

MMR, Varicella Vaccines Benefit Preterm Infants

BY KATE JOHNSON
Montreal Bureau

Preterm infants vaccinated against measles, mumps, rubella, and varicella at age 15 months mount adequate antibody responses similar to those of term infants, according to study findings.

"These findings support the prevailing recommendations for immunization of the preterm infant at the chronological age appropriate for a term infant," concluded Dr. Carl T. D'Angio of the University of Rochester (N.Y.) and his colleagues (*Pediatrics* 2007;119;574-9).

They noted that whereas few data previously have existed on these particular vaccines in preterm infants, limited data on other vaccines—such as inactivated influenza, *Haemophilus influenzae* type b booster, tetanus, diphtheria, and polio—have suggested diminished responses in preterm compared with term infants.

Predictors Noted For Prolonged AOM in Infants

The risks of prolonged acute otitis media in children who are not initially treated with antibiotics are two times higher if the patients are aged younger than 2 years and have acute bilateral infection, compared with older children who have unilateral infection, according to a meta-analysis.

"Clinicians can use these features ... to inform parents more explicitly about the expected course of their child's AOM [acute otitis media] and to explain which features should prompt parents to contact their clinician for reexamination of the child," wrote Maroeska M. Rovers, Ph.D., of the Julius Center for Health Sciences and Primary Care, and Wilhelmina Children's Hospital, University Medical Center Utrecht, the Netherlands, and colleagues (*Pediatrics* 2007;119; 579-85).

The meta-analysis included six randomized, controlled trials of children aged 6 months to 12 years with AOM who were randomized to antibiotic therapy or observation (either placebo or no treatment). Only the 824 patients in the observation arms were included in the analysis. The primary outcome was a prolonged infection defined as fever and/or pain at 3-7 days, and the predictors analyzed were age, gender, season, having been breast-fed or not, presence or absence of recurrent AOM, and baseline symptoms of fever, pain, bilateral AOM, otorrhea, and appearance of tympanic membrane (bulging, redness, perforation).

Of the 824 children, 303 (37%) had fever and/or pain at 3-7 days.

The absolute risks of pain and/or fever at follow-up were highest for children aged under 2 years with bilateral infection (55%) and lowest for those aged 2 years or older with unilateral infection (25%).

—Kate Johnson

"The relatively robust responses in preterm infants in this study may be explained in part by the specific vaccine antigens studied," they noted. "Live viral vaccines, such as MMR [measles, mumps, rubella] and varicella, often are highly immunogenic."

The study included 16 term infants, aged 37 weeks or older, and 16 preterm infants younger than 29 weeks. All infants were immunized with MMR and varicella vaccines between the ages of 14.4 and 16

months. Blood specimens were obtained before and again 3-6 weeks after immunization. Measles antibody was measured by plaque reduction neutralization assay; mumps and rubella immunoglobulin G (IgG) titers were measured by enzyme-linked fluorescent immunoassay; and varicella IgG was measured using a glycoprotein enzyme-linked immunosorbent assay.

Before vaccination, all patients in both groups were seronegative for measles-neutralizing antibody, and all had measles

titers of more than 120 mIU/mL after vaccination, reported the authors. Varicella titers were similar in both groups before and after vaccination; mumps and rubella titers were similar in both groups after vaccination, but lower in preterm than in term infants before vaccination. "This is consistent with lower transplacental antibody transfer in the preterm infants, because the most likely source of detectable prevaccine antibodies would be maternal," they explained. ■

ADVERTORIAL

MISMATCH MISCHIEF: THE IMPACT OF DRIFTED INFLUENZA STRAINS

Influenza vaccines have been available for over half a century. Yet year after year, influenza continues to place a huge burden on society—both in children and in adults.¹ Influenza affects between 5% to 20% of the US population every year, resulting in up to 25 million doctor visits and over 200,000 hospitalizations.^{2,4}

One factor contributing to influenza's heavy toll is vaccine mismatch.⁵ Each year the World Health Organization (WHO) selects influenza strains for the vaccine well in advance of the flu season. Vaccine mismatch occurs when the circulating strains do not match those chosen for the vaccine.

