



Perinatal Care Matters

A Publication of the Regional Perinatal Programs of California Spring, 2007

Neonatal Transport Data Collection System

REGION 1

North Coast Perinatal
Access System
415/ 476-3868

REGION 2

No. California Perinatal
Outreach Program
916/ 733-1750

REGION 3

East Bay Regional
Perinatal Program
510/ 204-3937

REGION 4

Mid-Coastal California
Perinatal Outreach Prog.
650/ 723-5763

REGION 5

San Joaquin/Sierra
Regional Perinatal Program
559/ 221-6315

REGION 6.1

Perinatal Outreach
Education Program
562/ 595-6459

REGION 6.2

South Bay Perinatal
Access Project
310/ 222-3651

REGION 6.3-6.6

PAC/LAC
818/ 788-6850

REGION 6.7

Community Perinatal
Network
562/ 945-6484

REGION 7

Inland Counties
Regional Perinatal Program
909/ 558-3970

REGION 8

Orange County
Regional Perinatal Program
714/ 456-6706

REGION 9

San Diego/Imperial
Counties Regional
Perinatal System
858/ 536-5090

REGION 10

Northern Kaiser
Permanente Regional
Perinatal Program
510/ 987-3430

REGION 11

Southern Kaiser
Permanente Regional
Perinatal Program
626/ 405-6052

On January 1, 2007, the California Perinatal Transport System (CPeTS), formerly the Perinatal Dispatch Centers, resumed neonatal transport data collection. CPeTS contracted with the California Quality Care Collaborative (CPQCC) to manage the renewed data system. This collaboration will optimize data quality, timeliness and enhance the understanding of transport patterns, outcomes and opportunities for quality improvement in California. It will also improve the availability of reports to facilities participating in the program.

Mandate to Collect, Analyze and Utilize Data

CPeTS was established in 1976 by AB 4439. This act developed two dispatch centers to facilitate transports of critically ill infants and mothers. CPeTS is responsible to collect and analyze perinatal and neonatal transport data for planning, program development, and outcome analysis. The previous data collection system was halted in response to changing data needs as well as HIPPA issues. Hospitals are mandated to systematically review and report neonatal transport in California by the following organizations.

California Children's Services (CCS) §3.25.1-30
Infant morbidity and mortality data concerning birthweight, survival, transfer...as required shall be submitted to the Chief, Children's Medical Services Branch/CCS Program annually.

California Code of Regulations, Title 22: §70547
Formal arrangements for consultation and/or transfer of an infant to an intensive care newborn nursery, or a mother to a hospital with the necessary services for problems beyond the capability of the perinatal unit.

AAP/ACOG Guidelines for Perinatal Care
recommends the following minimal regional evaluation of perinatal transport programs:

- Patient Outcome Data, including; unexpected neonatal morbidity or mortality during transport and at the receiving hospital.
- Logistic Information, including; frequency of failure to transfer patients generally considered to require tertiary care, availability and accessibility of needed services, capability to match the patient quickly and appropriately with the services needed, and programs to

promote patient and community awareness of available and appropriate regional referral programs.

Development of the Neonatal Transport System

Under the leadership of Drs. Jeff Gould and Al Hackel, key informant interviews and series focus groups were held around the State to identify key issues in perinatal transport. Individuals involved in perinatal transport provided expert guidance to identify and prioritize five major issues with improvement potential. These issues included:

- Underutilization of maternal transport;
- Delay in decision to transport infant;
- Difficulty in obtaining transport acceptance;
- Delay in transport following decision; and
- Consistent competency to stabilize the infant prior to the team's arrival, as well as transport team competency.

A workgroup was formed to develop and validate a data collection tool. The CPQCC developed an on-line data entry system which links transport data to outcome data. Following review and approval of the new system by Susanne Steinberg, MD, Chief, Maternal, Child and Adolescent Health Branch/Office of Family Planning, California Department of Health Services (DHS), and Marian Dalsey, MD, Chief, California Children's Medical Services, CCS.

