

## Impact of Clinical Alerts Within an Electronic Health Record on Routine Childhood Immunization in an Urban Population

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**OBJECTIVES:** The objective of this study was to test the hypothesis that clinical alerts for routine pediatric vaccinations within an electronic health record would reduce missed opportunities for vaccination and improve immunization rates for young children in an inner-city population.

**METHODS:** A 1-year intervention study (September 1, 2004, to August 31, 2005) with historical controls was conducted in 4 urban primary care centers affiliated with an academic medical center. All children who were younger than 24 months were enrolled. Electronic health record-based clinical reminders for routine childhood vaccinations were programmed to appear prominently at every patient encounter with vaccines due. The main outcome measures were rates of captured immunization opportunities and overall immunization rates at 24 months of age.

**RESULTS:** Immunization alerts appeared at 15,928 visits during the intervention. Alert implementation was associated with increases in captured immunization opportunities from 78.2% to 90.3% at well visits and from 11.3% to 32.0% at sick visits. Adjusted up-to-date immunization rates at 24 months of age increased from 81.7% to 90.1% from the control to intervention period. Children in the intervention group also became up-to-date earlier than control patients. Patient characteristics were stable throughout the study.

**CONCLUSIONS:** An electronic health record-based clinical alert intervention was associated with increases in captured opportunities for vaccination at both sick and well visits and significant improvements in immunization rates at 2 years of age. As electronic health records become more common in medical practice, such systems may transform immunization delivery to children

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