Human Milk for the Very Low Birth Weight Infant

Nationally more than 200 babies are born at Very Low Birth Weight (VLBW) every day. VLBW is classified as a birth of an infant weighing less than three pounds and four ounces or 1,500 grams. These babies are at 75 to 100 times greater risk of dying in their first month of life as those children born at average birth weight (greater than five pounds, nine ounces). In California, 1.1% of all infants are born VLBW (6,000 babies annually). Their outcomes are impacted by the care their mothers receive before delivery, care the infant receives at the time of delivery and during the first crucial days of life. Nutrition is an important aspect of their care.

The American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), the American Dietetic Association (ADA), the US Surgeon General, the World Health Organization (WHO/UNICEF) and many other organizations recognize that the promotion and support of breastfeeding is a key public health issue. During the VLBW infant’s neonatal period, optimal nutrition via breastfeeding will have profound effects on:

- Organ development – especially the lungs and brain, which are undergoing the most pronounced developmental differentiation. Retinol has been shown to accelerate healing of injured fetal lamb cells. More recently, prospective trials have proven that Vitamin A administration reduces the incidence of chronic lung disease in premature humans. Similarly, fatty acid supplementation improve neurodevelopmental outcomes in the VLBW infant.
- Immune status – antibody production is dependent on adequacy of protein production and susceptibility to infection is significantly related to nutritional status.
- Gastrointestinal integrity and the incidence of necrotizing enterocolitis (NEC) - feeding practices have long been implicated as risk factors that affect NEC rates; conversely, NEC markedly compromises the provision of nutrition and affects metabolic demands.
- Social and family development - Breastfeeding promotes strong families by improving the health of the mother, establishing a close bond between mother and infant and fostering communication and emotional development. Breastfeeding provides significant economic benefits to the family and the community by reducing unnecessary expenditures for infant formula, reducing health care costs, reducing employee absenteeism to care for a sick child, and decreasing resource use and waste. Breastfeeding cost-effectiveness studies reveal that as little as three months of exclusive breastfeeding can save $200 - $400 per child in health care costs during the first year of life.

**Standard of Care**

Research supports, and professional consensus opinion is growing that human milk, with appropriate fortification for the VLBW infant, is the standard of care for preterm nutrition, as well as term infant nutrition. The AAP issued a policy statement in 2003 stating, in part, “Human milk is them preferred feeding for all infants, including premature and sick newborns, with rare exceptions.” They further recommend: direct breastfeeding as optimal; expressed breastmilk, fortified when appropriate for premature infants; and a decision to choose not to breastfeed should occur only after the family has been fully informed of the risks associated with that decision. The AAP stated, “Before advising against breastfeeding or recommending premature weaning, the practitioner should weigh thoughtfully the benefits of breastfeeding against the risks of not receiving human milk.”

**Benefits of Human Milk**

Benefits of human milk for VLBW infants include:

- Breastmilk empties from the stomach faster, and reduces intestinal permeability faster;
- The use of breastmilk results in less residuals and faster realization of full enteral feedings;
- Many factors in human milk may stimulate gastrointestinal growth, motility and maturation;
- Enzymes in breastmilk help immature infants absorb and utilize nutrients more efficiently and may also improve absorption of nutrients when breastmilk and artificial milks are combined;
- Reaching full feedings faster with the use of breastmilk means fewer days of IV’s, less
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- side effects from TPN, less infections and infiltrations from IV’s, and less costly and fewer hospital days;
- Breastmilk-fed infants have a reduced incidence of necrotizing enterocolitis;
- Breastmilk use leads to reduced episodes of bacteremia and sepsis;
- Breastmilk use is associated with fewer urinary tract infections;
- VLBW infants fed breastmilk tend to have higher IQ scores; and
- VLBW infants receiving breastmilk have improved visual development.

While there are occasional medical contraindications to the use of a mother’s breast milk, the most likely reason given for not providing human milk to VLBW infants is lack of availability. It stands to reason that mothers of VLBW infants should be directed and supported as much as possible to ensure that their milk is available for their baby. A mother’s successful commitment to supplying her milk is likely to have significant medical benefit for her VLBW infant in both the short and long-term. If a mother’s breastmilk is not available, by her choice or medical benefit for her VLBW infant in both the short and long-term. If a mother’s breastmilk is not available, by her choice or medical contraindications, the alternative of banked human milk should lead to the realization of most, but not all, of the benefits of human milk for the VLBW population.

