Commentary

Optimizing Long-Term Care by Administration of Influenza Vaccine to Parents of NICU Patients

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The neonatal intensive care unit (NICU) team has traditionally invested itself in maintaining the health of its patients upon discharge from high-acuity care. Historically, this has included the administration of vaccinations to the patients and more recently, Palivizumab — a monoclonal antibody directed against respiratory synctial virus (RSV). With increasing awareness of the ill-effects associated with influenza virus and recommendations those in close contact with high-risk infants receive the vaccine, the NICU may be an ideal arena to capture parents of high-risk infants for vaccination. This would potentially decrease exposure of the neoatal patient group to influenza virus and may decrease morbidity and mortality associated with the disease. NICUs should work in concert with their associated Departments of Obstetrics to immunize pregnant mothers when appropriate, educate parents regarding influenza and its potential effects in infants and offer influenza vaccine in-season to parents as part of comprehensive care.
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Influenza is a common infectious agent in the pediatric population, infecting 15 to 42% of preschool children with a fatality rate of 3.8 per 100,000.[1–3] Those with underlying respiratory and cardiac disease are at substantially higher risk of complications from influenza and are more likely to require hospitalization.[4–7] Trivalent inactivated influenza vaccine is a safe, cost-effective method of preventing influenza in children, with a sero-conversion rate of up to 89%.[8–10] Based on this information, both the American Academy of Pediatrics (AAP) and the Advisory Committee on Immunization Practices (ACIP) recommended influenza vaccine for family members and close contacts of those at risk of serious influenza. (Table 1).[11] Included in this high-risk category are children with chronic respiratory and cardiac disease and healthy children below 23 months of age, particularly those younger than 6 months.[8]

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Yet studies demonstrate the majority of adult patients who meet eligible criteria do not receive the influenza vaccine.[12] As all parents of NICU infants will inherit a high-risk patient upon discharge home — and in light of poor vaccine coverage rates for adults and children — NICUs appear to be unique, unexploited arenas to immunize parents of hospitalized neonates during the flu season. In an effort to maximize comprehensive care efforts, the neonatal team should work closely with OB/GYN to immunize mothers during or immediately after labor. Furthermore, since children are important vectors of harboring virus, discharge planning should also include, in season, education regarding influenza and a strong recommendation by the NICU team that sibling and children of neonates receive the flu vaccine.[13,14] It has also been shown that physician recommendations are the greatest single predictor of receiving vaccine and thus alone may strongly influence parental decision-making.[15] For parents who cannot obtain the vaccine elsewhere, the NICU should endeavor to administer it to appropriately consented parents.

As the AAP recently expanded its guidelines for influenza immunization to include all healthy children between ages 6 to 23 months, several concerns regarding the logistics of distributing increased vaccine quantities to an expanded population have arisen (Table 2). Limited vaccine supply, an issue based on recent experience in which there has been an estimated 10 to 30 million shortage in vaccine supply, does not apply to this NICU initiative as in times of vaccine shortage, parents of high-risk infants would still be prioritized for receipt of vaccine under current vaccine rationing suggestions.[16] The introduction of, intranasal trivalent, cold-adapted, live attenuated vaccine for those patients *not* in contact with infants or those at high risk of serious influenza should also ease the vaccine burden. Other concerns such as increased personnel demands, physician/nurse time and recall systems do not apply to the 24-hour staffing available in the intensive care setting and should therefore not remain an obstacle to comprehensive parental vaccination.

The NICU with its readily available access to parents of high-risk neonates should be an ideal venue for administering influenza vaccine in season. Given the statistics for adult compliance with receiving the vaccine and the logistical constraints posed on primary caregivers to immunize all young healthy children, the NICU may help safeguard the future care of their discharged patients by providing this service. As an interdisciplinary subspecialty, neonatologists should work with OB/GYN and other relevant hospital divisions to ensure timely influenza vaccination to adults in close contact with their tiny and vulnerable patients.

