

Bone Resorption Assessment (Urine)



63 Zillicoa Street
Asheville, NC 28801
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Patient: **SAMPLE
PATIENT**

DOB:

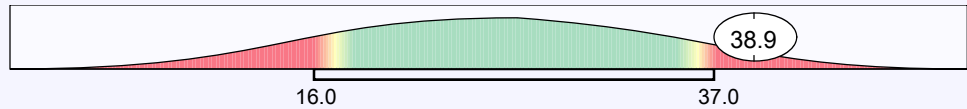
Sex:

MRN:

Chemistry Parameters

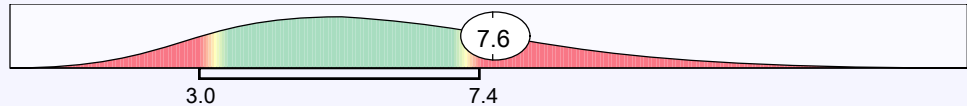
Pyridinium Crosslinks/ Creatinine

Ref Range
nmol/mmol



Deoxyypyridinoline/Creatinine

Ref Range
nmol/mmol



Commentary

Methodology: EIA and Kinetic (Jaffe)

Commentary is provided to the practitioner for educational purposes, and should not be interpreted as diagnostic or as treatment recommendations. Diagnosis and treatment decisions are the practitioner's responsibility.

The performance characteristics of all assays have been verified by Genova Diagnostics, Inc. All assays are cleared by the U.S. Food and Drug Administration unless otherwise noted with ♦.

Pyridinium crosslinks consist of both pyridinoline and deoxyypyridinoline. Deoxyypyridinoline is found predominantly in bone tissue, whereas pyridinoline is found in both bone and cartilage. Pyridinium crosslinks are released when bone is broken down (or resorbed). While not diagnostic of osteoporosis, these markers may be used to monitor bone resorption status and therefore are a useful gauge of treatment efficacy.

The level of pyridinium crosslinks is elevated. Abnormally high pyridinium crosslinks in urine suggest increased cartilage, connective tissue, and/or bone resorption. For example, pyridinoline might be elevated secondary to rheumatoid arthritis, lupus and other connective tissue disorders, osteoarthritis, or chronic alcohol ingestion. Similarly, periods of rapid growth or repair of connective tissue (adolescence post-trauma) may lead to high levels.

Significantly elevated levels of pyridinium crosslinks have been noted in conditions such as hyperthyroidism, hyperparathyroidism, Paget's disease, multiple myeloma, hypercalcemia of malignancy, and certain cancers, particularly if associated with bone metastases. Elevations have also been seen with liver dysfunction, renal osteodystrophy, spinal cord injury, bone marrow transplantation, gastrointestinal diseases related to nutrition and mineral metabolism, cystic fibrosis, scleroderma, growth hormone disorders, growth hormone treatment, and estrogen deficiency.

The level of deoxyypyridinoline (DPD) is elevated, indicating an increased rate of bone loss. In individuals with no underlying bone disease, this is an important marker in the development of osteoporosis. Elevations of DPD may also suggest a recent fracture (levels may stay elevated for up to a year), or a rapid state of bone development as is found

Commentary

in adolescence. DPD is naturally elevated in pregnancy and the post-partum period, with levels gradually returning to pre-pregnancy levels during lactation.

Increased excretion of DPD has been associated with various factors, including running, prolonged bed rest (4 days or longer), excessive dietary sodium, vitamin D deficiency, and low intake of copper, potassium, magnesium, beta carotene, and fiber. A healthy diet high in calcium and other trace elements, adequate vitamin D and K, and regular moderate exercise have been proven to decrease the rate of bone resorption and contribute to building of bone.

Step 3:

Ship the specimen to the lab

Specimen must be returned in the Genova Diagnostics kit box for correct delivery to the lab. Please refer to the shipping instruction insert found in your kit box.



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Bone Resorption Assessment Patient Collection Instructions

IS-148



Check Your Kit

- A - 1 Urine collection cup
- B - 1 Tube
- C - 1 Pipette
- D - 1 Glove
- E - 1 Biohazard bag and absorbent pad
- F - 1 Bubblewrap bag
- G - 1 Freezer brick
- H - 1 Foam insulator box
- I - 1 Rubber band
- J - 1 Requisition (to be completed and signed)
- K - 1 Prepaid mailing envelope

- If any items are missing or expired, call Client Services at 800.522.4762, then press 1
- Keep the kit box for shipping your specimen to the lab.

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IS-148,e,pi,b-401-u,123013

Step 1:

Important things to know and consider

- Specimen must be received by the laboratory within 2 weeks of collection.
- **Abnormal kidney function** or use of diuretics may influence test results. This test should not be performed on individuals with kidney disorders. In addition, certain medications can affect urine creatinine levels [e.g. cephalosporins (e.g. Cefoxitin), cimetidine (Tagamet), fibrates (e.g. Ciprofibrate), and trimethoprim-sulfamethoxazole (Bactrim)].
- If any of the following factors apply to you, it is advisable to delay testing. Please consult your healthcare provider.
 - Urinary tract infection
 - Pregnancy or lactation
 - Bone fracture: Levels may remain elevated for up to one year
 - Spinal cord injury; severe burns
 - Use of medicines or supplements such as cephalosporins, trimethoprim (e.g. Bactrim®TM), doxycycline, sulfasalazine, and Human Growth Hormone

Schedule & Prepare for the urine collection

- If this is a repeat test, collect specimens under similar conditions, bearing in mind the factors that can influence results:
 - Phase of the menstrual cycle: Follicular vs. luteal
 - Physical activity: Note level of exercise or bed rest
 - Meat: Avoid high meat intake the night before collection
- **Refer to the shipping instruction insert for specimen shipment instructions.** *Sample MUST be stored frozen at least 2 hours before shipping.*
- **Freeze the enclosed freezer brick** a minimum of 8 hours before shipping.
- **Complete the requisition form** with all patient and billing information. Be sure it is signed by the patient/responsible party and the healthcare provider.

Step 2:

Collecting your urine specimen

Not following these instructions may affect your test results.



- 1 Write your full name, time, and date of collection** on the tube using a ballpoint pen or pencil only.



- 2 After awakening for the day (after 6 to 8 hours sleep), collect your first morning urine in the collection cup** provided in your kit. *After filling the cup, pass any additional urine into the toilet. (Note: If you wake up to urinate during the night within six hours before your rising time, collect your urine and refrigerate it; then add that refrigerated sample to the urine you collect when you rise for the day.)*



- 3 Use the pipette to transfer urine** from the collection cup into the tube until it is nearly full.



- 4 Recap the tube tightly.** Discard the remaining urine, the collection cup, the pipette, and the glove.



- 5 Place the filled tube into the biohazard bag** and *freeze a minimum of 2 hours prior to shipping.*

Consult your healthcare provider if you have any questions at any time during this test.