Note: This article was based on the newly released CPQCC QI Toolkit: Nutritional Support of the Very Low Birth Weight Infant: Part I, written by Jane Morton, MD, Courtney Nisbet, RN, MS, William Rhine, MD, Nancy Wight, MD, and David Wirtschafter, MD. A complete list of references is available in the Toolkit, which can be downloaded from the CPQCC web site, www.cpqcc.org.

Best Practice Recommendations for Breastfeeding the VLBW Infant:

Establishing Lactation: The First 100 Hours

- Pump early, pump often: informing the mother and initiating early pumping.
- Pump early, pump often: providing equipment, staff and logistics for simultaneous “double” breast pumping to establish a regular pumping schedule.
- Encourage and provide resources to allow mothers to keep a pumping diary of milk production, the equivalent to charting lactation vital signs in the mother.
- Non-pharmacological means to optimize early milk production: breast massage; manual expression; and Early colostrums feeds.

Setting the Stage for Lactation Support

- Obstetric and perinatal professionals should actively advocate breastmilk and breastfeeding during prenatal patient contacts.
- Obstetric and perinatal professionals should screen for risk factors for insufficient lactation or breastfeeding problems prenatally.

Obstetric and perinatal professionals should promote breastmilk and breastfeeding by having a breastfeeding supportive office or organization.

- Perinatal professionals should seek out opportunities to educate and support the breastfeeding family.
- Labor and delivery/neonatal staff should allow as much maternal contact with the infant before transfer to the NICU as the infant’s medical condition allows.
- Postpartum and NICU policies and practice should support breastfeeding in a coordinated, consistent manner.
- Every mother of an infant admitted to the NICU should be provided with an appropriate breast pump and the support to use it effectively.
- Specific lactation assistance should be available to mothers of NICU infants.
- Physicians involved in mothers’ postpartum and in infants’ NICU care should advocate for breastfeeding.
- Perinatal and neonatal professionals should have the knowledge, skills and attitudes necessary to successfully support provision of breastmilk to the VLBW infant.
- Obstetric, perinatal, and neonatal professionals should counsel mothers when breastfeeding may be of concern or contraindicated.
- Non-pharmacologic means to optimize early milk production: skin-to-skin contact.
- Maternal discharge planning should be a team approach. Submitted by: Courtney Nisbet, RN, MS – Quality Improvement Coordinator, California Perinatal Quality Care Collaborative (CPQCC), Region 4.

Breastfeeding Decreases Infant Mortality

The National Institute of Environmental Health Sciences recently released data that suggests breastfeeding can reduce the risk of death for infants in their first year of life. Looking at infants between 28 days and one year of age, researchers concluded that promoting breastfeeding can potentially prevent up to 720 postneonatal deaths in the U.S. each year.

Researchers compared CDC records of 1,204 children who died between 28 days and one year of causes other than congenital anomalies or cancer with those of 7,740 children still alive at one year. The children who were breastfed had 20% lower risk of dying between 28 days and one year than children who weren't breastfed. Longer breastfeeding was associated with lower risk. The effect was the same in both black and white children.

Breastfed infants in the U.S. have lower rates of morbidity, especially from infectious disease, but there are no contemporary US studies of the effect of breastfeeding on all-cause mortality in the first year of life. The study appears in the May issue of the scientific journal, Pediatrics, and will be released at the 2004 Academic Pediatrics Societies meeting in San Francisco on May 2, 2004. For more information visit http://www.nih.gov/news/pr/may2004/niehs-02.htm.
Advanced Maternal Age and Increased Pregnancy-Related Morbidity and Mortality

Advanced maternal age or 'mature' pregnant woman is defined as a woman 35 years or older at the time she gives birth. Postmature, premenopausal, mature gravida, elderly, obstetrically senescent, or participating in childbearing in the twilight of the reproductive are some terms used historically which have a more negative connotation (1,3). These titles support the perception that advancing age is itself a risk factor for poor pregnancy outcome. More recently, some authors have suggested defining advanced maternal age as beginning at 40 or 45, rather than thirty-five.