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Table 1 Center for Disease Control (CDC) Recommendations for Influenza Vaccine of Relevance to the Neonatologist (abbreviated and adapted from www.cdc.gov)

People 50 years of age or older
Residents of long-term care facilities
Anyone in close contact with people at risk of serious influenza
People with a weakened immune system
People 6 months to 18 years of age on long-term aspirin therapy
Pregnant women who will be past the third month of pregnancy during the flu season
CDC *encourages* vaccination for: (abbreviated)
Household contact and out-of-home caretakers of infants from 0–23 months of age, especially those younger than 6 months

Table 2 Logistic Constraints to Influenza Immunization (adapted from reference 8, Rennels et al.)

Limited vaccine quantity
Seasonal vaccine availability
Multiple injections
Reimbursement issues
Personnel demands
Recall systems
Complicated vaccine schedule
(Bold indicates constraints alleviated by potentially distributing vaccine to parents in the NICU).

References

1. Glezen WP, Couch RB. Interpandemic influenza in the Houston Area, 1974–1976. N Engl J Med 1978;298:587–92.
2. Neuzil KM, Zhu Y, Griffin MR, et al. Burden of interpandemic influenza in children younger than 5 years: a 25-year prospective study. J Infect Dis 2002;185:147–52.
3. Glezen WP. Serious morbidity and mortality associated with influenza epidemics. Epidemiol Rev 1982;4:25–44.
4. Glezen WP, Greenberg S, Atmar R, et al. Impact of respiratory virus infections on persons with chronic underlying conditions. JAMA 2000;283(4):499–505.
5. Izurieta H, Thompson W, Kramarz P, et al. Influenza and the rates of hospitalization for respiratory disease among infants and young children. N Engl J Med 2000;342:232–9.
6. Ferson MJ, Morton JR, Robertson PW. Impact of influenza on morbidity in children with cystic fibrosis. J Paediatr Child Health 1991;27: 308–11.
7. Neuzil KM, Wright PF, Mitchel Jr EF, et al. The burden of influenza illness in children with asthma and other chronic medical conditions. J Pediatr 2000;137:856–64.
8. Rennels M, Mesissner C, et al. Reduction of the influenza burdern in children. technical Report 2002. Pediatrics 2002;110(6) URL:http://www.pediatrics.org/cgi/content/full/110/6/e80.
9. Bernstein DI, Zahradnik JM, De Angelis CJ, et al. Clinical reactions and serologic responses after vaccination with while-virus or split-virus influenza vaccines in children aged 6 to 36 months. Pediatrics 1982;69:404–8.
10. Cohen G, Nettleman M. Economic impact of influenza vaccination in preschool children. Pediatrics 2000;106:973–6.
11. Committee on Infectious Disease Policy Statement. Reduction of the influenza burden in children. Pediatrics 2002;110(6):1246–52.
12. Honkanen PO, Keistinen T, Kivela SL. Factors associated with influenza vaccination coverage among the elderly: role of health care personnel. Public Health 1996;110:163–8.
13. Longini Jr IM, Koopman JS, Monto AS, et al. Estimating household and community transmission parameters for influenza. Am J Epidemiol 1982;115:736–51.
14. Fox JP, Hall CE, Cooney MK, et al. Influenza virus infections in Seattle families, 1975–1979. Study design, methods and the occurrence of infection by time and age. Am J Epidemiol 1982;116: 212–27.
15. Poehling K, Speroff T, Dittus R, et al. Predictors of influenza virus vaccination status in hospitalized children. Pediatrics 2001;108(6) URL: http://www.pediatrics.org/cgi/content/full/108/6/e99.
16. Kramarz P, DeStefano F, Gargiullo PM, et al. Influenza vaccination in children with asthma in health maintenance organizations. Vaccine Safety Datalink Team. Vaccine 2000;18:2288–94.