

# eNeonatal Review

Jointly Presented by The Johns Hopkins University School of Medicine and The Institute for Johns Hopkins Nursing

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## July 2006 VOLUME 3, NUMBER 11

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### In this issue...

Death in childhood is considerably less common than death in maturity. However, more than half the deaths of children take place in infancy<sup>1</sup>. In the year 2003, the rate of infant mortality in the United States was 6.85 deaths per 1000 live births<sup>2</sup>. Congenital anomalies, including anencephaly and bilateral renal agenesis, are the leading cause of death in the first year of life<sup>3</sup>.

Two of the three leading causes of infant death — congenital malformations and disorders related to short gestation or low birthweight — can be anticipated based on antenatal testing or perinatal events. The third most common cause is Sudden Infant Death, for which risk can be predicted and reduced but not eliminated. Other causes include sequelae to maternal pregnancy complications, cord and placental complications, unintentional injuries, respiratory distress, bacterial sepsis, and hemorrhage and circulatory diseases. Together these disorders account for 68.6% of all infant deaths in the United States<sup>2</sup>.

In this issue we summarize the current literature related to care of the neonate with lethal anomalies or other conditions which place them at risk for neonatal death, focusing on evidence-based practices that reduce suffering and enhance quality of life for the family and the affected neonate.

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## This Issue

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- **PRACTICES WHICH CONTRIBUTE TO THE QUALITY OF LIFE FOR THE NEONATE**
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- **ASSISTING CLINICIANS TO PROVIDE EFFECTIVE PERINATAL PALLIATIVE CARE**
- **ASK THE AUTHOR**

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### Guest Faculty Disclosure:

#### Mary Terhaar

Faculty Disclosure: No relationship with commercial supporters.

#### Maya Shaha

Faculty Disclosure: Has indicated a financial relationship in the form of grants and research support from the Swiss Cancer League and Dorothy Evans Lyne Fund.

### Unlabelled/Unapproved Uses:

The authors have indicated that there will be no reference to unlabeled/unapproved uses of drugs or products in this presentation.

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## Learning Objectives

The Johns Hopkins University School of Medicine and The Institute for Johns Hopkins Nursing take responsibility for the content, quality, and scientific integrity of this CME/CE activity.

### At the conclusion of this activity, participants should be able to:

- Discuss palliative care as it relates to perinatal and neonatal care
- Identify the rationale for evidence based practices which contribute to the quality of life for the neonate and for the bereaved family
- Describe policy changes that clinicians may implement to provide more effective perinatal palliative care

## Commentary

Recent developments in science and technology have made it possible for clinicians to more consistently and reliably predict risk and diagnose lethal fetal conditions. As a result, stillbirth, unanticipated fetal death, and neonatal loss are becoming uncommon events in current perinatal practice<sup>3</sup>. As a result of the ability to anticipate untoward pregnancy outcomes, many families have been afforded meaningful opportunities to participate in informed decisions regarding care of their fetus and neonate with serious life-threatening health problems<sup>4</sup>. Families who are informed before the birth about such anomalies and medical conditions can plan for the care their child will eventually need.

What has not changed is the pattern of providing care for the population of infants with fatal anomalies and other conditions, which bring the end of life in such proximity to its beginning<sup>5</sup>. Whereas hospice care is increasingly provided for adults with terminal conditions, the same cannot be said for infants and children<sup>3</sup>.

Palliative care is care that relieves symptoms and suffering but does not cure; it is at the core of hospice care and is seen in high contrast to the critical care commonly provided to the sick neonate<sup>6</sup>. As a means to

effectively support the family experiencing perinatal loss, clinicians must work outside the familiar and comfortable action-oriented role of hero and assume a less familiar, less comfortable role of witness<sup>7</sup>. In such a paradigm shift, the focus of care then moves to more directly enhancing the quality of life and relieving suffering as opposed to achieving a cure for illness<sup>8</sup>. In the special case of infants and children, the palliative approach begins at the time of diagnosis and continues irrespective of any decision to treat or not to treat. Such care can be provided in tertiary health care centers, in communities, in hospice, or at home. Palliative care by definition is *active total care* of the child's mind, body and spirit, as well as care of the child's family<sup>9</sup>. It is comprehensive, collaborative application of best practices in the best interest of the infant and family. As such, it is congruent in both approach and action to neonatal intensive care.