Neonatal Transport Record Features

New transport records have been developed to assess patient stability, complications and to co-manage care prior to transport will be collected by referring professionals and transmitted to those receiving the infant. A modified Transport Risk Index of Physiologic Stability (TRIPS) Score will provide uniform assessment of patient status and stability at the time of referral, transport team arrival at referring facility and return to receiving NICU. Quality improvement issues identified during the transport process may be recorded as well.

Electronic data must be submitted for all neonates transferred to or from a CCS designated NICU as well as all facilities participating in CPQCC. Completing data collection is the joint responsibility of the referring and receiving hospitals, while reporting is the responsibility of the receiving facility.

For more information on the Neonatal Transport Data System visit the CPeTS website at www.perinatal.org or www.cpqcc.org.

Neonatal Intensive Care Unit Program Reduces Premature Infants' Length of Stay and Improves Parents' Mental Health Outcomes

An educational intervention program for parents of infants born prematurely that is implemented early in the Neonatal Intensive Care Unit (NICU) can reduce parental stress, depression and anxiety, enhance parent-infant interactions, and reduce hospital length of stay, according to a study led by Dr. Bernadette Melnyk, Dean and Distinguished Foundation Professor in Nursing at Arizona State University College of Nursing & Healthcare Innovation, Phoenix.

The study, which was funded by the National Institute of Nursing Research (NINR), a component of the National Institutes of Health (NIH), set out to evaluate the efficacy of an intervention program [Creating Opportunities for Parent Empowerment (COPE)] that was designed to make parent-infant interactions a more positive experience and enhance parent mental health outcomes for the ultimate purpose of improving child development and behavior outcomes.

Program Design

Two hundred and sixty families with preterm infants participated in a randomized, controlled trial conducted from 2001 to 2004 in two NICUs, in Rochester and Syracuse, New York. Subjects at each of the two study sites were randomly assigned to receive the COPE program or a comparison intervention program.

The researchers describe COPE as a four-phase educational-behavioral intervention program, with each phase providing parents with information on:

- The appearance and behavioral characteristics of premature infants and how parents can participate in their infant's care, meet their infant's needs, make interactions with their infant a more positive experience, and aid in their infant's development;
- Activities that assist parents in implementing the experimental information, such as recognizing their infants' alert states and stress cues, and identifying special characteristics of their infants.

Phase I of the COPE program occurred 2 to 4 days after the infants' admission to the NICU; Phase II occurred 2 to 4 days after completion of Phase I; Phase III occurred 1 to 4 days before discharge; Phase IV was delivered in the parents' home one week after infant discharge.

The investigators packaged the intervention as audiotaped and written information along with prescribed activities so that it could be easily reproduced and administered to all parents of preterm infants in NICUs at low cost. Their goal was for the COPE program to achieve widespread use without requiring intensive staff training and time.

Program Outcomes

The study, which appears in the November issue of *Pediatrics*, found that mothers in the COPE program reported significantly less stress in the NICU and less depression and anxiety than mothers in the comparison group when evaluated 2 months following the intervention. Trained observers in the study rated mothers and fathers in the COPE program as more positive in interactions with their infants. Mothers and fathers

also reported stronger beliefs about their parental role and what behaviors and characteristics to expect of their infants during hospitalization. Also, infants in the COPE program had a 3.8-day shorter NICU length of stay and a 3.9-day shorter total hospital length of stay than did comparison infants. In addition, for very low birth weight infants in the study (those less than 1500 grams), the COPE infants had an eight-day shorter length of stay than comparison infants.

The researchers report that the COPE group's shortened hospital stay resulted in decreased hospital costs of \$5000 per infant (4 days x \$1,250/day). They further note that with 480,000 low birth weight premature infants born every year in the U.S., approximately \$2.4 billion could be saved annually within our national health care system if the COPE program were to be adopted by NICUs across the country.

