

**55 BURNOUT: STRESS PATTERNS AMONG NEONATAL INTENSIVE CARE UNIT (NICU) NURSES AS A FUNCTION OF EXPERIENCE.**

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We postulate that burnout, the loss of motivation for creative involvement, is related to specific stresses. Therefore, we evaluated patterns of stress among NICU nurses that changed with length of employment by the newly developed Neonatal Nurse Stress Assessment Inventory (NNSAI). Briefly, this utilized an in-depth interview format. The NNSAI was administered to 23 full time nurses and the sample was stratified by length of employment into 4 periods: 1) orientation, 2) 2 months to a year, 3) 1-3 years, 4) more than 3 years. Analysis of the data showed stress clustering in 3 major areas: a) individual competence; b) organizational recognition; c) personal burnout. Significant difference ( $p < .005$ ) in stress clustering emerged according to length of employment: individual competence for period 1, organizational recognition for period 2, and organizational recognition and burnout for period 3. Implications of these data are: 1) issues of individual competence during the orientation period are usually resolved by 2 months; 2) nurses during periods 2 and 3 have major concerns about organizational recognition within the NICU and the hospital. Our data suggests that if organizational recognition issues (opportunities for professional growth, responsive supervision, and adequate staffing) can be alleviated, then burnout may be minimized.

**56 CHILD MALTREATMENT IN TWIN FAMILIES.** Jessie R. Groot-huis, James V. Lustig, Joyce P. Robarge, Susan O'Connor, & William A. Altemeier, III, St. Vincent Hosp., Medical College of Ohio at Toledo and Nashville General Hosp., Vanderbilt Univ., Dept. of Pediatrics, Nashville.

Inadequate spacing of children carries an increased risk for child abuse and neglect (CAN). Twin births (T) are an extreme example, yet the association of T with CAN has not been explored. To study this, 48 consecutive T families delivering at St. Vincent Hosp. and Nashville General Hosp. were compared with 124 control single birth families matched for hospital of delivery, birth date, race, maternal age, and socioeconomic status. Criteria for all subjects included (mean used for T pairs): birth weight (BW)  $> 2000$  gms & 5 min. Apgar (A5)  $> 6$ . A review of agency files without knowledge of T vs control status revealed that 3 control (2.4%) vs 9 T families (19%) were reported for CAN within 3 yrs. following delivery ( $p < .001$ ). However, T also had significantly lower Apgar scores at 1 (A1) ( $p < .001$ ) and A5 ( $p < .001$ ), lower BW ( $p < .001$ ) and longer nursery stays (N) ( $p < .001$ ). A regression analysis was generated with all 172 subjects to assess the impact of these & T status on subsequent reports of CAN. T carried the highest beta weight (T=.189, N=.140, BW=-.093, A1=-.030, A5=-.009). The correlation of an identical regression model excluding T ( $R^2=.089$ ) was significantly less predictive of maltreatment compared with the regression model including T ( $R^2=.109$ ) ( $p < .05$ ). Twin delivery significantly increased risk for CAN. This appeared to be related to delivery problems, but the impact of social factors is currently being investigated.

**57 THE EFFECT OF INTERHOSPITAL TRANSPORT VARIABLES ON THE SURVIVAL OF CRITICALLY ILL NEONATES WITH RDS.**

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Previous studies have demonstrated the effect on outcome of critically ill newborn infants transported from community hospitals to regional ICNs. The effect of transport variables has not been studied on a standardized population. Requirements for such a study include a "one disease" population, a "controlled" pre-transport severity of illness and an adequate number of cases to allow for multivariate analysis. A population meeting these requirements composed of 335 infants with RDS transported in 1977 to 10 No. Calif. ICNs was studied. Transport teams arrived in the referral hospital in the first 12 hours of life. The RDS diagnosis was made at the ICNs. Outcome was measured as survival at ICN discharge. Infants with birthweights between 750 and 2500 grams were included. The severity of illness was controlled by fitting basic pre-transport physiologic and therapeutic variables to a multiple logistic function. Pre-transport variables included birthweight, 5 minute Apgar, pH, temperature, and tracheal intubation. When the pre-transport population was standardized, the influence of transport team response time and patient transit time on survival was found to be insignificant. The transport mode was significant. Infants transported by air had a 96% survival rate versus 78% for those transferred by surface. The transport variables studied did not effect patient outcome; the exception being transport mode. Further studies are required to determine the cause of this difference.