## References:

1. Romesberg TL. [Understanding Grief: A Component of Neonatal Palliative Care](#). Journal of Hospice and Palliative Nursing, 2004. (6)3: 161-170.
2. Hoyert DL, Heron MP, Murphy SL & Kung HC. [Deaths: Final data for 2003](#). National Vital Statistics Report. US Department of Health and Human Services, National Center for Health Statistics & Center for Disease Control, National Vital Statistics System, 2006 (54) 13: 1-13.
3. Hoeldtke, NJ & Calhoun, BC. [Perinatal Hospice](#). American Journal of Obstetrics & Gynecology, 2001 (185) 3: 525-529.
4. Chescheir NC & Cefalo RC. [Prenatal Diagnosis and Caring](#). Women's Health Issues, 1992 (2) 123-132.
5. Leuthner SR, Boldt AM, Kirby RS. [Where Infants Die: Examination of Place of Death and Hospice/Home Health Care Options in the State of Wisconsin](#). Journal of Palliative Medicine. 2004, (7)2: 269-277.
6. Institute of Medicine of the National Academies. When Children Die: Improving Palliative and End of Life Care for Children and Their Families. Washington DC: 2003.
7. Stanley KJ, Zoloth-Dorfman L. Ethical consideration. In Ferrell BR, Coyle N eds. Palliative Nursing. New York: Oxford University Press (2001): 663-681.
8. American Association of Colleges of Nursing. [Peaceful Death: Recommended Competencies and Curricular Guidelines for End of Life Nursing Care](#). Retrieved 21 June 2006.
9. Sepulveda C, Marlin A, Yoshida T, & Ullrich A, [Palliative Care: WHO's Global Perspective](#). Journal of Pain and Symptom Management, 2002 (24) 2: 95.

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## PALLIATIVE APPROACH TO PERINATAL AND NEONATAL CARE

Romesburg TL. **Understanding Grief: A component of Neonatal Palliative Care**. Journal of Hospice and Palliative Nursing, 2004 (6)3: 161-170.

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Hoeldtke, NJ & Calhoun, BC. **Perinatal Hospice**. American Journal of Obstetrics & Gynecology. 2001 (185) 3: 525-529.

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Sine D, Sumner L, Gracy D, & Von Gunten C. **Pediatric Extubation: "Pulling the Tube"**. Journal of Palliative Medicine 2001 (4) 4: 519-524.

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The Romesburg article emphasizes that death in the United States is most likely to occur only after exhausting all efforts to avoid it, with all possible medical interventions commonly attempted before imminence of death is accepted. The author proposes that this approach interferes with the potential benefits to infants and families that could result from initiating a palliative approach to care earlier in treatment. Emphasis is placed on the importance of addressing spirituality, culture, and follow-up grief support as necessary components of palliative care; the author further stresses the importance of education programs for clinicians in all roles to build knowledge, comfort, and competence in providing palliative care.

In their 2001 report, Hoeldtke & Calhoun describe an integrated and organized program to approach the needs of the perinatal family whose fetus is diagnosed with a lethal anomaly, proposing that three recent developments in perinatal care — state of the art antenatal diagnostics, perinatal grief support, and hospice care — can be effectively combined as best practice in the care of families of these children. They present a brief history of each of the practices, and review outcomes data.

The authors stipulate that the fundamental emphases of hospice care are to provide coordinated, collaborative, holistic care to the dying person and the family, which extends beyond the death and into the period of bereavement; to neither hasten nor delay death; and to affirm life. Perinatal hospice care focuses on the integrity of the family unit rather than the anomaly of the fetus. This care begins with identification of the anomaly and extends beyond the death of the infant, including: understanding of options and anticipatory guidance; the alleviation of fear; the postpartum period; the death of the child; the rituals of death; and the bereavement process.

The authors discuss involvement of the extended family in the birth and early infant care, address taking the infant home when death is not imminent, and emphasize the importance of overcoming resistance to a palliative approach within a tertiary setting. While they strongly advocate that a physician champion is vital to the success of establishing a perinatal hospice program, there is little discussion of the actual care provided for the infant and little guidance for clinicians engaged in this care.

