Protocol Reduced Neonatal Blood Infections

BY MICHELE G. SULLIVAN

PHILADELPHIA — A comprehensive infection-control protocol was associated with a significant decrease in the incidence of late-onset neonatal blood infections in very low-birth-weight infants, according to Linda Wicker, R.N.

After implementation of the protocol, which focused on hand hygiene, environmental contamination control, education, and intravenous line care, the rate of infections fell from 38% to 23%, she said at the annual meeting of the Eastern Society for Pediatric Research.

In 2004, the neonatal intensive care unit at Cooper University Hospital, Camden, N.J., found itself exceeding commonly reported neonatal ICU infection rates, said Ms. Wicker, a clinical educator at the hospital. "The reported incidence of these late-onset bloodstream infections ranges from 7% to 20%. Before 2004, the incidence in our NICU was about 38%. The comprehensive infection-control measures were instituted in January 2005 to reduce this rate."

VITALS

Major Finding: At one hospital, the incidence of late-onset bloodstream infections among very low-birth-weight infants was 38% before the start of a comprehensive infection-control program, and 23% afterward, a significant difference.

Data Source: A retrospective study of preintervention (n = 334) and postintervention (n = 303) groups.

Disclosures: None reported.

A multidisciplinary team developed the protocol, which targeted several areas. "First, we launched a hand hygiene campaign," Ms. Wicker said. "We banned all rings, watches, and bracelets, and artificial nails. We also put clocks at all the sinks to ensure a full 2-minute scrub."

A second focus of the protocol was reducing catheter-related infections. A dedicated central line management team cared for all the lines. Sterile technique was used for all line insertions. Staff also limited blood draws and heel sticks, and focused on early removal of all central lines.

Environmental controls included keyboard covers for all computers, removal of stuffed animals at the bedside, separate equipment for each incubator, cleaning bedside equipment during every shift, and daily sink bleaching.

Before entering the NICU, residents and nurses took a special infection-control education course. "We also reinforced the judicious use of antibiotics and early feeding with breast milk," Ms. Wicker said.

She and her colleagues analyzed the protocol's effectiveness by comparing pre- and postintervention groups. The preintervention group consisted of 334 infants treated from 2001 to 2004; the postintervention group consisted of 303 infants treated from 2005 to 2008. There were no significant differences between the infants' birth weight (average, 1,010 g), gestational age (27 weeks), sex (50% male), 5-minute Apgar score (8), or days on total parenteral nutrition (21).

Before the intervention, 126 infants (38%) experienced a late-onset bloodstream infection. The infections occurred in significantly fewer infants in the postintervention group (69, or 23%). The number of infections was also significantly lower in the postintervention era (92 vs. 145).

Gram-positive bacteria were the most commonly cultured organism in both the pre- and postintervention groups (115 and 70). Coagulase-negative staphylococcus was the next most commonly seen pathogen in the pre- and postintervention groups (81 and 51). *Staphylococcus aureus* was seen in 26 preintervention and 10 postintervention infections. ■

Rapid HIV Test May Help in Identifying Exposed Newborns

BY MICHELE G. SULLIVAN

PHILADELPHIA — Rapid testing of umbilical cord or newborn blood quickly and reliably identified infants exposed in utero to HIV, according to Dr. Prabi Rajbhandari.

VITALS

Major Finding: The results of a rapid HIV test performed on cord plasma or newborn blood were consistent with ELISA results in 54 neonates studied.

Data Source: A prospective study of the infants born to 14 mothers who were HIV positive and 40 mothers who were HIV negative.

Disclosures: None reported.

The rapid test was just as accurate as the standard enzyme-linked immunosorbent assay (ELISA), with 100% sensitivity and 100% negative predictive value in a small prospective study, Dr. Rajbhandari said at the annual meeting of the Eastern Society for Pediatric Research.

