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Monitoring lead screening within a Milwaukee family medicine residency

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BACKGROUND

In 2015, 9.3% of children screened at the Milwaukee county health department had lead levels ≥ 5 μg/dL.1

In Milwaukee, 41% of structures were built prior to 1950, a significant risk factor for lead poisoning.2

In the City of Milwaukee it is recommended that all children be tested at 12, 18 and 24 months, followed by annual testing through age 5 in all children enrolled in Medicaid and Women Infants and Children (WIC), as well as those who are uninsured.3

WIC is a federally funded supplemental nutrition program for low-income families found to be at nutritional risk, at many of their clinics lead screening is offered.4

The Aurora Family Care Center (FCC) has never had electronic access to lead screening performed by WIC clinics. This has created potential for duplicate screenings when children are seen at FCC for their preventive exams.

The CDC funds lead surveillance for Wisconsin mandating all laboratories conducting blood-lead analysis to report all lead levels to the Wisconsin Department of Health.5

This data is entered into the Wisconsin Blood Lead Registry by the Data Services Section of the Wisconsin Childhood Lead Poisoning Prevention Program.

Gaining access to the electronic Blood Lead Registry enables providers at FCC to view any previously performed lead screening on FCC patients at any outside facility, including WIC clinics.

OBJECTIVE

The purpose of this study is to determine if children at FCC were undergoing unnecessary duplicate blood lead screening secondary to lack of access to lead screening performed at outside facilities.

METHODS

• Retrospective review of lead screenings performed at well child exams in children 1-5 years of age at FCC during March-August, 2017.

• We reviewed FCC patients in the Wisconsin Blood Lead Registry (WBLR), gathering additional lead screening information, noting that lead levels were often reported to nearest whole number.

• Screenings performed <6 months apart in children age 12-24 months and <12 months apart in children ages 2-5 years old were considered duplicate lead screens.

• Statistics:
  • Basic descriptive statistics were calculated.
  • Categorical data were analyzed using Chi-square tests, continuous variables with 2-sample T-tests or non-parametric alternative tests.
  • Stepwise regression and binary logistic regression was used for multivariable analysis.

RESULTS

• After excluding 10 children with elevated lead levels that required repeat testing, 161 were included in our analysis.

• Children of mean age 1.8 years, were more likely to be female (54.0%) and African American (70.2%).

• Of children with at least one ordered lead test, 39% were not completed; mean first lead result 2.4.

• Only 20 (12.4%) had duplicate lead screenings ordered, of which 12 (60.0%) were ordered inappropriately (i.e., ordered as a duplicate), with 9 (75.0%) being ordered by FCC (Figure 1).

• Interestingly, on univariable analysis, higher lead levels were significantly associated with male gender (3.2 vs. 1.8, p=0.022) and Asian race (4.6 vs. all other races 2.1, p=0.046; Figure 2).

• On multivariable analysis, when including age, only Asian race remained significantly associated with higher lead levels (p=0.002).

CONCLUSIONS

• Inappropriate lead tests were more commonly ordered at FCC.

• With access to the WBLR we can determine if patients have had lead levels drawn at outside facilities and eliminate unnecessary duplicate tests.

• To further aid in decreasing the number of inappropriately ordered tests, we developed a workflow for clinic medical assistants to check blood lead screening and will conduct a six month post-intervention analysis.

REFERENCES