The article by Sine et al presents a case study involving hospice care of a five day old infant with lethal anomalies. They describe the palliative care provided for the newborn and the bereavement care provided to the family. The case presentation is reaffirming, the reflections are authentic, and the outcome is favorable for all involved. Further, the authors further provide a checklist to be used by hospital staff in discharging neonates to hospice, which includes: equipment, supplies, and medications to be made available; individuals and services to contact; orders and documentation to clarify; names and contacts for family and community resources; memory-making materials and suggestions; contingency plans; and alternatives and complementary therapies to consider. In addition, the authors present a sample order set for transition of ventilator dependent patients to hospice care.

## PRACTICES WHICH CONTRIBUTE TO THE QUALITY OF LIFE FOR THE NEONATE

Jones JE & Kassity N. **Varieties of Alternative Experience: Complementary Care in the Neonatal Intensive Care Unit.** Clinical Obstetrics and Gynecology 2001 (44) 4: 750-768.

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The authors propose that contemporary neonatology and the associated disciplines have taken a predominantly Western medical model view to both the problems and the outcomes of neonatal care. They propose that by expanding both treatment modalities and outcomes measures applied in day to day neonatal practice, clinicians might enhance the quality of care, as well as the long term outcomes achieved. Recommended non-traditional modalities include massage, kangaroo care, and a variety of noninvasive approaches to stress reduction and comfort care. No outcomes data are provided; rather the authors advocate considering complementary approaches to care.

## PRACTICES WHICH CONTRIBUTE TO THE QUALITY OF LIFE FOR THE BEREAVED

St John et al. **Shrouds of silence: three women's stories of prenatal loss.** Australian Journal of Advanced Nursing 2006, 23(3), 8-12.

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Vance JC, Boyle FM, Najman JM, & Thearle MJ. **Couple distress after sudden infant or perinatal death: a 30-month follow up.** Journal of Paediatrics and Child Health, 2002. 38(4), 368-372.

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Leuthner SR, Boldt AM & Kirby RS. **Where Infants Die: Examination of Place of Death and Hospice/Home Health Care Options in the State of Wisconsin.** Journal of Palliative Medicine. 2004, (2): 269-277.

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Serwint JR & Nellis ME. **Deaths of pediatric patients: relevance to their medical home, an urban primary care clinic.** Pediatrics, 2005, 115(1), 57-63.

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Haas, F. **Bereavement care: seeing the body.** Art & Science 2003 (17) 28: 33-37.

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Exploring the impact of prenatal loss on a woman's life and her approach to coping with such a situation, St. John et al conducted a descriptive exploratory study. Three Australian women participated by consenting to unstructured interviews; data were analyzed using content analysis. The authors report that women who suffer perinatal loss find themselves feeling isolated and not supported. Among the authors recommendations are that women experiencing perinatal loss be provided with a forum to talk about their experience, which they postulate could help to diminish the emotional burden and facilitate healing.

Vance et al performed a quantitative, longitudinal correlational study using a matched pair design to study the mental status of parents coping with grief over a dying infant, how this differs from couples who are not engaged in the bereavement process, and how the loss impacts the marriage. A consecutive sample of bereaved (n=138) and non-bereaved (n=156) parents who had experienced either sudden infant death or perinatal death were surveyed, with telephone interviews conducted at 2, 8, 15, and 30 months.

The researchers report that the level of distress differed significantly between couples who have experienced the loss of an infant and those who have not, that such distress was found to vary considerably among bereaved parents over time, and that women were more likely to experience distress than their partners. Also, in the case of incongruent distress between parents, women were more likely to experience longer term marital dissatisfaction, whereas husbands were less likely to report the quality of the relationship as being impaired. With a nearly 50% attrition rate over the course of the study, an interesting secondary finding was that those couples who completed the whole study reported higher marital satisfaction than those who did not. Interestingly, responses were found to change over the course of the study, so that people who were categorized as distressed initially were more likely to remain distressed throughout the entire study period. These findings illustrate that caring for families who have just lost their child requires attention to both the nature of the experience and the changing need for support over time.

In their 2004 retrospective survey of 508 infants who died from congenital anomalies during 1992-1996 across the state of Wisconsin, Leuthner et al investigated the pattern of resource utilization, studying the location of deaths, the services provided to families of dying infants, and the utilization of hospice care by these infants

and families. The authors found only 16 infants died at home. The authors question why so few infants who could be provided palliative care at home received it; whether home care personnel possess knowledge, skills and expertise to provide adequate care to dying infants and their families; and the pattern of care that makes use of hospital care when at home care is available and may be more appropriate.

