

**Medical Coverage Policy | Bone Turnover Markers**  
for the Diagnosis and Management of Osteoporosis  
and Diseases Associated With High Bone Turnover



**EFFECTIVE DATE:** 10|1|2015

**POLICY LAST UPDATED:** 7|7|2015

## OVERVIEW

Bone turnover markers are biochemical markers of either bone formation or bone resorption. Commercially available tests are available to assess some of these markers in urine and/or serum by high performance liquid chromatography or immunoassay. Assessment of bone turnover markers is proposed to supplement bone mineral density (BMD) measurement in the diagnosis of osteoporosis and to aid in treatment decisions. Bone turnover markers could also potentially be used to evaluate treatment effectiveness before changes in BMD can be observed.

## MEDICAL CRITERIA

Not applicable

## PRIOR AUTHORIZATION

Prior authorization review is not required.

## POLICY STATEMENT

### BlueCHiP for Medicare and Commercial Products

Measurement of bone turnover markers is considered not medically necessary in the diagnosis and management of osteoporosis or in the management of patients with conditions associated with high rates of bone turnover, including but not limited to Paget disease, primary hyperparathyroidism, and renal osteodystrophy.

## COVERAGE

Benefits may vary between groups and contracts. Please refer to the appropriate Evidence of Coverage or Subscriber Agreement for applicable not medically necessary benefits/coverage.

## BACKGROUND

After cessation of growth, bone is in a constant state of remodeling (or turnover), with initial absorption of bone by osteoclasts followed by deposition of new bone matrix by osteoblasts. This constant bone turnover is critical to the overall health of the bone, by repairing microfractures and remodeling the bony architecture in response to stress. Normally, the action of osteoclasts and osteoblasts is balanced, but bone loss occurs if the two processes become uncoupled. Bone turnover markers can be categorized as bone formation markers or bone resorption markers and can be identified in serum and/or urine.

There is interest in the use of bone turnover markers to evaluate age-related osteoporosis, a condition characterized by slow, prolonged bone loss, resulting in an increased risk of fractures at the hip, spine, or wrist. Currently, fracture risk is primarily based on measurements of BMD in conjunction with other genetic and environmental factors, such as family history of osteoporosis, history of smoking, and weight. It is thought that the level of bone turnover markers may also predict fracture risk, possibly through a different mechanism than that associated with BMD. However, it must be emphasized that the presence of bone turnover markers in the serum or urine is not necessarily related to bone loss. For example, even if bone turnover is high, if resorption is balanced with formation, there will be no net bone loss. Bone loss will only occur if resorption exceeds formation. Therefore, bone turnover markers have been primarily studied as an adjunct, not an alternative, to measurements of BMD to estimate fracture risk and document the need for preventive or therapeutic strategies for osteoporosis.

In addition, bone turnover markers might provide a more immediate assessment of treatment response and predict change in BMD in response to treatment. Treatment-related changes in BMD occur very slowly. This fact, coupled with the precision of BMD technologies, suggested that clinically significant changes in BMD could not be reliably detected until at least 2 years. In contrast, changes in bone turnover markers could be anticipated after 3 months of therapy. Bone turnover markers have also been researched as markers of diseases associated with markedly high levels of bone turnover, such as Paget disease, primary hyperparathyroidism, and renal osteodystrophy.

The literature suggests that bone turnover marker levels may be independently associated with osteoporosis and fracture risk in some groups, but there is insufficient evidence reporting an association for any specific marker. Questions remain about whether bone turnover markers are sufficiently sensitive to reliably determine individual treatment responses. In addition, there is insufficient evidence from controlled studies that bone turnover marker measurement improves adherence to treatment, impacts management decisions, and/or improves health outcomes such as reducing fracture rates. Thus, the use of bone turnover markers for the diagnosis and management of osteoporosis is considered not medically necessary.

There is insufficient evidence that measurement of bone turnover markers improves patient management or health outcomes in patients with conditions associated with high bone turnover including Paget disease, primary hyperparathyroidism, and renal osteodystrophy. Thus, bone turnover marker testing for these other conditions is considered not medically necessary.

#### **CODING**

The following CPT codes are medically necessary when filed with a covered diagnosis:

**82523** Collagen cross links, any method

**83937** Osteocalcin (bone gla protein)

The following is a list of diagnosis codes that are not medically necessary for this service:



Bone Turnover  
Markers for Diagnosis

#### **RELATED POLICIES**

None

#### **PUBLISHED**

Provider Update, August 2015

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