Identifying Factors Predicting Immunization Delay for Children Followed in an Urban Primary Care Network Using an Electronic Medical Record

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OBJECTIVE: An opportunity exists to use increasingly prevalent electronic health records to efficiently gather immunization, clinical, and demographic data to assess and subsequently reduce barriers to immunization. The objective of this study was to use data entered at the point of care within an electronic health record to identify factors that predispose children in an inner-city population to immunization delay.

METHODS: Retrospective cohort data from an electronic health record were used to evaluate the association between demographic, clinical, and immunization variables on immunization delay at 24 months. Patients 2 to 5 years old as of May 31, 2003, with an office visit between May 31, 2002, and May 31, 2003, were selected (N = 5464). Univariate and multivariable models were developed to predict vaccination delay at 24 months per the Advisory Committee on Immunization Practices guidelines.

RESULTS: Overall up-to-date immunization rates at 3, 7, 13, and 24 months were 75%, 45%, 82%, and 71%. Multivariable models using electronic health record data showed that early immunization status was the strongest predictor of immunization delay at 24 months. Multivariate analysis revealed that children who were inadequately immunized at 3 months of age were more than 4.5 times as likely to be immunization delayed at 24 months. In this analysis, patient and caregiver factors associated with immunization delay included insurance status and nonparent caregiver. Children who were premature were less likely to be delayed.

CONCLUSIONS: Using an electronic health record with information entered at the point of care, we found that early immunization status is a strong predictor of immunization delay for young children that can be identified as early as 3 months of age. Electronic health records may prove useful to clinicians and health systems in identifying children at high risk for immunization delay.

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