Serwint & Nellis tracked 36 children (31 African-American) who had received care from an urban, hospital-based, resident, continuity clinic at a large academic institution in Maryland (US), investigating and comparing their deaths with national data. The authors found that death rates at this institution were slightly higher than average, and that the causes of infant death varied slightly in comparison to national data. They further observed that infants at this institution were more likely to suffer from chronic illnesses or neuromuscular disease, and that the incidence of SIDS was also higher than the national data. However, deaths due to unintentional injuries were found to be less likely to occur, a finding was attributed to the close proximity to the tertiary hospital setting.

In this study only a small number of infants were found to have died at home. The authors argue that effective home care services are needed to support parents with dying infants in order to allow deaths to occur at home, recommend further exploration of the causes of death in order to structure support for families, and propose that further staff education is necessary to meet the needs of these infants and their families.

Haas' 2003 literature review examined the practice of encouraging families to view the body of the deceased, with the intent to establish an evidence base for what has become common practice. Conclusions, based predominantly on case study reviews, are that families benefit from honesty, from viewing the body if they so choose, from time together with the body, and from mementos of the lost family member.

## ASSISTING CLINICIANS TO PROVIDE EFFECTIVE PERINATAL PALLIATIVE CARE

Shuzman E. **Facing stillbirth or neonatal death. Providing culturally appropriate care for Jewish families.** AWHONN Lifelines, 2003. 7(6), 537-543.

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Yam BM, Rossiter JC, & Cheung KY. **Caring for dying infants: experiences of neonatal intensive care nurses in Hong Kong.** Journal of Clinical Nursing, 2001. 10(5), 651-659.

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Hassed SJ, Miller CH, Pope SK, Murphy P, Quirk JG Jr, Cunniff C. (1993) **Perinatal lethal conditions: the effect of diagnosis on decision making.** Obstetrics and Gynecology, 82(1), 37-42.

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Calhoun BC, Napolitano P, Terry M, Bussey C, & Hoeldtke N J. **Perinatal Hospice. Comprehensive care for the family of the fetus with a lethal condition.** J Reprod Med, (2003). 48(5), 343-348.

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Conway A & Maloney-Harmon PA. **Ethical Issues in the Neonatal Intensive Care Unit.** Critical Care Nursing Clinics of North America, 2004. 16(2), 271-278.

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Cignacco E, Stöffel L, Raio L, Schneider H, & Nelle M. **Recommendations for the palliative care of dying neonates.** Zeitschrift für Geburtshilfe & Neonatologie, 2004. 208(4), 155-160.

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Stringer M, Shaw VD, & Savani RC. **Comfort care of neonates at the end of life.** Neonatal Network, 2004. 23(5), 41-46.

Caelli K, Downie J, Letendre A. (2002). **Parents' experiences of midwife-managed care following the loss of a baby in a previous pregnancy.** Journal of Advances in Nursing, 39(2), 127-136.

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In the Jewish tradition, bearing a stillborn baby is considered a threat to the very foundations of Judaism. Shuzman's 2003 review of religious texts sought to enable nurses to provide culturally sensitive and adequate care. Among the author's recommendations are that a female nurse should, if possible, be assigned to the grieving parents; that Sabbath restrictions be observed when assigning nurses to the parents; that the presence of a female relative during labor and after the birth may offer comfort for parents; and that time with the dead infant may help parents to cope with the situation.

Similarly, Yam et al investigated the Chinese culture, with an exploratory study conducted among neonatal nurses in Hong Kong (n=10). They were interviewed face-to-face approximately 90 minutes; the study was guided by principles of grounded theory and content analysis was applied to the data. Among their findings were staff reports that caring for dying neonates was perceived to be stressful, particularly when the plan of care changed from curative to palliative, and that aspects of Chinese culture were perceived to act as barriers to nurses' successful coping with the demands of their job. Nurses further reported that they took refuge in a more distant nurse-parent relationship, leading the authors report that in order to overcome the barriers of the culture, nurses in China need to have high interpersonal communications skills.

In 1993, Hassed et al performed a retrospective study of 130 pregnancies in Arkansas, investigating parents' decision to terminate the pregnancy in case of lethal anomalies in the infant. The study aimed at identifying factors influencing decision-making when an unborn infant has been found to have congenital anomalies. The authors found that the type of congenital defect (i.e. anencephaly) correlated with parents' decision in favor or in refute of termination. However, parents were more often in favor of carrying the pregnancy to full term despite the unborn child's determined congenital defect, with "guilt" reported as a very important factor in parents' decision-making regarding pregnancy termination. Further, the authors note that healthcare professionals need to be aware of their own belief system with regard to infant death, so they can support the parents' decision (whatever it is), without regard to their own personal agenda.

