As part of a longitudinal surveillance program, 35 members of a larger cohort of 77 Gulf War I veterans who were victims of depleted uranium (DU) "friendly fire" during combat underwent a 3-day clinical assessment at the Baltimore Veterans Administration Medical Center (VAMC). The assessment included a detailed medical history, exposure history, physical examination, and laboratory studies. Spot and 24-h urine collections were obtained for renal function parameters and for urine uranium (U) measures. Blood U measures were also performed. Urine U excretion was significantly associated with DU retained shrapnel burden (8.821 mug U/g creatinine [creat.] vs. 0.005 mug U/g creat., p = .04). Blood as a U sampling matrix revealed satisfactory results for measures of total U with a high correlation with urine U results (r = .84) when urine U concentrations were>/=0.1 mug/g creatinine. However, isotopic results in blood detected DU in only half of the subcohort who had isotopic signatures for DU detectable in urine. After stratifying the cohort based on urine U concentration, the high-U group showed a trend toward higher concentrations of urine beta(2) microglobulin compared to the low-U group (81.7 v. 69.0 mug/g creat.; p = .11 respectively) and retinol binding
protein (48.1 vs. 31.0 mg/g creat.; p = .07 respectively). Bone metabolism parameters showed only subtle differences between groups. Sixteen years after first exposure, this cohort continues to excrete elevated concentrations of urine U as a function of DU shrapnel burden. Although subtle trends emerge in renal proximal tubular function and bone formation, the cohort exhibits few clinically significant U-related health effects.