Blood Lead Screening Rates in Children Aged 12-35 Months within a Milwaukee Family Medicine Residency Clinic

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INTRODUCTION

• There is no safe level of lead in the body.
• Elevated blood lead levels (>5 mcg/dL) primarily affect the development of the central nervous system in infants and young children potentially resulting in:
  • Behavioral issues
  • Mental health issues
  • Learning disabilities
  • Hearing loss
• Lead levels are highest between the ages of 18-36 months due to an increase in mobility and hand-to-mouth behavior.
• Despite the national downturn of childhood lead poisoning, Milwaukee (MKE) continues to have a higher than national average incidence of children testing positive for lead exposure due to a high density of housing with lead-based paint and lead lateral water pipes.
• In MKE, children with Medicaid are recommended to be screened for lead levels at 12, 18, and 24 months, followed by annual screening through the age of 5.
• Only 32% of Medicaid enrolled children received screening at 1 and 2 years of age in 2016 according to the Report on Childhood Lead Poisoning in Wisconsin.

PURPOSE

To review the rate of appropriate lead screening in children aged 12 to 35 months at Advocate Aurora Sinai’s Family Care Center (FCC) and to identify risk factors for elevated blood lead levels.

METHODS

• Retrospective chart review study (n=383) using Aurora Health Care’s electronic health records and the Wisconsin Lead Registry on children 12 through 35 months who attended FCC for well child exams during 10/01/2018 to 9/30/2019.
• Screening results were sorted into the age groups of 12-17, 18-23, and 24-35 months, per screening recommendations. The decision to include 24-35 months was intended to capture all 2 year old patients.
• Basic descriptive statistics were computed, and Fisher Exact Test was used for categorical analysis.

RESULTS

• Appropriate lead level screening rates of children were as follows: 45% for 12-17 months, 26% for 18-23 months, and 35% for 24-35 months. 62% of children at FCC ages 1 and 2 years had at least one blood lead test.
• There was no statistically significant difference in screening based on ethnicity as defined by Black vs non-Black (p=0.56), although Black was the majority tested for lead exposure (Fig. 1). There was no statistically significant difference in testing for male vs female patients (p=0.948).
• However, there was a statistically significant difference (p=0.016) between insurance carriers, with Medicaid patients (n=342, 89.3%) screening more than those with other insurance types (n=41, 10.7%).
• Certain ZIP codes in MKE had higher rates of lead screening (Tab. 1), correlating with areas known to have higher levels of childhood lead poisoning per the 2016 Report on Childhood Lead Poisoning in Wisconsin.

DISCUSSION

• Childhood lead screening rates at FCC (62%) were comparable to statewide screening for the general pediatric population (67.6%) in 2016.
• Higher screening rates seen with Medicaid patients may be attributed to the benefit of being a Women, Infants, and Children (WIC) member.
• FCC will implement point of care (POC) lead testing which bypasses the need for lab processing and increases screening accessibility. This will serve as an excellent opportunity to continue data collection to compare screening rates before and after implementation. We expect to see a significant increase in screening rates.
• Future steps include community outreach and advocacy to understand and confront increased blood lead levels and gather data from clinics with POC testing to determine its efficacy.

What is TRIUMPH? Training in Urban Medicine and Public Health (TRIUMPH) is an educational program for University of Wisconsin School of Medicine and Public Health medical students which integrates clinical, community, personal and leadership skill development in Milwaukee, WI. TRIUMPH prepares students to become community-engaged physician leaders who will promote health equity for people living in urban health professional shortage areas.

ACKNOWLEDGEMENTS

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Table 1: ZIP code stratification for childhood lead testing

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Figure 1: Childhood lead testing based on race

Figure 2: FCC patient with two granddaughters who tested positive for elevated blood lead levels and subsequently treated.