

Somashekhar Nimbalkar,<sup>a</sup>  
Ankush Khanna,<sup>a</sup>  
Dipen Patel,<sup>a</sup>  
Archana Nimbalkar,<sup>a</sup>  
Ajay Phatak<sup>b</sup>

<sup>a</sup>Pramukhswami Medical College, India; and  
<sup>b</sup>Charutar Arogya Mandal, India

## Report on Kangaroo Care Practices in a Tertiary Level NICU in Western India—Scope for Improvement

**BACKGROUND:** High-risk low birth weight neonates admitted to NICUs require prolonged care, which is expensive. Kangaroo care (KC) involves skin-to-skin contact between a family member and the newborn, frequent and exclusive (or nearly exclusive) breastfeeding, and early discharge from the hospital. It has many benefits, with decreased mortality, decreased morbidity, better bonding, early discharge, and rapid establishment of birth weight being the foremost among them.

**OBJECTIVES:** We studied the association of KC duration with reduced hospital stay and reduced mortality and morbidity, as well as factors governing delivery of KC.

**METHODS:** Data were collected from the charts of neonates <2 kg who were admitted to the NICU from January 2012 until June 2014. The data included sociodemographic variables, the clinical profile of neonates including treatment, details of KC, and important outcomes such as mortality, weight gain, antibiotic usage, and ventilator care. Descriptive statistics were used to report on the study population profile, and *t* tests and regression were used to explore associations.

**RESULTS:** A total of 106 neonates were included (68 boys, 38 girls). KC was provided to 52 (49.1%) neonates. Three (2.8%) neonates were term, 49 (46.2) were late preterm, 34 (32.1%) were moderate preterm, 16 (15.1%) were very preterm, and 2 (1.9%) were extremely preterm. A significant proportion required a cesarean delivery (*n* = 45 [42.5%]). About one-half of the neonates (*n* = 51) required ventilator support, and most neonates (*n* = 69) required continuous positive airway pressure support. The mean  $\pm$  SD birth weight of the neonates was 1538.07  $\pm$  337.88 g. KC was provided for a mean of 13.92  $\pm$  21.67 hours. The mean duration of KC was significantly greater for neonates who gained weight compared with those who experienced weight loss (20.92  $\pm$  27.89 hours vs 6.38  $\pm$  6.38 hours; *P* = .016). The mean duration of KC was significantly greater for neonates who did not require antibiotics versus those who required antibiotics (17.73  $\pm$  24.68 hours vs 4.23  $\pm$  3.39 hours; *P* = .002). The mean number of KC hours per day was 2.86  $\pm$  1.89. Linear regression revealed that mother's age was the only significant predictor of KC

hours per day (*P* = .074). There was no significant difference between mean KC duration for neonates who required ventilator support versus those who did not require it.

**CONCLUSIONS:** The few hours of KC given per day suggest that this intervention with proven benefits is not being used optimally. Qualitative research is warranted to determine the barriers for this lacuna.

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Amee Amin,<sup>a</sup>  
Dipen Patel,<sup>a</sup>  
Nikhil Shah,<sup>a</sup>  
Ajay Phatak,<sup>b</sup>

Somashekhar Nimbalkar<sup>a</sup>

<sup>a</sup>Pramukhswami Medical College, India; and  
<sup>b</sup>Charutar Arogya Mandal, India

## A Prospective Study of Nosocomial Infection in a Neonatal ICU (NICU)

A prospective study of nosocomial sepsis was performed in the NICU of Surgiscope Pvt. Hospital to determine the organisms causing nosocomial infection in neonates and their resistance patterns; also studied were risk factors, clinical presentation, hematologic parameters, and outcomes over a 12-month period. A total of 363 neonates were admitted to the ICU. A total of 250 blood samples were sent for culture and sensitivity testing in suspicious cases of nosocomial infection. All patients were on antibiotics. Of these, 36.8% (92 of 250) had a positive result on culture. Isolated bacteria were mostly gram-negative bacilli (80.43%) with a marked predominance of *Klebsiella* (*n* = 32 [43.2%]) followed by *Escherichia coli* (*n* = 18 [24.32%]), *Pseudomonas* (*n* = 16 [21.62%]), and acinetobacter (*n* = 5 [6.75%]). Resistance to gentamicin was 100% for all organisms. Resistance to amikacin was 100% for *E coli*, *Pseudomonas*, and acinetobacter and 40% for *Klebsiella*. Resistance of these gram-negative rods ranged from 70% to 100% and 50% to 100% for ceftriaxone and ceftazidime, respectively. Among the culture-positive cases, prematurity (67.39%) and low birth weight (60.86%) were the main risk factors. Refusal to feed (78%) and lethargy (68%) were the 2 main clinical presentations of nosocomial sepsis. It was also observed that in the culture-positive group, 68.5% (63 of 92) had low hemoglobin levels (<14 gm/dL), 18.5% (17 of 92) had leukopenia (total leukocyte count <5000 mm<sup>3</sup>), and 63% (58 of 92) of patients had thrombocytopenia (platelet count <100 000 mm<sup>3</sup>), 75% (69 of 92) had an elevated immature to total neutrophil ratio. C-reactive protein was positive in 84.78% (78 of 92) of cases, and 30.43% (28 of 92) of culture-positive neonates died. Mortality was high in preterm low birth weight infants (37% [23 of 62]). Emergence of multidrug-resistant organisms in the ICU is a serious problem causing high mortality and should be prevented with strict

implementation of strategies to control nosocomial infection, active surveillance of infection rates, and adherence to well-planned antibiotic protocols.