VACCINE MISMATCH—FREQUENCY AND SEVERITY

Mismatched strains occur frequently and may cause severe consequences⁵:

Season	Vaccine Strain	Drifted Strain	Drifted in Mismatched Type
2005-2006	B/Shanghai	B/Victoria	81%
2004-2005	A(H3N2)/Wyoming	A(H3N2)/California	78%
2003-2004	A(H3N2)/Panama	A(H3N2)/Fujian	89%
2000-2001	B/Beijing	B/Sichuan	89%
1997-1998	A(H3N2)/Wuhan	A(H3N2)/Sydney	81%

- Vaccine mismatch has occurred in 5 of the last 10 influenza seasons⁵⁻⁹
- During the 2003-2004 influenza season, when 89% of circulating A-strains were mismatched, 153 children—nearly half of whom were previously healthy—died from influenza-related causes¹⁰
- In one study, children under age 5 had **nearly twice** as many influenza-associated outpatient clinic visits and **more than 4 times** as many influenza-associated emergency room visits in the mismatched season of 2003-2004 than in the matched season of 2002-2003¹¹

MISMATCH MAY DIMINISH VACCINE EFFICACY¹²

In one study during the 1998-1999 influenza season, when vaccine strains and circulating strains were well-matched, the efficacy of the inactivated influenza vaccine against laboratory-confirmed influenza in healthy adults was 86%. During the 1997-1998 season, when the vaccine and circulating strains were mismatched, the efficacy of inactivated vaccine was just 50%.¹²

MedImmune is a biotechnology company committed to helping reduce influenza morbidity and mortality and to developing innovative solutions to improve vaccination strategies.

References: 1. Centers for Disease Control and Prevention. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*. 2006;55(Full Release):1-42. 2. Centers for Disease Control and Prevention. Key facts about influenza and the influenza vaccine. Available at: <http://www.cdc.gov/flu/keyfacts.htm>. Accessed September 21, 2006. 3. Couch RB. Influenza: prospects for control. *Ann Intern Med*. 2000;133:992-998. 4. Thompson WW, Shay DK, Weintraub E, et al. Influenza-associated hospitalizations in the United States. *JAMA*. 2004;292:1333-1340. 5. Centers for Disease Control and Prevention. Update: influenza activity—United States, 1997-98 season. *MMWR*. 1998;47:196-200. 6. Centers for Disease Control and Prevention. 2005-06 U.S. influenza season summary. Available at: <http://www.cdc.gov/flu/weekly/weeklyarchives2005-2006/05-06summary.htm>. Accessed November 7, 2006. 7. Centers for Disease Control and Prevention. Update: influenza activity—United States and worldwide, 2004-05 season. *MMWR*. 2005;54(25):631-634. 8. Centers for Disease Control and Prevention. Update: influenza activity—United States and worldwide, 2003-04 season. *MMWR*. 2004;53:284-287. 9. Centers for Disease Control and Prevention. Update: influenza activity—United States and worldwide, 2000-01 season, and composition of the 2001-02 influenza vaccine. *MMWR*. 2001;50(22):466-470. 10. Bhat N, Wright JG, Broder KR, et al. Influenza-associated deaths among children in the United States, 2003-2004. *N Engl J Med*. 2005;353:2559-2567. 11. Poehling KA, Edwards KM, Weinberg GA, et al. The underrecognized burden of influenza in young children. *N Engl J Med*. 2006;355:31-40. 12. Bridges CB, Thompson WW, Meltzer MI, et al. Effectiveness and cost-benefit of influenza vaccination of healthy working adults: a randomized controlled trial. *JAMA*. 2000;284:1655-1663.

MedImmune
Gaithersburg, MD 20878

©2006 MedImmune Vaccines, Inc. FLU06-136