According to the investigators, this is believed to be the first randomized controlled trial to demonstrate that a reproducible theory-based intervention with parents of premature infants that commences early in the NICU produces less parental stress in the NICU, more positive parent-interactions in the NICU, less parental anxiety and depressive symptoms following hospitalization, and reduced length of stay for preterms.

"This study demonstrates the important role that nurse scientists can play not only in helping families cope during a highly stressful period in their lives, but also in contributing to a family's long-term quality of life and well being," said Dr. Patricia A. Grady, Director, National Institute of Nursing Research.

More Study is Needed

The research team is continuing to follow these children and their parents to determine if these lower patterns of depressive and anxiety symptoms will continue over time through 3 years of age or escalate as developmental changes occur and lags in infant development are discovered.

Dr. Melnyk and her team point out that "interventions such as the COPE program, targeted to lessen depressive symptoms, are especially important in that depressed mothers have been found to be less responsive, affectionate, and positive during interactions with their infants, which leads to later adverse child outcomes. Specifically, maternal depression has been empirically linked with family violence, marital discord, impaired cognitive development, child abuse and neglect, and childhood mental health and behavior disorders." "Despite the high incidence of maternal depression in women with premature infants, these women rarely seek professional assistance for their condition, often unaware of their symptoms or minimizing them," they conclude.

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NIH News, November 1, 2006

<http://www.nih.gov/news/pr/nov2006/ninr-01.htm>

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Older Mothers More Likely Than Younger Mothers To Deliver By Cesarean

Researchers funded by the NIH have found that older mothers with normal, full-term pregnancies — particularly first-time older mothers — were more likely to undergo Cesarean delivery than were younger women with similarly low-risk pregnancies.

The researchers arrived at their finding after examining birth certificates from 8 million U.S. births, for children born between 1995–2000. Because the researchers were limited solely to information from birth certificates, they were unable to ascertain why older mothers were more likely to undergo cesarean delivery than were mothers who were younger. “Until we learn why older mothers with low-risk pregnancies have a disproportionately high rate of Cesarean delivery, the utmost caution is needed in evaluating older mothers as candidates for the procedure,” said Duane Alexander, M.D., Director of the NICHD, the NIH Institute that conducted the study. “Although older mothers share certain risk factors in common, each woman is a unique individual and the potential benefits and risks of Cesarean delivery should be evaluated for her specific case.”

Pregnancy Complications

The researchers undertook the study to evaluate the risks of pregnancy complications associated with advancing maternal age among women pregnant with a single child. Overall, older mothers (over age 35) were more likely than were younger women to experience complications during pregnancy and delivery. The study authors found that the risk of delivery complications increased with the mother’s age, as did the risk of premature birth and infant death. Such complications include excessive bleeding during labor, prolonged labor lasting more than 20 hours, and dysfunctional labor that does not advance to the next stage. In addition, older pregnant women were more likely to have diabetes and hypertension during pregnancy.

Study Findings

Using birth data from the National Center for Health Statistics, the researchers compared information on the mothers’ medical risk factors, pregnancy complications, and mode of delivery. Mothers in three age groups — 35 to 39, 40 to 44, and 45 and older — were compared to mothers age 30 to 34 years old. After adjusting for race and smoking status, researchers found that older women were at much higher risk for complications during pregnancy and delivery. Whether or not the women had previously given birth also affected their risk of certain complications.

Women giving birth at age 45 or older were also the most likely to have high blood pressure and diabetes while pregnant. The oldest mothers were also at greatest risk for excessive bleeding during labor, premature delivery (before 32 weeks), and Cesarean delivery. The chance of Cesarean delivery in all pregnancies increased with the women’s age. The chance of Cesarean delivery increased with age even in those deemed low risk because the mother had carried to term and had no complications due to excessive bleeding or to the baby’s positioning. The researchers found that, regardless of their age, women giving birth for the first time were much more likely to deliver by Cesarean. First-time mothers were

six times more likely to have a Cesarean delivery than were women who had given birth before, and even when their pregnancies were low risk (full-term, infants without birth defects, with a normal, head-down presentation, and in the absence of any bleeding complications).