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**Pranab Kanti Mallicki**

*Department of Child Health, BGC Trust Medical College, Chittagong, Bangladesh*

### A Study on Parental Stress in the Neonatal ICU Using Parental Stressor

**BACKGROUND:** Parents of neonates admitted to the NICU undergo a great deal of stress, making it imperative for health care providers to identify and act on the sources of this stress.

**OBJECTIVES:** In this prospective study, we determined the level of stress among parents of neonates admitted to the NICU by using the Parental Stressor Scale: Neonatal Intensive Care Unit (PSS: NICU). We also correlated the scores obtained with relevant parental and neonatal factors that could contribute to parental stress. The study setting was a tertiary care NICU in northern India.

**METHODS:** The study was conducted from November 2009 to April 2011. All parents of neonates admitted to the NICU for at least 48 hours were administered the PSS: NICU. Relevant parental demographic data and relevant neonatal data were collected. Total as well as mean scores and subscores were obtained. Correlation of the scores with other factors was conducted by using SPSS version 12.

**RESULTS:** A total of 343 parents completed the questionnaire. The total mean PSS: NICU scores ranged from 1.35 to 4.91 (mean: 3.71). The mean score for mothers was 3.78, and the mean score for fathers was 3.65. The mean subscores were highest for infant behavior (mean: 4.25), followed by parental role alteration (mean: 3.64). The mothers scored higher than the fathers in all subscores. Factors such as birth weight and gestational age influenced the stress levels to a significant degree; factors such as gender of the neonate, education and socioeconomic status of the parents, presence of birth asphyxia, ventilation status, and the nature of the infant's illness did not influence stress to any significant levels.

**CONCLUSIONS:** Parents of neonates admitted to the NICU experience high levels of stress. Parents of neonates with lower birth weights and gestational age experience more stress.

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**Mereta Varghese**

*CMC Medical College, Ludhiana, India*

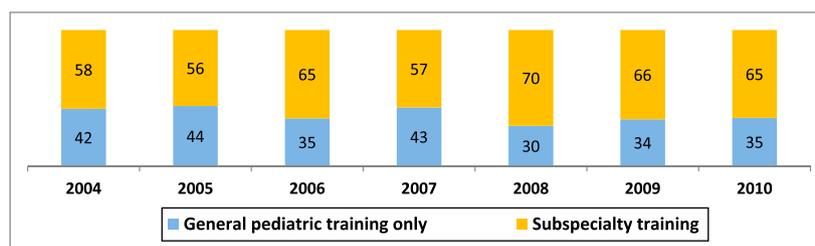
### The Training and Career Paths of Canadian Paediatric Residents, 2004–2010

**BACKGROUND:** Canadian pediatric residents usually pursue training in general pediatrics or subspecialty pediatrics. Graduates can work in community-based settings, hospital-based settings, or a combination thereof. Furthermore, new graduates may work in large urban or rural/remote centers. To date, no study has profiled the training and career paths of Canadian pediatric residents.

**OBJECTIVES:** The goal of this study was to profile the training and career paths of pediatric residency program graduates in Canada.

**METHODS:** A survey of all pediatric residency programs was completed in 2010 and updated in 2011. All residency programs in Canada participated. Data on residents were reported by their core training program (at completion of their third year of postgraduate training).

**RESULTS:** A total of 699 residents completed their core training in pediatrics in Canada between 2004 and 2010. The annual number of pediatric residents who completed their core training rose from 83 in 2004 to 122 in 2010. Training path data were available for 685 (98%) residents. Overall, 430 (63%) residents completed subspecialty training, whereas 255 (37%) completed general pediatric training only. There was a significant increase in the frequency of subspecialty training from the early graduates (2004–2007) to the later graduates (2008–2010) (Fig 1). Career path data were available for 665 (95%) of all Canadian pediatric residents: 405 (61%) of residents were working as subspecialists or still in training, 245 were working as general pediatricians, and 15 graduates (2%) had other practice types. Of all residents currently in practice, only 36 (8%) were working in rural/remote or underserved areas.



**FIGURE 1** Percentage of residents who completed general pediatric training only versus subspecialty training, 2004 to 2010.

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