



Perinatal Care Matters

A Publication of the Regional Perinatal Programs of California Winter, 2004

Prematurity In California

REGION 1

North Coast Perinatal
Access System
415/ 478-3868

REGION 2

Northern California
Perinatal Outreach Program
916/ 733-1750

REGION 3

East Bay Regional Perinatal
Program
510/ 204-3937

REGION 4

Mid-Coastal California
Perinatal Outreach Program
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/ 464-0042

REGION 7

Inland Counties
Regional Perinatal Program
909/ 558-3971

REGION 8

Orange County
Regional Perinatal Program
714/ 456-6706

REGION 9

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

REGION 10

Kaiser Permanente Regional
Perinatal Program, North
510/ 987-3430

REGION 11

Kaiser Permanente Regional
Perinatal Program, South
626/ 405-6052

Did you know that in an average week in California:

- 973 babies are born before 37 weeks,
- 149 babies are born before 32 weeks,
- 650 babies are born less than 5 ½ pounds
- 117 babies are born less than 3 1/3 pounds.¹

Preterm and low birth weight babies account for 16.8% of all births in California. In the United States, one of eight babies is born at least three weeks before the expected due date, a 27% increase since 1980.² Some of this increase is attributed to the rise in multiple births and in births to women age 35 and older. These factors, however, do not account for the entire upswing.

Preterm birth is a major cause of perinatal mortality and morbidities, such as cerebral palsy, blindness, chronic lung problems, developmental delays, and mental retardation. Advances have been made in neonatal care, but the best place for a developing baby is still the mother's womb.

Identification of risk factors continues to be used to identify women at risk for preterm birth. Unfortunately, risk factor based methods have proven to be of limited use, and attention is now being intensified to identify the mechanisms that lead to preterm birth. Medical conditions, such as maternal hypertension, smoking, uterine infection and a prior history of preterm birth put a mother in a higher risk category, but the etiology of preterm birth is still primarily a mystery. The following are mechanisms/pathways associated with preterm birth:

- History: Prior preterm birth as the most predictive risk
- Infection: Uterine, placental or systemic infection leading to an inflammatory response
- Stress: Acute or chronic maternal stress
- Mechanical: Multiple gestations, uterine or cervical abnormalities
- Race: African-American infants are almost twice as likely as Caucasian infants to be born preterm.³

Studies research cervical length and fetal fibronectin as possible predictor's of preterm birth. An ultrasound cervical measurement of >30mm long is associated with <5% risk of preterm birth, while a cervix <20mm is associated with preterm birth in >70% of cases.⁴ Widespread use of this technique is hampered

because of the skill required to obtain an accurate cervical measurement.

Rapid fetal fibronectin testing is easily available to providers, but is an expensive test due to the technology involved. While a positive fetal fibronectin result (> 50 ng fFN) is associated with preterm birth, it is the strong negative predictive value that makes it a valuable screening tool. A woman has a 99% chance of NOT delivering in the next 14 days with a negative result, while she has about a 17% risk of delivery in the next 14 days, if her test is positive.⁵

Preterm Birth Prevention

Over time, many preterm birth prevention strategies have been attempted. Bed rest continues to be commonly used to treat premature contractions, but no convincing evidence exists of its efficacy in preventing preterm births. In fact, prolonged bedrest was implicated in two randomized trials involving twins with increased rates of premature birth.⁶ American College of Obstetricians and Gynecologists (ACOG) Practice Guideline #43 (May 2003) states, "Bedrest, hydration and pelvic rest do not appear to improve the rate of preterm birth, and should not be routinely recommended."

Smoking cessation has been identified as a preterm birth prevention strategy for many years. Studies have shown the cost effectiveness and efficacy of smoking cessation programs. The Cochrane Collaborative's meta-analysis of >17,000 pregnant smokers demonstrated that reducing smoking also reduced the incident of low birth weight and preterm births. Their conclusion called for culturally sensitive smoking cessation programs for all pregnant women.⁷

In the last few years, exogenous progesterone has been identified as a potentially useful tool for the prevention of preterm birth. Study outcome data has shown a reduction in premature birth for treatment groups using either progesterone intramuscularly or via vaginal suppositories. ACOG Committee Opinion #291 (October 2003) stated additional research is needed to determine if women with other risk factors for preterm birth (multiple gestation, positive fetal fibronectin, and/or shortened cervix) could also benefit from progesterone therapy.

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Recommendations included restricting progesterone use to only women with prior history of preterm birth until issues of optimal delivery route and long-term safety have been resolved.

