In Reply.—

The purpose of this study[1] was not to identify any single variable that, by itself, could predict neurologic or developmental outcome in premature infants. Rather, it was to further investigate the previously published finding that acidosis was one of the factors in the newborn period that was influential in predicting poor motor performance and neurologic outcome at 2 years in very low birth weight infants.[2] As stated in the introduction, we sought to determine whether it was the metabolic or respiratory component of acidosis that was associated with poor outcome. We also examined the relationships of hypotension and/or hypoxemia to both the development of acidosis and to later outcome. We did not hypothesize that any one of these variables would independently have a strong predictive value.

We agree with Dr Raju that acidosis, hypotension, and/or hypoxemia do not account for an overwhelming portion of the variance in outcome measures. As we indicated in the Discussion section, there are several confounding variables including intraventricular hemorrhage, periventricular leukomalacia, other indicators of severity of neonatal illness, as well as various socioeconomic and educational characteristics of the parents that also contribute to the variance in developmental outcome.

We also agree with Dr Raju that alterations in the absolute mental developmental index and psychomotor developmental index scores do not reflect intelligence, but rather are a measure of milestone achievement for a particular age range. Using the frequency of infants with abnormal scores can also be fraught with problems because the cutoffs between normal, suspect, and abnormal are somewhat arbitrary.

The conclusion in our paper expanded the briefly stated conclusion in the abstract that it is the metabolic rather than respiratory component of acidosis that is important in predicting developmental outcome in very low birth weight infants. We also found that hypotension had an independent effect on outcome while hypoxemia did not.

It is our hope that better understanding of these abnormal physiologic conditions in sick premature infants will contribute to improving their ultimate neurologic and developmental outcome.

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Lead Levels, Home Dust, and Proximity to Lead Smelters

To the Editor.—

The article by Kimbrough et al (*Pediatrics*. 1995;95:550–554) concerning a survey of blood lead levels among children residing near a closed, heavily contaminated lead smelter found that 78 of 490 preschoolers (16%) had blood lead levels at or above the Centers for Disease Control and Prevention action level of 10 μg/dL. By contrast, the prevalence of elevated blood lead levels among all preschool children in the United States is 8.9%.[1] Kimbrough et al found that blood lead levels were positively correlated with home dust lead levels, soil lead levels, hours of outdoor play, and levels of lead in indoor paint.

Proximity of a child's home to the smelter was also found to be a powerful determinant of children's blood lead levels. Children who lived closest to the plant had the highest blood lead levels, and levels were inversely related to distance of residence from the smelter. This pattern is identical to that seen previously among children residing near active lead smelters.[2–6]

Unfortunately, Kimbrough et al have chosen to de-emphasize the importance of proximity as a determinant of their children's blood lead levels. They provide no data on the distribution of elevated blood lead levels among children living in each of the four concentric zones that they defined around the plant. They fail to inform us as to what proportion of the variance in their blood lead levels is due to distance. In their discussion, they downplay the striking relationship between proximity and blood lead level. Instead of calling for a cleanup of the smelter site, they suggest that the best approach to preventing lead poisoning in these young children would be parental education coupled with improving the condition of homes.

Although all of us who have worked in the field of lead poisoning prevention would agree on the importance of education, it is no substitute for primary prevention. When there exists a clear point source of lead pollution such as a smelter, and when proximity to such a source has been shown clearly to be associated with blood lead levels in children, there is no excuse for ignoring this reality and placing the primary burden for prevention on parents.

Kimbrough et al in their conclusion call for "targeted cleanup." I concur. And I submit that if their data on the relationship between children's blood lead levels and proximity to the smelter were to be properly presented in tabular form, then those data would provide a sound basis for such targeting.

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In Reply.—

Dr Landrigan oversimplifies the results of our study. Although distance was negatively correlated with blood lead levels, it was not as important a factor as other variables. In contrast to the earlier studies Dr Landrigan is referring to in his letter, the lead smelter in the community we studied had been closed for 8 years at the time we conducted our survey. Dr Landrigan's and the other studies cited were, for the most part, conducted around active smelters where airborne lead from the smelters may have contributed to the exposure of the children. The community we studied had many old Victorian privately owned homes with high concentrations of lead in indoor and outdoor paint.

In Tables 1 and 2 correlations among several blood lead risk factors, including distance from the closed smelter, are presented. Table 1 shows data from children with blood lead levels of 10 μg/dL or above and Table 2 shows data from children with blood lead levels below 10 μg/dL. These tables demonstrate that distance from the smelter is not an overriding factor. Distance is only weakly correlated with blood lead levels and moderately correlated with soil lead in the children with high (Table 1) and with low blood lead levels (Table 2). Thus, distance and soil do not appear to be important blood lead risk factors. Indoor and outdoor paint lead levels are also correlated with soil lead and account for some of the soil lead variance.