discrepancies were found. Logical consistency constraints were added to data input screens to minimize data entry error. Each week a 10% random sample of entered data was checked against the original data. If the pre-established 0.1% error threshold was exceeded, all data entered during that week were re-entered and re-checked for accuracy.

For all laboratory tests except apolipoproteins, a subgroup of samples was split into two specimens, and both specimens submitted blind to the laboratory for subsequent analysis. The coefficients of variation of the technical errors of the liver function tests, with the exception of bilirubin, were all well below 10%, with most below 5%. The coefficient of variation for bilirubin, which is sensitive to fluorescent light, was 10.77%. Coefficients of variation for the lipids were all below 5%. Coefficients of variation for urinary porphyrins, however, were high, especially for those porphyrins present in only trace amounts. The coefficient of variation for coproporphyrins was 17.38%, uroporphyrins 41.60%, heptaporphyrins 70.56%, and pentaporphyrins 81.87% (hexaporphyrins were not detected in any of the split samples).

In addition to the split samples, quality control was ascertained for the liver function tests and lipids analyzed by Smith-Kline-Bioscience using external standards provided by the American College of Pathologists. Each of the tests was within 1.6 standard deviations of the pooled specimens from all laboratories to which our laboratory was compared, with most of the tests well within one standard deviation. Interassay variations were also monitored for all liver function and lipid tests. With the exception of SGPT (15.7% against the low standard and 3.4% against the high standard), interassay coefficients of variation for the liver function and lipid tests were all lower than 10%, with most lower than 5%. Coefficients of variation for apolipoproteins were higher, with values ranging from 6.4% to 19.8%.

Data Analysis