

**Title:** Teriparatide for the treatment of adynamic bone disease in chronic kidney disease patients

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Adynamic bone disease (ABD) is characterized by low bone turnover and absence or a reduced number of osteoblasts and osteoclasts and its prevalence in chronic kidney disease (CKD) patients is increasing steadily over the last years. This high prevalence has been attributed to many factors, such as diabetes, use of drugs down-regulating parathormone release, high calcium intake, advanced age and chronic inflammation. Treatment of ABD imposes a serious challenge, since this condition is accompanied by a considerable increase in fracture risk and mortality. Current treatment concepts focus on limiting daily oral calcium intake as well as intradialytic calcium but reliable guidelines are lacking. Administration of teriparatide, the recombinant N-terminal region of human parathyroid hormone (PTH1-34), would theoretically improve ABD in CKD patients, since in these patients the condition is attributed to PTH deficiency or an intrinsic bone resistance to PTH. However, the use of this agent in CKD is limited to 2 small studies which showed that teriparatide treatment may increase bone mineral density, assessed by bone densitometry. Moreover, there are two case reports, one from our group, which showed that this treatment restored bone metabolism assessed by bone histomorphometry. Furthermore, it has been demonstrated that the pharmacokinetics of teriparatide in hemodialysis patients are similar to those observed among postmenopausal women with normal kidney function, likely due to hepatic clearance of the drug. Large prospective randomized controlled trials in CKD patients are urgently needed to determine the safety and efficacy of teriparatide administration and the optimal duration of treatment.