**58 NEONATAL HYPERVISCOSITY SYNDROME: LONG-TERM BENEFIT OF PARTIAL PLASMA EXCHANGE TRANSFUSION.** David O. Hakanson (Sponsored by F. A. Oski) Dept. of Pediatrics

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Partial plasma exchange transfusion (XT) has been recommended as the treatment of choice in neonatal hyperviscosity although there remains no statistical proof that it prevents long-term CNS or other sequelae.

In order to study the long-term effect of XT, 24 infants found to have hyperviscosity of whole blood were assigned randomly to receive XT within 12 hrs of birth or to receive only supportive treatment. Twelve infants received XT with fresh frozen plasma while the other 12 received no XT. Gestational ages ranged between 36 and 40 weeks ( $\bar{x}=37.6$ ); all infants were appropriate-for-gestational age. All infants were seen in follow-up at 8 months of age at which time Bayley Scales of Infant Development were administered.

Infants in the XT group had higher scores than the non-XT group for both mental (MDI) and motor (PDI) indices (XT group: 111 and 105, non-XT: 96 and 93). The differences were not statistically significant for either index, but approached significance for the MDI ( $p < .01$ ;  $> .05$ ).

Neuromuscular development also was assessed at 8 months by a physical therapist. One infant in the non-XT group was found to have a hemiparesis for which no cause other than the hyperviscosity could be identified.

Absolute benefit for partial plasma exchange transfusion in the treatment of neonatal hyperviscosity cannot be claimed from this study but therapeutic benefit is suggested.

**59 PERINATAL CHARACTERISTICS & INFANT DEVELOPMENT: TWO YEAR FOLLOW-UP.** Julie A. Hofheimer, N.I.M.H. W. June Holstrom, Univ. of Kansas. Athol B. Packer, Deborah Goldberg, Univ. of Florida. Stanley I. Greenspan, N.I.M.H. (Spon. by John W. Scanlon).

The increase in birthrate among adolescents raises concern about dysparenting & infant developmental disorders. Maternal, socioenvironmental (SEV) & perinatal variables were studied as related to mother-infant transaction & infant development at 6, 12, & 24 mos. Measures included the Hobel Scale of perinatal risk, the Bayley Scales of Infant Development (MDI & PDI), & Beckwith's record of transaction. SEV data were obtained by interview.

MANCOVA analyses indicated higher 6 mos. MDIs associated with increased mother's age, absence of prenatal complications, & "special" perinatal care. PDIs were related to special care, & "responsive vocalization" during transaction. Young & "of age" mothers were comparable in their transactions with their infants. At 12 & 24 mos., more optimal MDIs were associated with increased mother's age & availability of resources, but younger mothers engaged in less facilitating transactions with their toddlers.

The data suggest that infants of adolescents continue to be at risk regarding the quality of caregiving & problematic development. Risk is compounded when the young mother has fewer resources & less support. The data indicated that multidisciplinary perinatal care contributes to infant competence, but that a continuation of these special services is needed to enhance longterm development of infants born to multirisk families.

**60 FOLLOW UP OF SIBLINGS PRESENT AT BIRTH IN AN ALTERNATIVE BIRTH CENTER (ABC).** Nancy Irvin, Carol Leonard, Ronald I. Clyman and Roberta A. Ballard. Mt. Zion Hospital and Medical Center, Dept. of Peds., San Francisco, Ca.

Siblings have been included at births in the Mt. Zion ABC since its opening in 1976. During the first 3 years 88 families (14% included siblings at their birth. 71 families participated in our original study of behavior at birth. The reasons most frequently stated by these families for including siblings were a desire to prevent sibling rivalry and to promote attachment. In order to examine these issues a semi-structured interview utilizing a questionnaire designed to elicit reports of behavior changes was conducted with 18 families who had had 22 children present at the birth of a sibling 1 to 4 years previously. Age and sex of the children at the time of the birth are presented in the Table.

Age	0-3	4-6	7-10	11-15
Male	4	4	1	1
Female	4	4	3	1

All families reported overt sibling rivalry with 3 noting jealousy during the new sibling's infancy and 17 noting jealousy as the new infant began to walk and snatch toys. Of the 8 children who were  $\leq 3$  years old at the time of the sibling birth, all had symptoms which the parents felt were related to the new infant or to presence at birth. Despite some behavior changes and obvious signs of sibling rivalry, parents uniformly felt that presence at birth had increased sibling attachment and that they would include a sibling again.