Reviewer’s report

Title: The CDC blood lead reference value for children: Time for a change

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Reviewer: David Bellinger

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This is a straightforward, well-argued commentary written by two individuals with extensive experience and expertise in childhood lead poisoning. The basic point, that US lead policy should shift from secondary to primary prevention, is difficult to contest and has been argued previously by many others. In fact, it is listed as one of the highlights of the ACCLP recommendations document of 2012 that established the reference value of 5 g/dL. Nevertheless, the authors do a good job describing the bind that has been created by the combination of the accumulating evidence of harm at blood lead concentrations in the range of the reference value, and the evidence that many clinical labs cannot accurately measure such concentrations with sufficient precision to make this value useful as a trigger for intervention.

I agree with the authors that the policy shift recommended is required as a long-term strategy to reduce lead-associated morbidities in children (Bellinger, Chen, & Lanphear JAMA Pediatrics 2017). However, I think the point should also be made more clearly that screening of children, as well as environments, remains an important component of the strategy. I also think it is an overstatement to label this a "paradigm shift." The authors describe the substantial successes achieved by several primary prevention strategies (lines 98-106). Primary prevention has always been a crucial component of the overall strategy, and what is being advocated in really more of a shift in priority or emphasis than in paradigm (at least as far as I understand the term "paradigm").

Although, as the authors say, the data show that provision of inspectional services and control of environmental lead sources in response to the identification of a child with elevated exposure are not effective in reducing that child's blood lead concentration, it is worth noting that these interventions might be effective in preventing elevations of blood lead concentrations of children who will reside in the same location in the future. From the perspective of these children, these interventions would essentially be primary prevention, so they can be brought under the umbrella of the "paradigm shift" recommended by the authors. The authors do note (lines 124-5) that such resources must continue to be provided but this point could be given more emphasis. In making this point, the authors refer to the importance of "responding quickly when children have been exposed." This implies that some criterion will still need to be applied in order to identify such children. What do they recommend, and will it be possible to avoid the analytical challenges they cite so that the numbers of false negatives (and false positives) are minimized?
As I am cited in support of statements that the brain changes caused by lead are "permanent" (abstract) and that the deficits are "not reversible" (line 94), I would clarify that these don't really reflect my judgments. I agree that the epidemiological studies show that the deficits are persistent, but I do not think we have good evidence that they are immutable if appropriate supportive interventions are provided to exposed children.

Lines 104-5 are not a complete sentence.

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