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A survey of compliance: Medicaid's mandated blood lead screenings for children age 12–18 months in Nebraska

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Abstract

Background: To determine the frequency of Medicaid mandated blood lead level (BLL) screening compliance rates by clinical site.

Methods: Retrospective chart review for evidence of BLLs. Data analyses were conducted using frequencies, percentages & chi-square.

Results: The overall incidence of documented BLLs was 78.9% with one clinic demonstrating 100% BLLs while the others had 72%. Screening rates differed significantly by clinical site ($X^2 = 18.460$, $df = 3$, $p < 0.001$).

Conclusion: Although universal blood lead screening is mandated, there were missed opportunities to obtain BLLs in 21.1% of the records reviewed. Only one clinic had 100% documentation of BLLs when children on Medicaid were seen between the ages of 12–18 months.

Background

The National Institute of Environmental Health Science indicated that public health officials believe lead is the foremost environmental hazard to American children [1]. The population most vulnerable and at risk for lead exposure in Douglas County meets the criteria indicated by the United States General Accounting Office which includes children who are poor, African American, Hispanic, living in large metropolitan areas, or in older housing [2]. Recent researchers found that children with Blood Lead Levels (BLLs) less than 10 micrograms/deciliter suffered intellectual impairment, suggesting that there may be no identifiable level for adverse effects of lead exposure [3]. In 1997, the Center for Disease Control (CDC) recommended that states develop plans to assure BLL testing for all children at high risk including those enrolled in Med-

icaid [4]. In 1998, states were mandated to screen for BLLs on all children age 1–2 years enrolled in Medicaid programs [4,5].

According to the 2000 Nebraska Epidemiological Report only 18% of the approximately 24,000 children who were age one were screened [5]. Childhood blood lead screening data in 2002 for Douglas County revealed that, of 9,521 children screened, 4.6% ($n = 437$) had elevated BLLs > 10 micrograms/deciliter [6]. In 2003, the Douglas County Health Department indicated that from 1995 through 2002, 9.4% (3,545) of children had elevated BLLs [6].

The National and Nebraska Healthy People 2010 objectives for childhood lead poisoning are to eliminate ele-

vated BLLs in children [7]. Douglas County health officials want to assure that all children are tested once a year through age three with high-risk children being tested through age six [6]. Although Nebraska is working toward improving the number of children being tested for lead, the findings noted above demonstrate the need for further monitoring of institutional compliance and increasing the number of children screened.

Methods

This survey examined the lead screening rate for children on Medicaid, living in Douglas County, who were seen when they were between 12–18 months old (at any time during the years 1999 to 2002) in one of four health clinics used for the study. The researchers could not ascertain the type of health visit, acute versus well child check. However, the visits represent clinic visits rather than emergency room visits. The clinics were located within the Omaha Superfund Lead site [8]. Other factors examined were the institutional compliance rates among the four health clinics and compliance rates by type of provider, and gender and ethnicity of the child.

The four clinic sites were chosen because they serve a large percentage of the minority populations who are Medicaid recipients. No literature existed to predict an effect size to perform a power analysis for BLLs by site. Data on the frequency of children on Medicaid seen in the clinics were unavailable. Therefore, the sample size was based on the first year eligibility trend data available for children on Medicaid in Douglas County in 1999. In that year, the average number of eligible children age two each month was 2,126 [Personal communication, K. Collins, Aug. 19, 2002, Nebraska Department of Health and Human Services]. Based on these data, the *a priori* sample size of 50 independent charts per clinic was determined to be sufficient with the target sample size determined to be 200 medical records (Personal communication, J. V. Lupo, September 27, 2002, Creighton University). The final sample consisted of 209 randomly selected medical records. There were 22 (10.5%) Caucasian, 80 (38.3%) African American, 76 (36.4%) Hispanic and 31 (14.9%) unknown or other (1 Native American and 1 Asian), with 120 (57%) male and 89 (43%) female subjects.

Results

Documented mandated BLLs were present in 78.9% of the records, but lacking in 21.1%. A comparison of the screening rates for each clinic found one clinic at 100% and the others at 72% ($X^2 = 18.460$, $df 3$, $p < 0.001$). Screening rates by ethnicity remained significant ($X^2 = 10.434$, $df 3$, $p = 0.015$) after Bonferroni correction for multiple analyses. No significant differences were found when comparing screening rates by provider type (pediatric versus family practice), or gender of the child. Results of the over-

all survey were disseminated to each of the clinics along with that specific clinic's individual compliance rate.

Discussion

The major limitation of this study is that its usefulness is location-specific. Other limitations include the inability to obtain the proportion of each clinic's Medicaid clientele; no comparison to a larger representative sample; lack of consistent documentation of type of health care provider and incomplete medical records.

The results of this study are similar to the findings of Viver et al (2001). They found an overall screening rate of 80% for Rhode Island children on Medicaid who were between the ages of 19–35 months with differences among primary care provider practices and among ethnicities. In their study, African American children were more likely than Caucasian children to be screened [9]. Likewise, differences were found in the current study based on ethnicity of the child with Hispanics more likely to have documented BLLs than African Americans or Caucasians (91%, 74% and 68% respectively). Given the fact that the clinic with 100% documentation served primarily Hispanics, this finding is not surprising.

Conclusions

Missed opportunities to meet the mandate remain and have implications for public health. Local public health officials can use the findings as evidence of the need to continue ongoing support for the lead program. In order to assure that mandated BLLs are being done in clinics serving children on Medicaid, policies, procedures and protocols need to be developed by involving clinic personnel. Additionally, compliance rates need to be monitored for quality improvement. Further research is needed to identify which factors make lead screening programs successful and which elements contribute to missed opportunities.

Competing interests

None declared.

Authors' contributions

MW was the PI and guided the project. SC conducted data analyses and contributed to writing the manuscript. CA collected and entered data as well as contributed to writing the manuscript. LAB collected and entered data. All authors read and approved the final manuscript.

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