Currently, a double blind, placebo-controlled study of vaginal progesterone gel is being conducted to resolve some of these issues. It will ultimately involve 630 women with prior history of preterm birth or a transvaginal ultrasound cervical length of 2.5 centimeters. It is hoped that the use of exogenous progesterone, while still controversial, will show efficacy and safety in reducing preterm births.

The March of Dimes Prematurity Prevention Campaign

Due to the complexity of this problem, a major research effort, coupled with consumer/provider education and a major infusion of financial support, is necessary. March of Dimes has embarked on a 5 year \$75 million Prematurity Prevention Campaign, partnering with ACOG and Association of Womens Health and Neonatal Nurses (AWHONN) to reduce preterm births in the US. The Northern California Chapter of the March of Dimes provided a grant to Sutter Medical Center Sacramento (SMCS) to enhance their organization's effort.

SMCS chose two approaches: 1) patient education and 2) protocols to assist providers with the identification of preterm labor. March of Dimes created easy to read materials (English and Spanish) defining signs and symptoms of preterm labor with instructions for the women experiencing contractions. These are being translated into Russian, Korean and Chinese. In addition, a Preterm Assessment Toolkit has been developed to assist with the correct disposition (admit/treatment, discharge or transfer) of women presenting with signs and symptoms of preterm labor. This toolkit consists of protocols, PTL algorithm, physician orders, patient education, discharge instructions, competencies and procedures about preterm labor assessment, speculum exams, ferning, and Group B Streptococcus (GBS) testing/treatment. Distribution will begin November, 2004 with toolkit training sessions assisted by the Regional Perinatal Programs of California. For further information, contact Mary Campbell Bliss, RN, CNS at 916-733-8471 or blissm@sutterhealth.org.

References

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Submitted by Barbara Boehler, CNM, MSN and Mary Campbell-Bliss, CNS, MSN, RPPC Regions 2 and 3

Low Cesarean Section Rates May Not Necessarily Imply High-Quality Obstetrical Care

Over the last twenty years, cesarean section deliveries have risen sharply, leading many to express concern that cesarean delivery rates may not always be explained by clinical indications. As a result, it has been assumed that hospitals with lower standardized rates provide a higher quality of obstetrical care in spite of the fact that optimal cesarean rates have not been established. This has led to significant effort across the country to reduce the number of cesarean deliveries and the inclusion of cesarean rates as a common quality indicator used in provider report-carding. However, the concept of "the lower the cesarean rate, the better" has been challenged by a growing concern that efforts to drastically reduce cesarean rates may place mothers and infants at undo risk for poor perinatal outcome. To examine whether lower cesarean rates put newborns at increased risk, researchers with the California Perinatal Quality Care Collaborative (CPQCC) conducted a study comparing the morbidity and mortality experienced by infants born to low-risk mothers across three groups of hospitals, those that have average, lower-than-average and higher-than-average cesarean rates.¹

Study Design

Data obtained from the California Office of State Health Planning and Development (OSHPD), including birth and death certificate information, infant and maternal primary hospitalization discharge data, and transfer/rehospitalization data during the first year of life for the period 1998-2000 were utilized along with ICD-9-CM codes to identify maternal risk factors, neonatal diagnoses and therapeutic interventions. Using a risk stratification strategy (that is the selection of a population thought to be homogenous for risk), a defined subset of low-risk women who account for a large population of cesarean deliveries and whose risk for cesarean delivery should be quite similar was identified for study. This low-risk cohort consisted of women of all parities who did not have a prior cesarean delivery, were in active labor at term (more than 37 completed weeks gestation) with a singleton, and had no evidence of diabetes, oligohydramnios, chorioamnionitis, placental abruption or abnormal presentation. Mothers whose infants were born with congenital physical or metabolic anomalies were excluded from the study. To control for differences in case mix, subjects were further risk adjusted for race/ethnicity, maternal age and parity, which allowed the comparison of subjects from low- and high-cesarean hospitals to be compared with those in average-cesarean rate hospitals.

Each of 282 California hospitals with at least 200 annual births were classified as having an average, low, or high cesarean delivery rate by testing whether the observed cesarean rate for each hospital's low-risk group was lower, equal to, or higher than the entire group's state average. This low-risk group's neonatal outcomes (low birth weight, very low birth weight, neonatal mortality and morbidity, prolonged hospitalization, and necessity of selected therapeutic interventions) were then compared across low, average, and high cesarean rate hospitals. During 1998-2000, 1,540,771 singleton, live births were delivered in the 282 California hospitals selected for the study. The primary cesarean rate for these infants was 23.3%. The study population of low-risk

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subjects consisted of 748,604 (48.6%) of these infants. The cesarean rate in this low-risk population was 5.8% overall, with low-cesarean rate hospitals at 3.5%, average-cesarean hospitals at 5.7% and high-cesarean hospitals at 8.3%. Maternal characteristics were compared across the three hospital groupings. In general, the low-risk maternal group had slightly more Hispanic mothers, a higher percentage of mothers aged 20-30 years, and more nulliparous mothers than the entire population. Average-cesarean hospitals had more non-Hispanic white deliveries, fewer MediCal deliveries and moderate levels of teenaged, older and nulliparous mothers. Low-cesarean hospitals had the highest percentage of managed care births. Mortality, morbidity and use of therapeutic interventions were generally infrequent in the low-risk population, but meconium aspiration syndrome was the most common diagnosis and mechanical ventilation the most frequent intervention identified.

