

In-Hospital Vaccines for Parents Benefit Babies

BY MICHELE G. SULLIVAN

FROM THE ANNUAL MEETING OF THE EASTERN SOCIETY FOR PEDIATRIC RESEARCH

PHILADELPHIA — Providing new parents with immunization opportunities before they leave the hospital with their infant benefits the babies and their parents, the results of two retrospective studies showed.

The studies focused on such in-hospital vaccination programs. One found that parents in the neonatal intensive care unit almost universally accepted a seasonal influenza vaccine; the other, that new mothers who accepted the tetanus-diphtheria-pertussis vaccine during their postpartum stay were significantly more likely to be on track with their infant's primary vaccination schedule than mothers who didn't accept the shot.

Infants younger than 6 months suffer the highest influenza mortality. Infants who have been hospitalized—including those with a NICU stay—are at particularly high risk. Because these young babies cannot be vaccinated against the flu, the best way to protect them is to create "a cocoon of immunization" around them, by vaccinating their caregivers and household contacts," Angeline Seah of Stony Brook (N.Y.) Uni-

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Major Finding: Of the 574 parents eligible to receive the flu vaccine, 550 accepted, for a total immunization rate of 96%. Infants of the case mothers, the majority of whom received Tdap vaccination immediately post partum, were significantly more likely to have received their first set of immunizations by 3 months (88% vs. 82%), and significantly more likely to have completed their primary series by 8 months (67% vs. 59%) and 9 months (75% vs. 65%).

Data Source: Two retrospective studies of in-hospital immunization, one involving flu vaccination of 753 parents of infants in the NICU and the other involving Tdap vaccination of mothers immediately post partum.

Disclosures: None was reported.

versity said at the annual meeting of the Eastern Society for Pediatric Research.

Ms. Seah and neonatologist Shetal Shah, theorized that the NICU would be a near-ideal place to educate parents about the benefits of a flu shot and to give the vaccine.

They conducted a retrospective analysis of three flu seasons to determine parental vaccination rates. The study periods were November through March during 2004-2005, 2006-2007, and 2008-2009.

During each season, all parents of NICU patients were educated about the risks and benefits of the flu vaccine. If they consented, parents were immunized at their child's bedside. The vaccine was available 20 out of every 24 hours. Parents were told that their decision to accept or reject the vaccine would have

no impact on their ability to visit and care for their child.

The study included 753 parents and 455 infants. About a quarter of the parents (179) had been vaccinated before their child was born. Of the 574 eligible to receive the flu vaccine, 550 accepted, for a total immunization rate of 96%. Only 4% of the parents (24) refused the vaccine.

NICU immunization rates varied significantly from year to year, Ms. Seah said. In the first year, 64% of parents were vaccinated in the NICU and 23% had been previously vaccinated.

In year 2, 12% had been vaccinated before arriving at the NICU and 80% were vaccinated in the NICU, and in year 3, one-third of parents had already been vaccinated before arriving in the NICU.

"This probably represents an

increased awareness of the seriousness of flu infections in newborns," she said.

Vaccination rates also varied significantly between mothers and fathers. Paternal rates were significantly lower than maternal rates in the years when they were measured (years 2 and 3). This might reflect the availability of flu vaccine at the obstetrician's office, Ms. Seah said.

A second study found that mothers receiving a tetanus-diphtheria-pertussis (Tdap) vaccine education packet and the Tdap immunization in the immediate postpartum period were more likely to be up to date with their baby's immunizations months later.

"Our Tdap initiative had a positive effect on the timeliness of both start and completion of the infant's primary immunization series," said Dr. Ishminder Kaur of the Albert Einstein Medical Center, Philadelphia. "We should consider expanding this initiative to other caregivers to increase infant protection."

The Philadelphia Department of Public Health launched the postpartum education/vaccine program in three city hospitals in 2008, a year after two Philadelphia infants died of pertussis contracted from their mothers.

"The numbers of mothers vaccinated at discharge in-

creased tremendously within the first 3 weeks of this initiative, from 49% to 90%," she said.

The program consists of standing orders for Tdap vaccine for all postpartum mothers, verbal consent for immunization, and a written opt-out for patients refusing. Dr. Kaur and her colleagues conducted a retrospective cohort study to determine the programs' effect on infant immunizations.

