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## Editorial: Ethnicity, Socioeconomic Status, and the 50-Year US Infant Mortality Record

The article by Singh and Yu in this issue of the Journal<sup>1</sup> discusses important issues for public health professionals and needs to be carefully studied. The purposes of their study are “(1) to examine the long-term trends and differentials in infant, neonatal, and postneonatal mortality in the United States from 1950 through 1991 by race and ethnicity, education, and family income; (2) to examine the extent of socioeconomic differentials over time in infant mortality; (3) to examine changes in the race-specific patterns of leading causes of death over time; and (4) to assess the implications of the past and recent trends for the future course of mortality by projecting mortality rates for infants to the year 2010.”

This is an impressive agenda! It is not surprising that all these objectives could not be met in the space of one journal article. The extensive amassing and presentation of data on these important matters is invaluable. It is unfortunate that there is not space for an equally desirable analysis of the important impacts and interrelations of time, ethnicity, and social factors on infant mortality and its major components. No one article can answer all needs, but the article by Singh and Yu answers a major need to lay out important data for all of us to think about.

The chief conclusions can be summarized from the Discussion section as follows: (1) despite impressive reductions in overall infant mortality, the Black/White disparity in infant mortality has not

only persisted but widened; (2) substantial differences in infant mortality exist across other racial and ethnic groups; (3) inequality in infant survival widened across educational levels between 1964 and 1987; (4) the Black/White disparity in infant mortality also widened across all educational levels; (5) there is no empirical evidence of increasing inequality across income levels in infant mortality; and (6) infant mortality in the US remains higher than that in most other industrialized nations.

This seems a curiously limited set of conclusions, one mostly restricted to a statement of empirical findings. Perhaps there is a reason for this paucity, not because of any sins of the authors, but because they, as all of us do, use oversimplified indices of unfavorable pregnancy outcome as shorthand explanations for or summaries of a complex situation. This aggregation tends to obscure the complexity of the real world and, correspondingly, to fog the conclusions we might reach as to causation and prevention.

Barring occasional revolutions, science proceeds by replacing simpler truths with more complex ones, and the present situation with infant mortality may require data and analyses more complex than those in Singh and Yu. The need for greater differentiation of analytic variables is illustrated and/or underlined by several aspects of their study.

**Mortality variables.** The prime example here is of the need to differentiate

further infant mortality into components. Figures 1 and 2 show important time trends in infant mortality, neonatal, and postneonatal mortality. The emphasis throughout the paper is on infant mortality as such, but careful examination of the two figures shows that the two parts of infant mortality behave quite differently. Moreover, although both White and Black groups show consistent long-term declines in infant mortality, there are striking (and unexplained) differences in the behavior of postneonatal mortality between Blacks and Whites. The ratio of Black to White postneonatal mortality rate rose during the 1950s and then declined sharply thereafter so that in recent years the ratio of Black/White postneonatal mortality declined from nearly three to just under two.

**Other outcome variables.** The outcomes used by Singh and Yu are restricted to mortality and cause of death; thus several other variables used as outcomes (often as a proxy for mortality) are not mentioned except by implication, e.g., “short gestation and low birthweight” is mentioned as a cause of death in Table 5. We clearly need to differentiate the dissimilar epidemiologic behavior of such constructs as low birthweight (variously defined), prematurity, intrauterine growth retardation, etc.

**Ethnicity and race.** The paper shows clearly that the categorization of race or

**Editor's Note.** See related article by Singh and Yu (p 957) in this issue.

ethnicity is quite complex (see Table 1). It seems reasonable to believe that detailed data on ethnicity/race cross-classified by other interrelated variables such as socioeconomic status would help us understand the factual situation and possible avenues of causation. Certainly, ethnic variation encompasses more complex relationships than the Black/White comparison.

**Socioeconomic status.** Tables 2 and 3, showing Black/White differences in infant mortality for maternal education (Table 2) and income (Table 3), demonstrate that socioeconomic status is not a simple variable. Education and income behave differently; mortality varies much more with education than with income.

**Cause of death.** The detailed presentation in Tables 1, 4, and 5 of trends in cause of death by race points to the material overlap between the cause, "short gestation and low birthweight" and actual detailed measurement of birthweight and length of gestation. One cannot but believe that actual measurements of these variables would be more useful than the cause of death statement.