There was no difference in the mortality of infants born in low and average-cesarean hospitals. For some clinical conditions, observed morbidity was increased in infants born at low-cesarean hospitals (65% increase in adverse effects of maternal anesthesia; 38% increase in birth asphyxia; 19% increase in meconium aspiration syndrome). There was no difference in the odds of NEC, GI hemorrhage or renal failure, but electrolyte and metabolic abnormalities were increased by 10% and feeding difficulties were increased by 35% in the low-cesarean hospitals. Therapeutic interventions were greatly increased (that is the use of injected/infused therapeutic substances, vasopressors and mechanical ventilation) and the percentage of infants requiring prolonged length of stay increased 12% in low-cesarean hospitals.

To more closely examine the increased morbidity, outcomes were compared by route of delivery in low and average-cesarean hospitals, with the thought that increased morbidity in vaginally delivered infants might suggest that certain infants delivered vaginally could potentially have benefited from cesarean delivery, while the increased morbidity in infants born by cesarean section might suggest that there were problems in either the timing or the conduct of the procedure. When compared with infants born vaginally at average-cesarean hospitals, infants born vaginally at low-cesarean hospitals also had significantly higher levels of morbidity, use of therapeutic interventions, and lengths of stay.

When compared with average-cesarean hospitals, high-cesarean hospitals had similar rates of neonatal mortality, but differences in morbidity and interventions were mixed. High-cesarean hospitals seemed to have a higher incidence of fetal hemorrhage, non-central nervous system birth trauma, birth asphyxia and electrolyte disorders, but less meconium aspiration syndrome. Although high-cesarean hospitals seemed to use more mechanical ventilation, they used less infused/injected medications, and there was no difference between the two groups in length of stay. Mode of delivery was also examined in this group, with the thought that since there were higher-than-average cesarean deliveries in these hospitals, there should be less morbidity in the remaining pool

of infants delivered vaginally. This proved not to be the case, as the incidence of fetal hemorrhage, trauma, birth asphyxia, electrolyte disorders and use of mechanical ventilation was actually increased in infants born in high-cesarean hospitals, indicating that some women whose infants might have benefited from cesarean delivery were not offered that option.

Major findings demonstrated that hospitals with both higher- and lower-than-average cesarean delivery rates for low-risk mothers experience higher levels of neonatal morbidity. Furthermore, using low case mix-adjusted cesarean rates as a proxy for quality obstetrical care without taking infant outcomes into account may not provide a valid reflection of the quality of obstetric care because low cesarean delivery rates may be associated with poorer neonatal outcomes. Further assessment of the quality of hospital intrapartum care based on practice patterns as they relate to neonatal and maternal morbidity is sorely needed before we can ever again assume that a low cesarean rate equals high quality care.

¹ Gould, et al. Cesarean delivery rates and neonatal morbidity in a low-risk population. *Obstetrics and Gynecology* 2004; 104 (1): 11-19.

Submitted by: Barbara Murphy, RNC, MSN
Region 4: MCCPOP

CPeTS Perinatal Bed Availability Activities

The California Perinatal Transport System (CPeTS) is funded by the Division of Maternal, Child and Adolescent Health Branch (MCAH) of the Department of Health Services (DHS). There are two divisions of the system providing services to Northern and Southern California. The Northern Division is located at the Lucile Packard Children's Hospital at Stanford. The Southern Division is at the University of California at San Diego's Regional Perinatal Systems.

The activities of the California Perinatal Transport System (CPeTS) include the provision of emergency access through its communications centers to the perinatal health care delivery system and assistance in the referral and interhospital transport of high-risk maternity patients and critically ill neonates to perinatal centers and CCS-approved accredited neonatal intensive care facilities. A key part of this plan is the maintenance of an interactive bed-availability roster on the CPeTS website at www.perinatal.org. Reporting of the bed-availability has been maintained by the CPeTS centers, but self-updating of the bed availability can be easily accomplished by the participating hospital units. In July, the MCAH advised the hospital units that it would be necessary for the self-updating to occur in order to make the reporting as timely as possible. This is of particular importance because of the potential for sudden crises to occur.

