Reviewer's report

Title: Low birth weight and longitudinal trends of cardiovascular risk factor variables from childhood to adolescence: The Bogalusa Heart Study

Version: 1 Date: 23 July 2004

Reviewer: John A Morrison

Reviewer's report:

General
The article by Frontini et al. entitled, “Low birth weight and longitudinal trends of cardiovascular risk factors from childhood to adolescence: the Bogalusa Heart Study,” evaluates the relationship between low birth weight and trends in such CVD risk factors as lipid parameters, blood pressure, adiposity, and glucose-insulin and insulin resistance. Participants having longitudinal follow up in the Bogalusa Study and birth weight data from the Office of Vital Statistics in New Orleans were assigned to “low birth weight” (LBW) and controls using the race specific 10th and 75th percentiles as the cutoffs (the latter cutoff being included because of the association between high birth weight and numerous factors-of-interest). GLM was used to compare mean levels of outcome variables between groups adjusting for age, race, and sex. GEE model adjusting for race and sex and with age as predictor assessed the longitudinal rates of change in the outcome variables. Results indicate that in childhood, low birth weight children had significantly higher LDL and lower HDL cholesterol levels than their normal weight compares. In adolescence, only the glucose comparison (low birth weight= higher) reached stat significance. The rate of change in SBP, LDL-C, and glucose was faster and in BMI was slower from childhood to adulthood in the low birth weight group. Low birth weight was related to trends in SBP, triglycerides, and glucose.

1.) The use of race specific cutoffs to define the low birth weight and control groups places black and white participants with the same weights in different birth weight groups, making it difficult to compare the effects of LBW in itself... as if it is relative weight that counts here instead of actual weight. I suspect that this decision has not had a big impact on analyses, but wonder if it could affect the analyses marginally since whites 250 gms above the WHO cutoff of 2500 gms were included in the LBW group, while blacks 62 gms below the WHO cutoff were on the control group. Aside from maternal smoking and congenital infections, low birth weight is not well understood. Blacks do have lower birth weights (this is given as the rationale for using race specific values), but this could be related to decreased insulin sensitivity in blacks. It would be instructive if the authors could do the analyses using the WHO cutoffs as well as the ones used and 1) compare results and 2) look at the subjects whose classification was shifted.

2.) The authors report a shift in analyzers from the AAII to the Abbott VP in midstream. Although both were standardized by the CDC Standardization Program one still wonders whether there was any overlap in the two methods to provide QC comparison data and to assure readers that no small but systematic differences existed to add noise to the data.

3.) Does the number of participants with data vary across the variables of interest in Table 1? If, not say so and report the overall so readers can eye-ball how close to significance the non-significant comparisons are. This is of interest since two of the significant findings in the 4-11 group were not significant in the 12-18 group. Why should LBW children have lower HDL and higher LDL at ages 4-11 and not 12 to 18? Are there pubertal factors at work? Or, sample size issues—the differences are in the expected direction. On this issue, the investigators make 20 comparisons here without adjusting the p-values. I am not sure how Bonferroni applies to studies like Bogalusa, where over
time and different reports hundreds of comparisons will be. Surely, one does not start the “counter” over at each new report so even if they had made only one comparison here, they have already made hundreds and adjusting the p-value accordingly would be ridiculous. Yet they do make a number of comparisons.

4.) Because the Bogalusa Study is such a huge study, I think that, for example, it would be more appropriate on p 3 para 2 ln 6 to write that the “present analysis examines..” and on page 4, ln 1 to write that the “present report…” instead of calling this paper a “Study”. A small point, since each analysis studies some outcome etc.

5.) The question posed by the authors is not new but on-going and the authors clearly define the task at hand.
The methods are appropriate etc.
The data are sound.

Given the stated standards of BMC Pediatrics, the article by Frontini et al is clearly publishable, but I would recommend to them that they consider the comments and respond as they wish

-------------------------------------------------------------------------------

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

-------------------------------------------------------------------------------

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

-------------------------------------------------------------------------------

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after minor essential revisions