The proportion of childbearing women 35 years and older has increased during the past two decades. National birth statistics demonstrate continued increases in birth rates for older women in all reported ethnic groups. In the United States more than a half million women ages 35-54 gave birth in the year 2000 (4). Reasons for the increased birth rate for older women include an aging population, delayed and second marriages, school and career opportunities previously unavailable, as well as expanding infertility treatment options.

Despite the potential socioeconomic benefits of delayed childbearing, the more mature pregnant woman is not impervious to the increase in chronic illness associated with aging. Diabetes and hypertension are two common chronic illnesses that can affect pregnancy outcome. Obesity increases with age and raises maternal risk, independent of age.

Except for deaths from anesthesia, where the pregnancy-related mortality ratio is low for all women, the risk of death for all causes increases with advancing maternal age. As is the case for many maternal-child health indicators, racial differences exist when comparing maternal mortality figures. The greatest excess risk of pregnancy-related death among older white women, particularly those 40 years and older, is due to hemorrhage, cardiomyopathy, embolisms, and other medical conditions. The excess risk for older African-American women bearing children is greatest for pregnancy hypertensive disorders, cerebrovascular accidents, infections, and other medical conditions (2).

Maternal mortality at all ages is a rare occurrence in the United States. Estimated maternal mortality rates based on data where there are few occurrences will exhibit considerable variability. Comparisons based on these rates should be evaluated carefully. It is more useful to use at least three years combined data when analyzing local County or even State maternal mortality figures, especially if there are fewer than 20 occurrences.

The authors of two studies in the November 2003 Obstetrics & Gynecology (2,5) conclude that the greater maternal-fetal risks for older pregnant women require special counseling or more risk awareness for such women before and during pregnancy. ACOG, in an October 31, 2003 news release, advises that women over 35 women be given extra counseling regarding the specific risks of pregnancy for more mature women.

Maternal morbidity and pregnancy-related mortality risks do increase with maternal age. However, the vast majority of women age 35 and older can and will do well during pregnancy. The number and spacing of previous pregnancies, genetics, nutritional status, substance abuse history, family support, economic resources, and prenatal care impact pregnancy outcome. Preconception counseling and good obstetrical care, along with maternal health promoting behaviors can improve outcomes for all maternal age groups.


Submitted by: Ellen Silver, RNP, PAC/LAC

Advanced Maternal Age…¸con’t

Quality of Care

In a perfect world, quality of care for pregnant women and their families starts prior to pregnancy. Preconception care and/or interconception care provide an opportune moment to take inventory on the health and well-being of the woman and family. Assessments and screening should be broad based. The psychosocial, health education and nutritional needs of the woman and her family should be evaluated and improvement should be provided. Medical providers should work in collaboration with local community-based organizations that offer services that are culturally competent and sensitive to the needs of the family to help promote healthy behaviors.

With proper screening, problems can be identified and risk-appropriate care offered. Take the case of a 16 year old single mother, monolingual in Spanish whose baby was born at 27 weeks at a Level I hospital and later transferred to a CCS designated Community NICU. The woman received no prenatal care; and in addition to being preterm the infant girl was born with a neural tube defect. Now, 12 weeks later the baby is going to be discharged with referrals to the local Children’s Hospital Spina Bifida Clinic. Information has been given to the mother about the how-to’s of caring for her baby, yet little information has been given to her about planning for a subsequent pregnancy. What screening and assessments should be performed? What referrals should she receive? How should her care be coordinated? What will be done to prevent this from happening again? If this woman lived in your community what would you do? If you have an interesting case that could benefit by regionalization, e-mail it to esilver@paclac.org

Submitted by: Fran Davis-Snavely, RN, CNM, Region 7

Supported in part by grants from the State of California Department of Health Services, Maternal & Child Health Branch
Congratulations Sandra Shewry & Dr. Richard Jackson
Sandra Shewry, appointed Director of the Department of Health Services by Governor Schwarzenegger on March 18, 2004, returns to state service after having served for many years as the executive director of the Managed Risk Medical Insurance Board. As the newly appointed State Public Health Director, Dr. Jackson will be responsible for providing leadership and oversight of the department's public health related activities.