The study comprised two groups of patients from the Einstein Medical Center: 238 mothers who gave birth in July 2007 before the initiative (controls), and 250 mothers who gave birth during July 2009 (cases). Among the cases, 12 mothers refused the vaccine. Infant immunization rates were tracked through the city's public immunization registry. Because the hospital serves predominantly a Medicaid population, the city records capture most of the infants born there.

The investigators looked at immunization rates at 3, 8, and 9 months. Infants of the case mothers were significantly more likely to have received their first set of immunizations by 3 months (88% vs. 82%), and were significantly more likely to have completed their primary series by 8 months (67% vs. 59%) and 9 months (75% vs. 65%). ■

Postnatal CMV Infection Outcomes Poor in VLBW Infants

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF THE PEDIATRIC ACADEMIC SOCIETIES

VANCOUVER, B.C. — Postnatally acquired cytomegalovirus infection can cause severe illness in very low-birth-weight infants in the short term, based on findings from a retrospective study.

Infants in the study who became infected and symptomatic with cytomegalovirus (CMV) infection in the postnatal period had high rates of complications. In fact, their clinical and laboratory findings were similar to those of congenitally infected infants.

"Postnatal CMV infection can cause significant morbidity, and it can potentially lead to [poor] long-term outcomes," lead investigator Dr. Sarah A. Meyer said in an interview. "It is often something that we don't think about a lot, and we just need to keep it in our mind that if we have babies that present with some of these symptoms, we should be testing them and following their outcomes."

Much is known about congenitally acquired CMV, according to Dr. Meyer of Children's Hospital Boston. But com-

paratively little is known about CMV acquired in the postnatal period through breast milk.

Using hospital records for the years 1997-2009, she and her colleagues retrospectively studied 34 infants who had symptomatic, culture-positive CMV infection and were cared for in a neonatal intensive care unit.

Of the infants (all but 1 of whom met criteria for very low birth weight [VLBW]), 22 had been infected postnatally, whereas the other 12 infants (having a range of birth weights) had been infected congenitally.

Compared with their congenitally infected counterparts, the postnatally infected infants had a lower median birth weight (688 vs. 1,500 g), had a younger median gestational age (26 vs. 32 weeks), were older on the day of diagnosis (52.5 vs. 3.5 days of life), and were more likely to have been breastfed (100% vs. 67%). The proportions delivered by cesarean section were similar, she reported in a poster at the meeting.

Among those infected in the postnatal period, the time to CMV diagnosis was

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Major Finding: Very low-birth-weight infants with symptomatic, postnatally acquired CMV infection had high rates of pneumonitis (73%) and late-onset sepsis (43%).

Data Source: A retrospective cohort study of 34 infants with symptomatic CMV infection.

Disclosures: None was reported.

correlated with the length of exposure to breast milk ($r = 0.84$), indicating that the risk of viral transmission persisted with continued exposure. In contrast, the time to CMV diagnosis was not correlated with the day of life on which infants were first fed breast milk.

The most common complications with postnatal infection were pneumonitis (present in 73% of infants), colitis (50%), hepatosplenomegaly (36%), and intracranial findings (27%).

Relative to their congenitally infected counterparts, postnatally infected infants had generally similar clinical findings, but were more likely to have pneumonitis (73% vs. 0%) and less likely to have petechiae and purpura (10% vs. 50%) and retinitis (0% vs. 25%).

The two groups were also similar in

rates of hematologic and cerebrospinal fluid laboratory abnormalities, presence of cerebrospinal fluid CMV positivity by polymerase chain reaction testing, and median blood CMV viral load.

Among the 15 infants overall with neurologic follow-up, the rate of hearing loss was 71% in those congenitally infected, compared with 13% in those postnatally infected, with numbers too small to permit statistical comparison. Rates of developmental delay and cerebral palsy were similar, although these sequelae in the postnatally infected infants also could have been related to their prematurity, noted Dr. Meyer.

A final analysis did suggest that symptomatic postnatal CMV infection may add substantial morbidity above and beyond that due to having a very low birth weight, she said.

Compared with 1,226 infants from the general VLBW population, the VLBW infants with postnatal cytomegalovirus infection had a higher rate of bronchopulmonary dysplasia (81% vs. 16%) and late-onset sepsis (43% vs. 18%). Rates of necrotizing enterocolitis and intraventricular hemorrhage did not differ significantly between the groups. ■