Rule Finds Newborns at Risk of RSV Infection

BY ELIZABETH MECHCATIE

FROM PEDIATRICS

In a study that identified independent risk factors for respiratory syncytial virus lower respiratory tract infections in a group of healthy term newborns, investigators in the Netherlands developed "a simple prediction rule" that they say can be used in clinical practice to identify healthy newborns at high risk for being treated as outpatients for these infections during the first year of life.

In the prospective birth cohort study of 298 healthy term babies born in two large urban Dutch hospitals between January 2006 and December 2008 who were followed for a year, the following were identified as independent predictors for respiratory syncytial virus (RSV) lower respiratory tract infections (LRTI): day-care attendance and/or having siblings, high parental education level, birth weight over 4 kg, and birth from April to September.

The risk of RSV LRTI was 10 times higher for children with these four factors, compared with children without these factors (Pediatrics 2011;127:35-41).

Using statistical analyses of the association between these predictors and the presence or absence of RSV LRTI, Dr. Michiel Houben of Wilhelmina Children's Hospital, Utrecht, the Netherlands, and his associates derived the prediction rule, with scores ranging from 0 to 5. The absolute risk of having an RSV LRTI ranged from 3% for a child with a score of 2 or less (20% of the children) to 32% for a child with a score of 5 and all four of these factors (8% of the children).

"Clinicians can use these features to differentiate between children with high and low risks of RSV LRTI and subsequently can target preventive and monitoring strategies to children at high risk," he and his coauthors concluded.

They noted that to date, clinical prediction models have only been developed for predicting hospitalization in preterm infants, and as far as they know, theirs is the first study that "attempts to predict the risk of nonhospitalized RSV LRTI for healthy newborns by using molecular detection of RSV."

The primary outcome measured in the study was RSV LRTI, which was based on a positive RSV polymerase chain reaction test result and symptoms of acute wheezing or a moderate/severe cough. Parents recorded their children's respiratory symptoms with daily logs and used nose and throat swabs when the child had a respiratory tract infection. During their first year of life, 42 (14%) of the 298 children had an RSV LRTI.

With the formula they derived, 1 point was assigned for a birth weight over 4 kg, 1 point for being born from April to September, 2 points for being in day care or having siblings, and 1 point for a high parental education level. In an example they provided, a baby born in July (1 point) and who is in day care (2 points), who weighed 4.2 kg at birth (1 point) and has parents who are not highly educated (0 points) would have a score of 4 points, corresponding to a "probability of developing a RSV LRTI of 23%," they wrote.

Because of the "extremely high" incidence of medically attended RSV infection, "children classified as being at high risk could be monitored more closely and lifestyle changes that reduce exposure could be applied," Dr. Houben and associates added.

One of the study authors received research funding and speaker's fees from Abbott International; the other authors indicated they had no relevant financial disclosures. ■

VIEW ON THE NEWS

Study: Well Done, but Raises Concerns

If clinicians used this type of prediction rule in their practices, Dr. Lance Chilton said it would be used to identify those at the highest risk – with scores of 4 or 5 – rather than using a low score as a basis to advise parents not to worry. Some of the factors that are in the formula are modifiable, he pointed out, noting that a score of 4 or 5 might influence parents to decide to take their children out of day care.

Dr. Chilton said that he is not aware of any clinicians who use a predictive scoring system to identify newborns at highest risk of RSV infection.

"If you asked a group of pediatricians what they used as a means of prediction as to who is at highest risk of RSV infection, most would come up with day-care attendance and older siblings, and none of them would have guessed that higher educational achievement would be positively correlated with risk of a medically attended RSV infection," he said in an interview. "And most would say that they recommend that all babies stay away from coughing people and crowds of people during the winter virus season."

While he thought the study appeared to be well done, he pointed out that there are major differences in hospitalization rates for RSV between United States and European epidemiologic studies, and that there are likely other differences, such as the use of emergency departments for treatment rather than general practices. One concern he had was that the study might be used "as a means to suggest" that newborns with a score of 4 or 5 be given palivizumab (Synagis), "which would markedly increase costs without any proof of effectiveness, let alone cost-effectiveness."

