J., Latif, R. K., Rowbotham, D. J. (2005) Ethnic differences in thermal pain responses: A comparison of South Asian and White British healthy males. *Pain*, 118(1-2), 194-200. Retrieved from <http://www.sciencedirect.com.ezproxy.liberty.edu:2048/science/article/pii/S0304395905004094>