

CALCIUM x PHOSPHATE CONTROL—THE BENEFIT OF THE SCANTIBODIES CAP/CIP RATIO

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98% of the body's calcium and phosphate is stored in bone. When bone is adynamic, it is unable to utilize or buffer calcium and phosphate. A high bone turnover state produces a net efflux of calcium and phosphate from bone, with attendant risk of soft tissue calcification. Thus, the turnover status of the bone has a major impact on serum calcium and phosphorous levels. Bone histology studies demonstrate that the 1-84 PTH/7-84 PTH or CAP/CIP ratio is superior to the specific 1-84 PTH assays (i.e., Scantibodies CAP assay or Nichols Bio-Intact PTH assay) for the non-invasive assessment of bone turnover status. We used the CAP/CIP to target normal Ca x Phos in dialysis patients. This led to an overall improvement in our calcium and phosphate control. Before using the ratio, 48% of our dialysis patients had Ca x Phos > 55. After 6 months, 26 % were > 55 . Use of the ratio has significantly improved the control of calcium and phosphate in our ESRD patient population.

JC: High Ca x Phos

Date	Ca	Phos	Ca x P	CAP	CIP	Ratio	Bio-Intact	Alk Phps	Dose Hecctorol
May-03	11	6.9	76				205	115	4
Jun-03	10.5	6.9	72	120	181	0.66		107	4
Jul-03	9.8	6.2	61	148	126	1.2		94	1
Aug-03	11	5.8	64	187	228	0.8		130	1
Sep-03	10	4.9	49	320	161	2		106	0
Oct-03	9.7	6.6	64	358	291	1.2		106	1

Note how the Bio-Intact PTH value of 205 pgm/mL would indicate a high bone turnover state, but the calcium x phosphate product is too high at 76. The CAP/CIP ratio of 0.66 indicates an adynamic bone disease state. When the ratio was used to guide vitamin D therapy (Dr. Amerling decided to reduce vitamin D in this patient), the calcium x phosphate product decreased to 49. Dr. Amerling's decision to decrease vitamin D has given rise to an indication that the bones are increasing their turnover with an improved buffering of calcium and phosphate and a decrease in the calcium x phosphate product.

Amerling R. Calcium x Phosphate Control—The Benefit of the Scantibodies CAP/CIP Ratio. *Am J Kidney Dis* 2004(April); 43(4):6, pp. A16.