DR. CHILTON *is a pediatrician at the Young Children's Health Center at the University of New Mexico, Albuquerque. Dr. Chilton, formerly the chair of the Center for Disease Control and Prevention's working group on RSV immunoprophylaxis, said he had no relevant financial disclosures.*

HPV Vaccine Dosing Schedule Adherence, Completion Low

BY SHARON WORCESTER

FROM PEDIATRICS

More than half of the doses of human papillomavirus vaccine received by 3,297 girls and young women undergoing vaccination at an academic medical center were received late, and the three-dose vaccine series completion rate was only 14% by 7 months and 28% by 12 months, according to a retrospective medical records study.

Adherence to the recommended interval of 2 months between the first and second dose was 28.5%, and adherence to the recommended intervals of 12 weeks between the second and third dose, and 6 months between the first and third dose was only 19.7% and 13.3%. Adherence to all three intervals was just 11.5%, Dr. Lea E. Widdice of Cincinnati Children's Research Foundation and her colleagues reported (Pediatrics 2011;127:77-84)

The average time between dose one and two was about 6 months, and the average time between dose one and three was 11 months, the investigators noted.

Independent predictors of vaccine series completion were white (vs. black) race (odds ratio, 2.04 at 7 months; 1.92 at 12 months); use of contraception that required intramuscular injection every 3 months (OR, 1.53 at 7 months; 2.06 at 12 months); and private (vs. public) insurance (OR, 1.31 at 7 months; 1.16 at 12 months), they found. Age did not predict adherence.

The investigators reviewed the health information records of all 9- to 26-year-old girls and women who initiated vaccination at Cincinnati Children's Hospital Medical Center from November 2006 to June 2008.

VITALS

Major Finding: Independent predictors of vaccine series completion were white (vs. black) race (odds ratio, 2.04 at 7 months; 1.92, at 12 months); use of contraception that required IM injection every 3 months (OR, 1.53 at 7 months; 2.06 at 12 months); and private vs. public insurance (OR, 1.31 at 7 months; 1.16 at 12 months).

Data Source: A retrospective study of health information records for 3,297 female patients (aged 9-26 years) who initiated HPV vaccination at a pediatric academic medical center.

Disclosures: Dr. Widdice said she has received research support through the investigator-initiated studies program of Merck & Co. for research unrelated to this study. Another author on the study, Dr. Jessica A. Kahn, is a co–principal investigator of a National Institutes of Health–funded clinical trial of HPV vaccine in HIV-infected adolescents, for which Merck is providing HPV vaccine and immunogenicity testing. The other investigators said they had no relevant financial disclosures. This study was funded by the NIH.

"Understanding adherence to the HPV4 recommended vaccination schedule, and identifying factors that predict completion among adolescents who initiate vaccination are necessary to develop evidence-based strategies to increase adherence among adolescents," Dr. Widdice and her associates wrote.

The findings are of concern because although the vaccine has been shown in clinical trials to be 94%-100% effective, the duration of protection and efficacy in those who don't complete the vaccine series or who receive doses at intervals different from those in the clinical trials are currently unknown, and because the decreased likelihood of series completion among black subjects – who comprised about two-thirds of the study subjects – could exacerbate existing disparities in cervical cancer, the investigators said.

"In future studies, factors that underlie the association between race and completion of the HPV4 series should be examined," they wrote, adding that the health care community should be vigilant in providing education and access to all patients.

Future studies also should compare immunization status for HPV and other diseases in adolescents, should aim to understand rates of and reason for not initiating vaccination in an effort to optimize HPV4 vaccine coverage, and should assess factors related to HPV vaccine adherence in male patients now that there is a "permissive recommendation" for use in that population and since factors could differ between male and female patients, they said.

In this study, compared with HPV4 vaccine clinical trials, the mean completion rates were lower, and the mean intervals between doses were longer.

"Clinical improvement efforts should focus on timing of the second dose as well as completion of three doses," Dr. Widdice and her associates added. ■