Calhoun et al studied parents in the United States military medical system who lost their newborn or unborn child. The authors found that parents are highly likely to choose a supportive program to help cope with the situation, noting that from the 33 cases, 28 couples opted to participate in a grief support program designed to assure continuous care. The program was initiated as soon as the potentially lethal condition of the fetus was identified, allowing for in-depth planning for the birth. Prenatal, perinatal and postpartum medical care decisions were discussed and implemented. In the case of an infant's death, the parents were able to be present and say their good-byes, as well as create a little memento. For these reasons, the program was viewed to support optimal parent-infant bonding as well as anticipatory grief work. The authors note that in order to deliver effective care, the multidisciplinary healthcare team needs to be involved in the support of the prospective parents at the earliest possible moment, needs to have the same goal, and that every member needs to be informed about pertinent issues and parent preferences. Current structures in healthcare, the authors report, are perceived to be sufficient to facilitate the implementation of such a pregnancy support program at any given time.

Due to the many medical advances, healthcare professionals in NICUs are confronted with situations that often border upon or become ethical dilemmas. The article by Conway & Maloney-Harmon presents a review of current literature on ethical theory, decision making models, and the law (including the Bill of Rights), and recommends a set of guidelines to support any neonatal team working in collaboration with the perinatal family to make ethical decisions regarding care for the infant. Based on this study, pertinent questions for NICU healthcare professionals are raised, including issues of nutrition, maintaining body temperature, and alleviating pain. The authors conclude that, given that palliative care takes into account ethical principles and constructs, it is both congruent and completely pertinent in neonatal care.

Preterm infants and infants with congenital anomalies have a high risk of dying; however, there are few

support structures in healthcare settings to alleviate pain in the dying infant or to promote a dignified death in neonates. Cignacco et al report on a program, including a pain score that was developed at the University Hospital in Berne, Switzerland. The authors present guidelines for pain management, body temperature, nutrition, mouth care, body care, positioning, and breathing support. Extubation care and supportive care for parents is described in detail. Although the program has not been evaluated formally, oral feedback from healthcare professionals and parents indicates preliminary success, with healthcare professionals reporting an appreciation for the end-of-life guidance provided, and parents reporting feeling better cared for and supported.

As a result of years of end-of-life care for adult patients, comfort care has been developed, with the aim of providing care in a way that assures the dying person is comfortable and experiences minimal stress due to pain or discomfort. Stringer et al developed a set of guidelines to promote quality end-of-life care for dying neonates in neonatal intensive care units across America; their report also includes guidelines for discharge to home, as well as for home care. The authors based their work on a single case study and several methods were combined (i.e., Delphi procedure, survey and debriefing with healthcare professionals on site) to develop and evaluate the guidelines, which were finalized employing a consensus-building approach. Staff report the guidelines to be beneficial, indicating that dying neonates are now cared for in a more comprehensive and holistic manner.

Caelli et al report that it is likely that more than 2% of families in the Canada and Australia will experience an infant death, and conducted a phenomenological study of an intervention program developed by a group of midwives in Canada. Called Special Delivery Service (SDS), a key aspect of the program had midwives working in close conjunction with the respective obstetrician to better support the parents experiencing perinatal loss. Of the couples who had completed the SDS, 13 individuals (5 men and 8 women) chose to participate in the study. The authors report a positive impact of the SDS on the couples' coping: participants reported being better able to share their grief; that SDS contributed to a better quality of life for them, including enhanced self-confidence; and that they had a greater degree of trust in their healthcare professionals. Further, participants placed high value on the midwife lending an open ear to the couples when they were sharing their experiences.

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### LAST MONTH'S Q & A June 2006 - Volume 3 - Issue 10

Last issue we discussed birth injuries as a major cause of morbidity and mortality, examined the complications created by the increasing trend in the use of vacuum extraction, and reviewed the latest guidelines in prevention and management.



Commentary & Reviews:  
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Commentary & Reviews:  
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**We received the following question from one of our subscribers.**



Regarding "deliveries in water": What is your experience and what does the literature say about related birth injuries and complications?