CALIFORNIA STATE BUDGET
AB 1800 (Oropeza) / SB 1095 (Chesbro) Budget Act 2004-05
The State of California continues to face the most financially challenging times in its history. Although the forecast for state revenue is somewhat improved, the budget deficit remains dramatic. The Governor will be presenting his Proposed May Revisions to the State Budget on May 14, 2004, including changes being considered in funding of healthcare services.

MAY REVISIONS TO THE STATE BUDGET: HEALTH
The May Revision proposes:
• a withdrawal of the enrollment caps and co-payments for various Health and Human Services Programs.
• Medi-Cal provider rate reduction of 15%, $462 million in 2004-2005. The state has been enjoined preventing implementation the 5% reduction in the 2003-'04 budget.
• Maintains the reduction of Medi-Cal interim rates by 10% for non-contracting cost reimbursed acute care hospitals, $31 million in 2004-2005.
• Maintains the Medi-Cal provider float by delaying the Medi-Cal check write by one week, $18.1 million in 2003-2004 and $143 million in 2004-2005.

MEDI-CAL REDESIGN
The Department of Health Services recently completed a series of eight stakeholder meetings across California to discuss federal waiver options and the opportunity for improving the cost efficiencies of the Medi-Cal program in California without reducing eligibility or benefits available through the Medi-Cal program. Several patient advocacy groups have submitted alternative proposals for consideration by the department as part of this process. Stakeholder groups will meet at least two other times during the 1115 waiver development phase (June through October 2004). Summaries of work group meetings and other updates are posted on the website. www.medi-calredesign.org

CALIFORNIA PERFORMANCE REVIEW
The vision and determination for restructuring Government in California as previewed in Governor Schwarzenegger’s budget summary and featured in his State of the State address is currently being developed. The California Performance Review focuses on four key areas: Executive Branch Reorganization, Program Performance Assessment and Budgeting, Improved Services and Productivity and Acquisition Reform. More information is available at Website: http://cpr.ca.gov

LEGISLATION 2004-2005
AB 2049 (Nakanishi): Fetal Ultrasound.
Passed Assembly. Referred Senate RLS.
A person or facility that offers fetal ultrasound, or a similar procedure, for keepsake or entertainment purposes, without a physician's prescription, shall disclose, in writing, prior to performing the procedure, the following statement: "The Federal Food and Drug Administration has determined that the use of medical ultrasound equipment for other than medical purposes, or without a physician's prescription, is an unapproved use."

AB 3044 (Yee): Prenatal Ultrasound.
This bill would require any licensed health facility that provides prenatal ultrasound screening to detect congenital heart defects, with the exception of a small and rural hospital, to require that the ultrasound be performed by a sonographer who is nationally certified in obstetrical ultrasound by the American Registry for Diagnostic Medical Sonography or the American Registry of Radiologic Technologists, or has a minimum of 5 years of work experience in this state as a sonographer. The bill would also require a sonographer to perform ultrasound under the direct supervision of a qualified physician.

SB 1275 (Ortiz): Hospitals: maternity services-infant feeding.
Hearing Date set for May 10, 2004, in Senate Appr.
Requires that a general acute care hospital provide or arrange for the provision of lactation management education and safe preparation and appropriate bottle feeding techniques of infant formula for all health care practitioners who are permitted to provide these services and who regularly work the majority of their hours in the hospital maternity unit and nursery.

SB 1555 (Speier): Maternity Care. Sen Appr.
Would require every individual or group policy of health insurance that covers hospital, medical, or surgical expenses issued, amended, renewed, or delivered on or before Jan 1, 2005, shall cover maternity services including prenatal care, ambulatory care maternity services, involuntary complications of pregnancy, neonatal care, and inpatient hospital maternity care including labor and delivery and postpartum care.

AB 2331 (Mountjoy): Abortion: Fetal Pain
This bill would require the physician performing an abortion in the 3rd trimester to offer the pregnant woman information and counseling on fetal pain and offer the pregnant woman anesthesia for the fetus.

SB 1631 (Figueroa): Cal-Health Program
In Senate Appr Suspense File.
This bill would create the California Health Care Program (Cal-Health) to coordinate the Medi-Cal and Healthy Families programs for the purpose of reducing administrative costs.