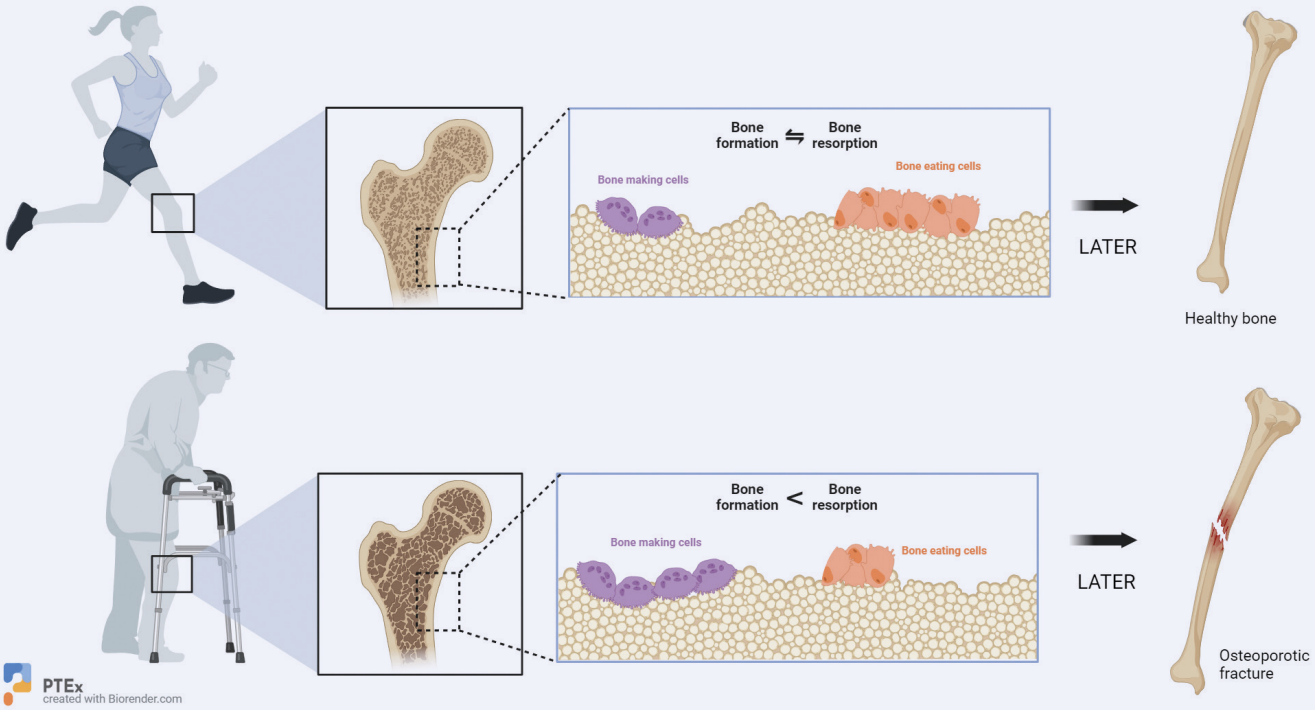
PATHOLOGY TESTS EXPLAINED

Information about pathology tests to help everyone take control of their health and make the right decisions about their care.

WHAT YOU SHOULD KNOW ABOUT **TESTING BONE MARKERS**

Measuring certain proteins called bone markers in a sample of your blood or urine can give a good picture of the health of your bones. Bones constantly undergo a process of breakdown and rebuilding as part of a natural regeneration cycle. This on-going remodelling process takes place on a microscopic scale throughout the body to keep bones alive and sturdy. Bone markers can show the rate at which old bone is removed and new bone is formed.



Bone resorption and new bone formation.

How bone regenerates

Bone is a living, growing tissue that is constantly rebuilding itself, replacing old weak bone with new fresh bone tissue. To do this the body breaks down and dissolves old bone into minerals and collagen which are resorbed, while at the same time it grows new bone. In order to keep bones healthy, it is important that the amount of bone that is removed is replaced with the same amount of new bone.

In young, healthy people the amount of bone removed is about the same as that replaced but as we age the process becomes unbalanced and there can be a loss of bone structure and strength, which leads to bone disorders such as osteoporosis.

As well as ageing, several diseases can cause an imbalance between bone resorption and formation. These include rheumatoid arthritis, hyperparathyroidism, Cushing disease, chronic kidney disease and multiple myeloma. Long-term use of medications such as antiepileptics, glucocorticoids, or lithium can also deplete your bones.

Testing

The choice of bone marker tests will depend on your medical history, symptoms, and a physical exam, and these all vary from person to person. If a test is ordered as a baseline before you start therapy, then the same test will be ordered later so that the two results can be compared. Bone marker testing is used to:

- diagnose bone disorders such as osteopenia, osteoporosis, Paget's disease, and osteomalacia,
- help monitor your bone health and assess the effectiveness of medication,
- assess your risk of bone fractures, especially if you already have osteoporosis.

Bone marker testing is usually performed when bone loss is detected by a bone mineral density (BMD) test of your hips and spine or if you have a history of unexpected bone fracture.

Laboratory tests can also include measuring calcium, phosphate, albumin, vitamin D, alkaline phosphatase, thyroid and parathyroid hormones.

There are several bone marker tests including Procollagen type 1 N-propeptide (P1NP) for bone formation and blood C-terminal telopeptide of type I collagen (beta-CTX) for bone resorption.

Urine deoxypyridinoline or urine N-terminal cross-linking telopeptide of type I collagen (NTX) are also used as bone resorption markers. These markers are useful to monitor treatment.

Giving a blood or urine sample

You may need to fast before having a sample collected for some tests and samples of blood and urine are typically collected in the morning. Many of the bone markers in the blood and urine vary in concentrations throughout the day so timing can be important.

What can your results tell you?

A high level of one or more bone markers in either or both urine and blood suggest an increased rate of resorption and/or formation of bone, but it does not indicate the cause. You will most likely need other tests to learn more about your condition.

Low or normal bone marker levels suggests that there is no excessive bone turnover.

What are reference intervals?

Your results will be compared to a set of numbers called reference intervals – sometimes called normal ranges. This is the range of test results considered normal for the general population. If a result in your report is outside this range, it can be flagged as high (H) or low (L). This does not necessarily mean that anything is wrong and depends on your personal situation. Your results need to be interpreted by your doctor.

Questions to ask your doctor

Why does this test need to be done?

Do I need to prepare (such as fast or avoid medications) for the sample collection?

Will an abnormal result mean I need further tests?

How could it change the course of my care?

What will happen next, after the test?

For more detailed information on these and many other tests go to **pathologytestsexplained.org.au**

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www.pathologytestsexplained.org.au

Please use this QR code to access more information

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My Health Record

You'll find a direct link to the Pathology Tests Explained website embedded in the pathology results pages of your My Health Record.

Click on the link to find information about what your tests are investigating or measuring and what your results can tell your doctor.