Our personal experience with water births is limited, and the literature provides a wide difference in opinion with regard to related injuries. A retrospective review of the literature by Pinette et al, while not identifying an adequately controlled trial of delivery underwater compared with delivery in air, found 16 citations that described associated complications, including fresh water drowning, neonatal hyponatremia, neonatal waterborne infectious disease, cord rupture with neonatal hemorrhage, hypoxic ischemic encephalopathy, and death. The authors conclude that while water births may be associated with potential complications not seen with land deliveries, the rates of these complications are likely to be low and are not well defined. Conversely, an observational study by Geissbuehler et al looked at 9518 spontaneous singleton cephalic presentation births, of which 3617 were waterbirths and 5901 landbirths. The authors found fewer complications with regard to the infant and mother noted with waterbirths, and no deaths related to spontaneous labor. They conclude that waterbirths are associated with low risks for both mother and child when obstetrical guidelines are followed.

Reference:

1. Pinette MG, Wax J, Wilson E, [The risks of underwater births](#). AJOG, Vol 190, issue 5, May 2004; 1211-1215.
2. Geissbuehler V, Stein S, Eberhard J, [Waterbirths compared with landbirths: an observational study of nine years](#). J Perinat Med. 2004;32(4):308-4

### The eNeonatal Review Team asked the June faculty a few questions.

**Q** Birth injuries and cerebral palsy (CP) are often blamed on poor obstetrical care. How does this impact on the expert witness called upon to give his or her opinion in these unfortunate cases?

**A** This is an extremely difficult task that in our opinion is often overshadowed by the emotional aspect associated with these cases. A four year study by Gaffney et al looked at the relation between suboptimal intrapartum obstetric care and cerebral palsy in the Oxford regional health authority; the authors found that neonatal encephalopathy only accounted for 6.8% of cases of cerebral palsy. Their conclusion: "there is an association between quality of intrapartum care and death as well as an association between suboptimal care and cerebral palsy, but this seems to have a role in only a small proportion of cerebral palsy". The authors also note that the contribution of adverse antenatal factors in the origin of cerebral palsy need further study.

Therefore, in our opinion, when evaluating these cases it is important to evaluate all the factors before concluding that the cause of the cerebral palsy is birth related.

Reference:

1. Gaffney G, Squier MV, Johnson A, [Case-control study of intrapartum care, cerebral palsy, and perinatal death](#). BMJ. 1994 Mar; 308(6931):743-50.

**Q** What are the most important criteria for defining the pathogenesis of neonatal encephalopathy as a cause of cerebral palsy?

**A** In a review by Hankins and Speer ([Defining the pathogenesis and pathophysiology of neonatal encephalopathy and cerebral palsy](#). Hankins GD, Speer M. Obstet Gynecol. 2003 Sep; 102(3):628-36.) they quote both The American College of Obstetricians and Gynecologists (ACOG) and the international cerebral palsy task force in identifying four essential criteria as a prerequisite to diagnosing an intrapartum hypoxic-ischemic insult as cause for moderate to severe neonatal encephalopathy that results in cerebral palsy. Importantly all four criteria must be present. They are:

1. Evidence of metabolic acidosis in fetal umbilical cord arterial blood obtained at delivery (pH<7 and a base deficit of 12mmol/L or more).
2. Early onset of severe or moderate neonatal encephalopathy in infants born at 34 weeks or more gestation.
3. Cerebral palsy of the spastic quadriplegic or dyskinetic type.

4. Exclusion of other identifiable etiologies, such as trauma, coagulation disorders, infectious conditions, or genetic disorders.

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**Target Audience · [back to top](#)**

This activity has been developed for Neonatologists, NICU Nurses and Respiratory Therapists working with Neonatal patients. There are no fees or prerequisites for this activity.

**Learning Objectives · [back to top](#)**

At the conclusion of this activity, participants should be able to:

- Discuss palliative care as it relates to perinatal and neonatal care
- Identify the rationale for evidence based practices which contribute to the quality of life for the neonate and for the bereaved family
- Describe policy changes that clinicians may implement to provide more effective perinatal palliative care.

**Statement of Responsibility · [back to top](#)**

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- Dr. Lawson has indicated a financial relationship of grant/research support from the NIH. He also receives financial/material support from Nature Publishing Group as the Editor of the Journal of Perinatology.
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