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## Home Visiting and Childhood Lead Poisoning Prevention

Alan D. Woolf

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*In Reply.*—

Vento et al state that the “Patients and Methods” section in our article<sup>1</sup> lacks essential information on resuscitation. They ask how many patients needed intermittent positive-pressure ventilation, what fraction of inspired oxygen was used, and what the arterial oxygen saturation on a minute-to-minute basis was. They then state that our definition of asphyxia was weak, using only an Apgar score of <5 at 5 minutes and a pH level of <7.1. They suggest that use of 100% oxygen in resuscitation could have influenced the results.

We are unable to see the relevance of these comments on our study, which compared MRI brain scans in 3 groups of newborns with hypoxic-ischemic encephalopathy managed at different temperatures. The resuscitation methods used were those recommended in the United Kingdom at the time. Although Vento et al may disagree with them, the methods applied to all the infants studied, and differences between the 3 groups, therefore, cannot be a result of the use of oxygen rather than air.

It is important to point out that our study did not select infants on the basis of birth asphyxia alone. The infants had to have evidence of encephalopathy clinically and by electroencephalography (EEG) as well as evidence of poor Apgar score and/or acidosis at birth. This is well documented, and the encephalopathy criteria were similar to those used for our pilot studies of hypothermia<sup>2,3</sup> and in the large Cool Cap randomized, controlled trial.<sup>4</sup>

Entry criteria were as follows:

1. gestational age of  $\geq 36$  weeks (excluding those with metabolic or congenital abnormalities);
2. need for resuscitation and an Apgar score of <5 at 5 minutes or cord or first arterial blood pH of <7.1 or base deficit of >16 mmol/L;
3. presence of encephalopathy with at least 1 of the following: hypotonia, abnormal reflexes, absent or weak suck, or clinical seizures; and
4. amplitude-integrated EEG with either moderate II or severe III abnormality, performed within 24 hours of delivery.

EEG grading in the first 24 hours is the best single predictor of severity of outcome after asphyxia, and this is described and referenced in our article.

Vento et al may be right in claiming that our use of 100% oxygen routinely for resuscitation may seem suboptimal now, but this applied to all our infants and does not invalidate our comparison of brain imaging after different temperature-management regimes.

**Marianne Thoresen, MD, PhD, FRCPC**

Department of Clinical Sciences  
Child Health at St Michael's Hospital  
University of Bristol  
Bristol BS2 8EG, United Kingdom

**Andrew Whitelaw, MD, FRCPC**

Department of Clinical Sciences  
Child Health at Southmead Hospital  
University of Bristol  
Bristol BS10 5NB, United Kingdom

**Denis Azzopardi, MD, FRCPC**

Department of Paediatrics  
Imperial College  
Hammersmith Hospital  
London W12 0NN, United Kingdom

**Shelley Renowden, FRCR**

Department of Neuroradiology  
Frenchay Hospital  
Bristol BS16 1LE, United Kingdom

**A. David Edwards, FMedSci**

**Mary A. Rutherford, FRCR, FRCPC**

Imaging Sciences Department  
Robert Steiner Magnetic Resonance Unit  
Department of Paediatrics  
Imperial College  
London W12 0NN, United Kingdom

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*To the Editor.*—

The recent report by Brown et al<sup>1</sup> regarding the effectiveness of a randomized, controlled trial of an in-home intervention in reducing the blood lead level (BLL) of children with lead poisoning is of great interest. Although the authors conclude that such counseling did not reduce BLL, they should clarify some important considerations.

The authors do not comment on whether guidance given to both groups included the need for careful, frequent hand-washing by the children, which is recommended by the American Academy of Pediatrics.<sup>2</sup> Because mouthing behaviors are closely correlated with the degree of risk for lead dust ingestion, hand-washing and frequent washing of toys and mouthable objects may help mitigate that risk. Such guidance could have reduced the chance of an additive effect resulting from the intervention.

In their "Methods" section, it is noteworthy that nurses providing follow-up care to the controls were blinded to group assignment, whereas those providing care to the children receiving the intervention were not. This difference might very well have led to a confounding source of bias in the expected direction of the results when the Nurse Child Assessment Satellite Teaching Scale was administered to determine maternal-child interactions at the end of the study. Intervention nurses, convinced that their counseling worked, would have been more likely to rate maternal-child interactions as having improved.

Finally, the authors described their outcome as a negative finding, although one could view that interpretation as seeing the glass as half empty. The fact that both groups experienced substantial declines in their BLL 1 year later (a 47% reduction) is gratifying. The decline is perhaps, in part, a result of the child's continued physical growth (diluting the body burden of lead), reduced oral behaviors, or lead's redistribution between compartments, as suggested by the investigators. In addition, another interpretation of the study's results is that even general guidance on lead poisoning prevention by visiting nurses effectively works to reduce the hazard of continued contamination. If this were not the case, at least some children would have been expected to experience a continued rise in their BLL to even more problematic levels over the course of the study.

**Alan D. Woolf, MD, MPH**

Pediatric Environmental Health Center  
Children's Hospital Boston  
Boston, MA 02115

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*In Reply.*—

Dr Woolf's letter raises some excellent points, and we appreciate the opportunity to clarify some of the findings

from our randomized community trial<sup>1</sup> of educational interventions provided by nurses to families of children with moderate-level lead poisoning.

As recommended by the American Academy of Pediatrics,<sup>2</sup> parents of children in both the intervention and comparison groups were encouraged to wash the children's hands carefully and frequently. However, by design, the children in the intervention group received more frequent reminders over a longer time. In effect, those in the intervention group received a larger dose of the importance of hand-washing.

We also found the results of the Nurse Child Assessment Satellite Teaching Scale (NCATS) intriguing. Because of the study logistics, we would have had difficulty using only individuals who were blinded to the children's group assignment to perform the NCATS testing in the home. We agree that because the nurses were not blind to group assignment, the results could have been biased. Thus, we have suggested that additional research in this area is needed. Because higher NCATS scores have been linked with improved measurements of children's cognitive abilities,<sup>3</sup> our preliminary findings suggest that simple interventions such as those used in this trial that focus on parenting of young children may benefit lead-exposed children.

Dr Woolf points out that the mean blood lead levels (BLLs) declined in both groups. Because the State of Rhode Island had begun offering case management services to children with BLLs in the 15 to 19  $\mu\text{g}/\text{dL}$  range before our community trial was initiated, we were unable to conduct this research with a comparison group that did not receive services. Had we had a comparison group that was not receiving services, we might have seen greater differences in BLLs between the 2 groups. However, of the 153 children tested for blood lead 1 year after enrollment, 80 (52%) still had BLLs  $\geq 10 \mu\text{g}/\text{dL}$ . These children were evenly distributed between groups, with 39 (51%) in the comparison group and 41 (54%) in the intervention group. In addition, during the 1-year enrollment period, 12 (16%) of the children in the comparison group and 16 (21%) of those in the intervention group had at least 1 BLL test result that was higher than their BLL test result when they enrolled in the trial.

The findings of this study underscore the need for primary prevention of lead exposure through the control and elimination of lead sources in children's environments before they are poisoned.

**Pat McLaine, RN, MPH**

Johns Hopkins School of Nursing  
Baltimore, MD, 21205

**Mary Jean Brown, ScD, RN**

Lead Poisoning Prevention Branch  
Centers for Disease Control and Prevention  
Atlanta, GA 30341

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