Although the study authors couldn’t identify reasons for the increased Cesarean delivery rate from the birth certificate data they analyzed, Dr. Luke explained that several factors could underlie the increase. Dr. Luke theorized that physicians’ concerns of potential malpractice could be one cause of the increased number of Caesareans for older and first-time mothers. She added that the mother’s weight could also be a factor. Women tend to get heavier as they age and with each subsequent pregnancy. Obesity and overweight are known to complicate pregnancy and labor. Moreover, some of the Cesarean deliveries among older women may be elective procedures, with women opting for the procedure over conventional labor, Dr. Luke said.

Members of an independent panel weighed the merits of patient-requested Cesarean deliveries at an NIH-sponsored conference in March 2006. Panel members noted that there were benefits and risks involved with each mode of delivery. Ultimately, the panelists could not make a recommendation for or against elective Cesarean deliveries (http://www.nih.gov/nihrecord/04_21_2006/story01.htm).

The number of women giving birth at age 30 and older has shown a marked increase in the last two decades. The National Center for Health Statistics reported that, between 1980 and 2004, the number of women in the United States giving birth at age 30 or older has doubled and at age 35 and older has tripled. The number of mothers giving birth at age 40 or older has nearly quadrupled. The study authors attribute the trend of more women giving birth at an older age, in part, to the increased use of fertility-enhancing therapies.

Citing statistics from the U.S. Centers for Disease Control and Prevention, the study authors noted that more than half of all in vitro fertilization (IVF) cycles between 1998 and 2003 were among women 35 years and older. The authors noted that several studies have found that women who had conceived with the help of fertility therapies were significantly more likely to have pregnancy complications than those who had conceived without assistance. These included complications involving the placenta and vaginal bleeding.

The study authors do not know the reasons for the increased risk of complications in assisted pregnancies but theorize that the older maternal age and underlying causes of infertility might account for the increased risk. In the current study, researchers were unable to identify which women had conceived with the help of fertility treatments. Dr. Luke said that birth certificates now in use will ascertain if other methods of delivery were attempted before the Cesarean delivery. She added that this new information might provide insight into why the Cesarean delivery rate has increased among older mothers.

<http://www.nih.gov/news/pr/ma72006/nichd-08.htm>

Study Highlights Length of Stay, Costs, and In-Hospital Deaths Among Infants With Selected Birth Defects

Birth Defects (BDs) are the leading causes of pediatric hospitalizations, medical expenditures, and infant mortality, accounting for approximately 20% of total infant deaths in the United States. A recent report by the University of Arkansas for Medical Sciences and Centers for Disease Control (CDC) estimates national hospital charges and rates of in-hospital deaths resulting from specific BDs. Thirty-five BDs were selected for analysis based on the likelihood that any of the 35 would be diagnosed at birth or during the neonatal hospital stay and that the diagnosis would represent a permanent structural defect rather than an anomaly associated with preterm birth. An analysis of hospital stays during 2003 for newborn infants with any of 35 BDs indicated substantial variation regarding average length of stay, average hospital charge, and the incidence of in-hospital deaths.

Outcome

Certain severe BDs were associated with a high risk for in-hospital death, particularly anencephaly (85.3%). Approximately 60.4% of infants admitted with trisomy 13 and 56.4% of those with trisomy 18 died before discharge. Approximately one third of newborn infants with diaphragmatic hernia (34.4%) and hypoplastic left heart (33.5%) and one fourth of those with renal agenesis (27.3%) died in the hospital.

The average length of hospital stays for newborns was longest for infants with surgically repaired gastroschisis (41.0 days) or omphalocele (32.5 days). Average length of stay was ≥ 21 days for infants with eight other BDs: esophageal atresia, common truncus arteriosus, hypoplastic left heart, diaphragmatic hernia, bladder exstrophy, coarctation of the aorta, pulmonary valve atresia or stenosis, and transposition of the great arteries. In comparison, the average length of stay for uncomplicated births in 2003 was 2.1 days.