Referring hospitals can access the website to locate open maternal and neonatal beds for transports as well as contact and referral information. Further information on this matter can be obtained by contacting the Northern and Southern Division offices of the CPeTS.

Submitted by Al Hackel, MD, Director, Northern CPeTS

Public Policy

California State Propositions: In November two important initiatives were passed in the general election.

Proposition 61: Children's Hospital Projects. Grant Program. Bond Act. Initiative Statute.

- Authorizes \$750,000,000 in general obligation bonds, to be repaid from state's General Fund, for grants to eligible children's hospitals for construction, expansion, remodeling, renovation, furnishing and equipping children's hospitals.
- 20% of bonds are for grants to specified University of California general acute care hospitals; 80% of bonds are for grants to general acute care hospitals that focus on children with illnesses such as leukemia, heart defects, sickle cell anemia and cystic fibrosis, provide comprehensive services to a high volume of children eligible for government programs, and that meet other stated requirements.

Summary of Legislative Analyst's Estimate of Net State and Local Government Fiscal Impact:

- State cost of about \$1.5 billion over 30 years to pay off both the principal (\$750 million) and the interest (\$756 million) costs of the bonds. Payments of about \$50 million per year.

For additional information please visit:

<http://www.voterguide.ss.ca.gov/propositions/prop61-title.htm>

Proposition 71: Stem Cell Research. Funding. Bonds. Initiative Constitutional Amendment and Statute.

- Establishes "California Institute for Regenerative Medicine" to regulate stem cell research and provide funding, through grants and loans, for such research and research facilities.
- Establishes constitutional right to conduct stem cell research; prohibits Institute's funding of human reproductive cloning research.
- Establishes oversight committee to govern Institute.
- Provides General Fund loan up to \$3 million for Institute's initial administration/implementation costs.
- Authorizes issuance of general obligation bonds to finance Institute activities up to \$3 billion subject to annual limit of \$350 million.
- Appropriates monies from General Fund to pay for bonds.

Summary of Legislative Analyst's Estimate of Net State and Local Government Fiscal Impact:

- State cost of about \$6 billion over 30 years to pay off both the principal (\$3 billion) and interest (\$3 billion) on the bonds. Payments averaging about \$200 million per year.
- Unknown potential state and local revenue gains and cost savings to the extent that the research projects funded by this measure result in additional economic activity and reduced public health care costs.

For additional information please visit the following web site:

<http://www.voterguide.ss.ca.gov/propositions/prop71-title.htm>

Quality of Care Working Regionally to Improve Data

In an effort to have an integrated perinatal regional system promoting high quality, risk appropriate care, the Regional Perinatal Programs of California (RPPC) initiated local quality improvement committees that consist of diverse providers including neonatologists, obstetricians, maternal-fetal medicine specialists, nurses, transport coordinators, QI and risk management coordinators and administrators from hospitals and clinics as well as members of the local public health department(s) and health plan staff. Regional quality improvement activities are based on California Children's Services Standards, MCAH data systems such as Perinatal Profiles, California Perinatal Quality Care Collaborative, Vital Statistics, Office of Statewide Health Planning and Development and others as indicated.

Most recently the RPPC has been working with the Office of Vital Records to assist hospitals more effectively report data on maternal and newborn health indicators through accurate reporting on birth and death certificates. Although to the family, the 'name' is the most exciting component of a birth certificate; its completion and the information garnered help health care professionals and the systems that care for women improve outcomes. The data gained from birth certificates help assess population trends in communities, determine incidence of pregnancy complications and aid in determining the provision of risk-appropriate care.

Accuracy in reporting information requires commitment and dedication from multiple sources. The parents/family, maternal and child health care professionals and public health officials all have a vested interest in seeing that the information provided on a birth certificate is accurate. By working together we can improve the quality of the data we collect and the data we report! For information on contacting your local RPPC go to: <http://www.perinatal.org>
Submitted by: Ellen Silver, RNP, MSN, PAC/LAC

National Center for Health Statistics (NCHS) Releases Health of the United States, 2004 Chart Book on Trends in Health of American's

NCHS recently announced the release of its annual chart book on the health status of American's. Included in the book is an entire section dedicated to the health of women. Topics include: population, births, deaths, health status, risk factors and chronic diseases as well as ambulatory and inpatient care and nation health care expenditures information. The report and accompanying tables can be downloaded from their website at <http://www.cdc.gov/nchs/products/pubs/pubd/hus/womens.htm>

*Supported in part by grants from the California
Department of Health Services,
Maternal, Child & Adolescent Health Branch*