Note for Correction of Serum Creatinine for NHANES III, NHANES 1999-2000, 2001-2002 and 2003-2004:

Serum creatinine is not standardized in many laboratories. The National Kidney Disease Education Program is attempting to have all laboratories standardize serum creatinine to reference methods (Myers, GL, *et al*. Recommendations for Improving Serum Creatinine Measurement: A Report from the Laboratory Working Group of the National Kidney Disease Education Program. Clin. Chem. 2006; 5-18). Equations for estimating glomerular filtration rate (GFR) from standardized creatinine have been published (Stevens LA, *et al*. N Engl J Med. 2006 Jun 8;354(23):2473-83). Serum creatinine assays on 190, 196, 194 and 190 stored specimens from NHANES III, 1999-2000, 2001-2002, and 2003-2004, respectively, were used to determine if serum creatinine needed to be adjusted when compared to a method traceable to a "gold" standard reference method. The Cleveland Clinic Foundation (CCF) laboratory analyzed the serum creatinine specimens using a Roche coupled enzymatic assay (creatininase, creatinase, sarcosine oxidase, kits # 1775677 and 1775766) performed on a Roche P Module instrument. The Roche method calibrators were traceable to an isotope dilution mass spectrometric method for serum creatinine using standard references methods (NIST SRM 967) and confirmed by analysis of CAP LN-24 linearity set based on NIST assigned values. Serum creatinine by the Roche method was then compared to the original NHANES III, 1999-2000, 2001-2002, and 2003-2004 measurements which used the Jaffe kinetic alkaline picrate method performed on several different analyzers. There were significant differences in results between the original and standardized serum creatinine for NHANES III and NHANES 1999-2000. The comparison of serum creatinine values (mg/dL) revealed:

	NHANES III	NHANES 1999-2000	NHANES 2001-2002	NHANES 2003-2004
Mean (SD) original NHANES sCr	1.177 (0.315)	0.838 (0.310)	0.982 (0.316)	0.977 (0.341)
Mean (SD) standardized sCr	0.947 (0.302)	0.996 (0.314)	0.987 (0.325)	0.970 (0.337)
Mean (95% CI)difference original-standaridized	-0.231 (-0.240, -0.221)	0.158 (0.150, 0.166)	0.005 (-0.004, 0.014)	-0.007 (-0.016, 0.001)
Paired t-test p-value	<0.0001	<0.0001	0.2805	0.0851

The recommended correction using Deming regression (that account for errors in measurement):

NHANES III	Y (standard sCr)= 0.960*(original sCr) – 0.184	r = 0.978
NHANES 1999-2000	Y (standard sCr)= 1.013*(original sCr) + 0.147	r = 0.984
NHANES 2001-2002	No correction needed	
NHANES 2003-2004	No correction needed	