The most expensive average neonatal hospital charges were for two congenital heart defects: hypoplastic left heart at \$199,597 and common truncus arteriosus at \$192,781. The average hospital charge for uncomplicated births was \$1,844. The most commonly identified BDs in this study were hypospadias and/or epispadias and obstructive genitourinary defects; each was identified in more than 13,000 newborns. Following those were Down syndrome ($n = 5,036$), cleft lip with or without cleft palate ($n = 3,486$), and pulmonary valve stenosis.

Impact

To assess the public health impact of BDs in the newborn period, at least three factors must be considered: 1) the prevalence of BDs among newborns, 2) the frequency of associated deaths, and 3) the length and costs of hospital stays, especially for BDs with low prevalence. Infants with defects requiring immediate surgical repair, such as gastroschisis, omphalocele, common truncus arteriosus, and hypoplastic left heart, tend to stay in the hospital longer after birth and incur

greater hospital charges than infants with more common BDs. In addition to newborn hospital stays, certain BDs such as hypoplastic left heart involve staged surgeries requiring multiple hospital stays during infancy; those costs are not included in this report.

The findings in the report underscore the need for further studies of medical-care utilization and expenditures beyond the neonatal period and analyses of survival among infants identified with BDs in registries. In addition, surveys of families are needed to quantify the economic and psychosocial effects of BDs on affected children and family members, as has been done for spina bifida.

Excerpted from original article in
MMWR™ Weekly, January 19, 2007 / 56(02);25-29.
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5602a1.htm>

Experimental Vaccine Given During Pregnancy Reduces Stillbirths from Common Virus

Researchers funded by the National Institutes of Health have developed an experimental vaccine that reduces stillbirths among rodents born to mothers infected with cytomegalovirus (CMV) — a common virus that can also cause mental retardation and hearing loss in newborn children who were infected in early fetal life.

Every year, 0.5 to 2.5 percent of babies born in the United States (approximately 40,000) are infected with CMV. There is no vaccine or treatment for pregnant women who have the infection. In a 2000 report, the Institute of Medicine of the National Academy of Sciences listed as a top priority the development of a vaccine to prevent cytomegalovirus during pregnancy. “An effective CMV vaccine for women of childbearing age could greatly reduce the disability caused by the virus,” said Duane Alexander, M.D., Director of the NICHD, the NIH institute that funded the study. “A prototype vaccine is the first step in protecting newborns against the most common viral disease of newborns in the developed world.” The study appears in the March 15, 2007, issue of the *Journal of Infectious Diseases*.

Background

CMV is a common viral infection related to the herpes virus and often causes few or no symptoms. The virus is transmitted to the fetus through the mother’s placenta. Ten to 15 percent of babies with congenital CMV have a long-term disability. The infection could potentially cause developmental disabilities such as autism or attention deficit disorder. The virus can also damage the placenta, leading to pregnancy loss. CMV is present in bodily secretions and is spread through close personal contact. The virus can enter through mucosal surfaces such as the mouth or breaks in the skin. It can also be transmitted through nasal secretions, blood transfusions, and sexual contact. Most adults will become infected with CMV at some point during their lives. Dr. Schleiss added that pregnant women may not even know they have the infection.

Information about CMV infections acquired before birth is available from NIH’s National Library of Medicine at <http://www.nlm.nih.gov/medlineplus/ency/article/001343.htm>.

Public Policy Update

Perinatal Bills to Watch for 2007

California Assembly Initiatives

AB34: Portantino – Umbilical Cord Blood Banking, Pilot Project

Existing law imposes responsibilities upon the State DHS and prenatal care providers with respect to prenatal care, screening, and counseling, and contains provisions governing the licensure of blood banks. Effective July 1, 2007, responsibility for the administration of the above-described provisions will be transferred to the State Department of Public Health (DPH). This bill would require the Department to develop a pilot project that would seek to diversify the umbilical cord blood supply collected in public blood banks. The bill would require the department to identify 5 hospitals, in ethnically diverse areas, as voluntary participants to collect, secure a patient's consent for donation of, and partner with specified entities to store, umbilical cord blood.

