

## **COMPARISON OF BONE MINERAL DENSITY (BMD) BY DXA IN CKD STAGES 3 & 4 WITH HEALTHY CONTROLS**

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Increased fracture risk has been reported in adults with chronic kidney disease (CKD). Lower BMD determined by DXA in the radius predicts fractures in dialysis patients. However, no studies have assessed DXA radius BMD in CKD stages 3 & 4. The Kidney Disease Improving Global Outcomes report concluded that the radius is the preferred DXA site in persons with CKD. The CRIC Study is a multi-center prospective observational cohort study of 3939 adults with eGFR 20 to 70 ml/min/1.73m<sup>2</sup> at entry. BMD was assessed by DXA (Hologic, Inc.) in the lumbar spine, hip and radius in 260 CRIC participants (224 stage 3 & 36 stage 4 CKD; 67% male; 53% black, 54% diabetic; median age 63, range 22 to 77 yr) at one CRIC center and compared to 539 healthy controls (46% male, 43% black; median age 49, range 21 to 80 yr) enrolled at the same site. BMI was significantly greater in CRIC subjects compared with controls (31.5 vs. 26.7 kg/m<sup>2</sup>;  $p < 0.0001$ ). In CRIC participants the median intact PTH was 48 pg/ml (range 7 to 633); 26% of stage 3 and 43% of stage 4 CKD subjects had a PTH level above the KDOQI target range. Sex-specific multivariable regression models were used to compare BMD in CRIC vs. controls, adjusted for age, race and BMI. BMD in the hip, trabecular ultradistal radius and cortical 1/3<sup>rd</sup> radius were comparable in CRIC and controls with the exception of significantly greater BMD in the 1/3<sup>rd</sup> radius in diabetic male CRIC participants compared with controls ( $p < 0.01$ ). Spine BMD was significantly greater in male diabetic and non-diabetic CRIC subjects (both  $p < 0.01$ ) and among diabetic CRIC females ( $p=0.02$ ), compared with controls. The greater spine BMD may be due to superimposed aortic calcification. Our study did not demonstrate reductions in BMD in the radius or other DXA sites in persons with stage 3 and 4 CKD compared to healthy controls.