It is predictable and perhaps the height of banality for an epidemiologist to plead for "better data" and "more research." Presumably the proceedings of the Fourth National Title V Maternal and Child Health Research Priorities Conference will do the same. This epidemiologist wants to plead for an emphasis on greater differentiation (in both data sources and research focus) of the components of our analysis of pregnancy outcome. This includes (1) unraveling the interrelations of various indices of unfavorable outcome (low birthweight, prematurity, intrauterine growth retardation, fetal loss, and neonatal and postneonatal mortality), (2) refining the indices of socioeconomic status and broadening our socioeconomic indices to yield more information on medical care availability, and (3) contrasting the results for various ethnic and/or racial groups.

It seems unlikely that our desire for this kind of differentiated data will be met by existing vital statistics mechanisms. However, the recent broadening of information routinely made available on birth

certificates, coupled with the greater availability of birth cohort data files with matched mortality data included, has tremendous promise (given time) of helping to meet needs for more differentiated and searching analysis.

This expansion of the data available in the vital statistics system, while invaluable, will not remove the need for occasional focused sample studies such as the National Maternal and Infant Health, the National Natality, and the National Infant Mortality surveys. Singh and Yu's paper illustrates the potential for integrating the results of these two kinds of data for analysis.

Singh and Yu have given us a good start; let's go on from here! □

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## Editorial: The Perinatal Paradox

The "perinatal paradox" is the incongruity between "our superb ability to care for the individual patient and our dismal failure to address the problems of the larger society."<sup>1</sup> In this issue, Robert Kliegman expands on this paradox.<sup>2</sup> I do agree that we are not adequately addressing the problems of the larger society, and I do agree that socially based assistance should be a component of programs to benefit children. I do, however, want to challenge a few basic assumptions on individual care and problems of the larger society.

The individual patient in the neonatal intensive care unit tends to receive high-technology care. All can agree that we are spending a lot of money on neonatal intensive care, but reasonable people will differ on their perceptions on how well we are providing superb care.

Keeping alive a baby born just after 23 weeks of gestation may not be superb care, especially when the family and society will be expected to allocate enormous resources to keep the baby alive and then to provide services later for severe disabilities. Failure to involve parents in decision-making is not superb care. Unwillingness to offer the option that the

baby not be resuscitated, especially when the prognosis is dismal, is not superb care. Failure to provide routine adequate assessments for treatable retinopathy of prematurity is not superb care. These are not isolated lapses, but system problems.<sup>3</sup>

Dr Kliegman writes about how difficult it is to change behaviors. He was apparently writing about those who were engaged in health-threatening activities. I am writing about the need to change physicians' behaviors.

Prematurity is a problem of the larger society. Unfortunately, the programs that Dr Kliegman advocates have not been proven to reduce the incidence of severe prematurity (i.e., birth near the junction of the second and third trimesters). Attention to the social and economic needs of women may contribute more than additional medical care to reducing infant mortality in the United States.<sup>4-6</sup> In part, this has been attributed to the socioeconomic correlates of infant mortality, preterm birth, and low birthweight.<sup>7,8</sup> Socially based assistance, however, appears to influence the risk of prematurity much less than hoped.<sup>9</sup> But then again, efficacy and rightness are not equivalent.

Policymakers need to understand that simple solutions to complex problems are rarely effective. When such a thoughtful advocate as Dr Kliegman appears to view prematurity as one disease, I feel the need to point out the heterogeneity of disorders that result in delivery months before term. Five initiators of prematurity deserve to be evaluated individually: premature onset of labor; premature rupture of membranes; pregnancy-induced hypertension severely threatening the mother's well-being; progressively severe fetal growth retardation; and the placental disorders that usually present with vaginal bleeding.<sup>9,10</sup> Now students of preterm labor view it as a syndrome that reflects a wide array of disease processes.<sup>11</sup> Obviously, one prophylactic or therapy is unlikely to be effective for all of these disease processes.

I would be remiss if I did not point out that unintended consequences and costs always deserve discussion. In a just society of equal opportunity, barren women deserve help in conceiving. Costly therapies to improve fertility<sup>12,13</sup> are con-

**Editor's Note.** See related commentary by Kliegman (p 909) in this issue.