

## **Epidemiology of Varicella in Hamilton County, Ohio Pre- and Post-Licensure of the Varicella Vaccine**

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### **Introduction:**

Previous studies have suggested a racial disparity of varicella in the United States (US) with blacks having higher rates of hospitalizations compared to whites. Methodologic flaws in the study design may have accounted for these differences. With the licensure of a varicella vaccine in 1995, it is important to better understand the varicella disease burden and identify high risk groups to target for immunization.

### **Hypothesis:**

Hamilton County (HC) black children have higher rates of emergency department (ED) visits and hospitalizations for varicella than HC white children.

### **Methods:**

CHMC discharge data for hospitalizations and ED visits for children <20 years of age from January 1, 1990 through December 31, 2000 were queried for varicella ICD-9-CM codes (052.0-052.9) in any position. Children with these codes were selected and geocoded to identify HC children. To assure all HC cases were identified, a regional database was used and only 1 HC child admitted to another hospital was found. Overall incidence by year, age and race were calculated using HC Census estimates. Trends by year for each age and race category were calculated using Mantel-Haentzel test for trend. Proportions were compared using chi-square tests.

### **Results:**

Overall, 4000 children with varicella were identified for the 11-year period; 327 were inpatients and 3673 were ED visits. Of inpatients, 55% were male, 62% were white and 90% were <10 years of age. For ED visits, 52% were male, 29% were white and 88% were <10 years of age. Black children were significantly older than white children for both hospitalized ( $p=.008$ ) and ED patients ( $p<.0001$ ). The overall incidence rates for varicella hospitalizations and ED visits were 11 and 132/100,000. The incidence for blacks vs whites was significantly higher for both hospitalizations (14 vs. 10/100,000;  $p<.05$ ) and ED visits (318 vs. 54/100,000;  $p<.001$ ). Overall there was a decreasing trend in hospitalizations and ED visits for both whites and blacks ( $p<.002$ ) over the 11-year period. Examining pre-(1990-1994) and post-(1996-2000) licensure periods, there were significant decreases in incidences in both white and black inpatients ages 5-9 and for whites <5 years of age. For ED visits, there were significant decreases in incidence for all age groups except for 15-19 year old white children.

### **Conclusions:**

A racial disparity in varicella hospitalizations and ED visits was proven using a well-defined population of HC children with higher rates in blacks. In addition, older black children appear to be at higher risk for hospitalization and ED visits compared to white children. Rates for both hospitalizations and ED visits have declined since the introduction of the varicella

vaccine in 1995 for most age groups. A proportional increase in rates in older children was not demonstrated. Given the racial disparity seen and the increased risk in older black children, additional studies should focus on understanding this disparity and how the varicella vaccine program can address these issues.