Time is of the essence for babies who have been exposed to the virus, Dr. Rajbhandari said in an interview. "The rapid test is complete in 20-30 minutes, compared to the ELISA, which can take days or even weeks to get a confirmed result," Dr. Rajbhandari of the Bronx-Lebanon Hospital Center, New York, said in an interview. "This is a very important factor, because if we know the baby has been exposed, we can start interventions right away to prevent vertical transmission, with no danger of missing the critical period of intervention."

None of the rapid HIV test kits have been studied in newborns. One kit, the OraQuick, has been approved for use in children as young as 12 years, but has not been studied in younger patients. None of the six rapid test kits has been studied using cord or newborn blood, she noted.

In New York, all pregnant women are offered HIV testing in the first trimester and, if living in an area of high HIV rates, again in the third trimester. If there is no record of the mother's HIV status at the time of labor, she is asked again to provide a blood sample. Infants of mothers who refuse that test can be tested for HIV exposure without consent. Abandoned newborns also are tested.

The prospective study by Dr. Rajbhandari and her associates included infants born to 14 HIV-positive mothers and 40 HIV-negative mothers. Test samples—blood collected at newborn screening, or cord plasma—were tested with the OraQuick test and ELISA.

For newborn blood, the tests showed perfect concordance for the exposed infants, she said. "The rapid test and the ELISA were both positive for all 14 samples from the positive mothers."

There were 33 blood samples available for testing from the 40 infants from HIV-negative mothers; seven samples did not have enough blood for the additional test. Again, the rapid test and ELISA were in complete agreement, showing negative results for all 33 samples.

There were 11 cord blood samples available from HIV-positive mothers; all of these samples tested positive by both the rapid test and ELISA. The tests were also perfectly concordant with the 32 cord blood samples available for HIV-negative mothers.

An obvious limitation of the study is its small sample size, Dr. Rajbhandari noted. "We need to have a larger sample, and this study is ongoing in order to achieve that." ■

Nasal Screening for MRSA Cuts NICU Infection Rate

BY MIRIAM E. TUCKER

BETHESDA, MD. — Nasal screening for methicillin-resistant *Staphylococcus aureus* significantly reduced the infection rate in a neonatal intensive care unit, in a retrospective study of 5,893 infants.

Some states have enacted legislation for mandatory screening for nasal colonization with methicillin-resistant *Staphylococcus aureus* (MRSA) among inpatients in high-risk inpatient units, but there is still ongoing debate about the value of such screening, Dr. Jeremias L. Murillo said in a poster presented at the annual conference on antimicrobial resistance sponsored by the National Foundation for Infectious Diseases.

Records from January 2006 to June 2009, when all patients admitted to the NICU were screened for nasal carriage of MRSA, were compared with those from an equivalent 42-month period from July 2002 to December 2005, when no nasal screenings were performed.

All MRSA infections were identified from a microbiology database and confirmed by chart review.

Nasal screenings were performed via rapid polymerase chain reaction testing, and infants found positive were decolonized with topical mupirocin, with contact isolation maintained until decolonization was completed.

There were no significant differences in birth weight or gestational age between the 3,269 infants who were screened and the 2,624 who were not. A total of 5 infants (0.15%) became infected in the NICU during the screening period, compared with 29 (1.11%) during the period when screening was not performed, Dr. Murillo of Children's Hospital of New Jersey and Beth Israel Medical Center, Newark, reported.

VITALS

Major Finding: During the screening period, 5 infants (0.15%) became infected in the NICU, compared with 29 (1.11%) during the period when screening was not performed.

Data Source: A retrospective study of 5,893 infants seen over two 42-month periods.

Disclosures: None reported.

In an interview, Dr. Murillo noted that in 2002 it took an average of 72 days from the time of admission before the infants became infected, compared with only 14 days in 2005, which was just before his hospital began screening.

"We felt that the shortened time frame was because the babies were coming into the NICU already colonized with MRSA and were therefore getting infected earlier," he said.

Some infants had positive nasal swabs—indicating that they were colonized but not infected—at the time of delivery, he added.

Replication of these findings with a large multicenter trial comparing screening versus nonscreening units should settle the MRSA screening debate once and for all, Dr. Murillo said. ■