AB 81: Torrico – Child Protection, Safe Surrender

This bill would expand the scope of the Safely Surrendered Baby Law to apply to children who are 30 days old or younger. It would permit the governing body of a city to designate a safe-surrender site and would also designate any fire station with a paramedic or emergency medical technician on duty at all times as a safe-surrender site. The bill would also appropriate \$5 million to the State Department of Social Services to conduct a statewide awareness campaign, to establish and operate a toll-free telephone number for assistance, and allocate \$1 million in the form of competitive grants to county social service agencies that conduct safe surrender site outreach.

California Senate Initiatives

SB 137: Torlakson – Children's Health, Medical Treatment

Existing law limits eligibility for treatment services under the California Children's Services Program to persons in families with an annual adjusted gross income of \$40,000 or less. This bill would change that eligibility limitation to include persons or families with an annual adjusted gross income of \$80,000 or less, of in a family with an annual or monthly income equal to or less than 300 percent of the federal poverty level.

SB 164: Migden – Prenatal Screening

This bill would change the name of the Birth Defects Monitoring Program to the Birth Defects Monitoring and Biomedical Resources Program and require the State Department of Public Health to change investigators, who are approved by the department to use pregnancy blood for research purposes, a fee for costs related to date linkage, storage, retrieval, processing, data entry, re-inventory, and shipping of pregnancy blood or its components, and related data management. The bill would require that the moneys collected from the prenatal fee increase and the usage and retrieval charge be deposited in the Birth Defects Monitoring and Biomedical Resources Program Fund, which the bill would create, and that would be continuously appropriated to support the activities of the program.

2006 Chaptered Legislation

California Assembly Initiatives

AB 2651: Jones – Newborns, Hearing Screening

Existing Newborn and Infant Hearing Screening, Tracking, and Intervention Act requires that every CCS – approved. This bill requires that every general acute care hospital with licensed Perinatal services offer all parents of a newborn, upon birth admission, a hearing screening test for the identification of hearing loss, using protocols approved by the DHS of its designee. Every general acute care hospital that has not been approved by CCS and that has licensed Perinatal services, that provides care in less than 100 births annually shall, if it does not directly provide a hearing screening test, enter into an agreement with an outpatient infant hearing screening provider certified by the department to provide hearing screening tests.

California Senate Initiatives

SB 246: Figueroa – Human Milk

This bill exempts a hospital from the tissue bank licensure and regulation requirements for the purpose of collecting, processing, storing, or distributing human milk collected from a mother exclusively from her own child. The bill also exempts from any screening test requirement human milk collected from a mother exclusively for her own child. This bill does not apply to any hospital that collects, processes, stores, or distributes milk from human milk banks or other outside sources.

SB1555: Speier – Umbilical Cord Blood Banking, Education, Screening

This bill requires DHS to conduct the Umbilical Blood Community Awareness Campaign to provide awareness, assistance, and information regarding umbilical cord blood banking options. Information must be made available in Cantonese, English, Spanish, and Vietnamese, about umbilical cord blood donation – as well as on the web sites of the licensing boards or agencies that oversee primary perinatal care providers. This bill also authorize a primary prenatal care provider to provide to a woman who is known to be pregnant, during the first prenatal visit, information developed by the department pursuant to this bill regarding her options with respect to umbilical cord blood banking.

SB 1638: Figueroa – Midwives, Advisory Council, Annual Report

This bill provides for the creation of a Midwifery Advisory Council and also requires each licensed midwife who assists, or supervises a student midwife in assisting, in childbirth occurring in an out-of-hospital setting to annually report to the Office of Statewide Health Planning and Development (OSHPD) certain information regarding his or her practice for the previous year. The bill requires the office to maintain the confidentiality of the information submitted pursuant to this requirement, and requires the Board of Licensing of the Medical Board of California to send a notice of noncompliance to those licensees who have not complied with the bill's requirements.