

## Pediatric Bone Program offers comprehensive care for bone disease



**UCLA's Pediatric Bone Program** brings together expertise from a number of disciplines to treat pediatric patients with primary bone disorders and those suffering other medical conditions that affect their bones. UCLA offers biochemical analysis, genetic testing, imaging and bone biopsy in the diagnosis and management of bone disease. While bone biopsy is considered the “gold standard” for diagnosis of many types of bone disease, only a few centers in the nation are equipped to perform the demanding analysis of bone biopsy samples.

The UCLA clinic also provides patient education on bone health, including ways to improve bone quality by increasing muscle strength.

### Childhood osteoporosis

Bone mass reaches its peak between the ages of 18 and 20, then declines with age. As a result, childhood osteoporosis presents both an immediate risk of bone fractures and the potential for future problems as bone mass diminishes later in life. While medications can improve bone health among osteoporotic pediatric patients, most are approved for use only in adults. This — combined with the understanding that children treated for osteoporosis are likely to be exposed to these medications over long periods of time — raises concerns over drug side effects and makes accurate diagnosis of childhood osteoporosis critically important.

### Research leads to laboratory offering

“Bone biopsy is a technically difficult test that is under-utilized,” states Isidro Salusky, MD, distinguished professor of pediatrics and chief of the Division of Pediatric Nephrology. Only a few institutions offer bone biopsy analysis.

“With a long history of basic scientific and clinical research involving different aspects of bone and mineral metabolism, we have tools that are not generally available,” Dr. Salusky explains. “This includes being one of the few centers in the country that possesses the technology and skills needed to process and interpret bone biopsy samples.”

In addition to offering clinical testing as a Center for Medicare and Medicaid Services CLIA (Clinical Laboratory Improvement Amendments) laboratory, UCLA continues to conduct research in metabolic bone disease and abnormalities of bone and mineral metabolism in children.

## Osteogenesis imperfecta and other bone disorders

Osteogenesis imperfecta is a rare genetic disorder that leads to bone fragility, multiple fractures and pain. While osteogenesis imperfecta cannot be cured, medications are available that improve bone quality, reducing fractures and pain. In addition, rehabilitation can improve muscle strength and markedly enhance the patient's ability to function normally.

Examples of other bone disorders include patients with chronic kidney disease, who can suffer complications related to mineral metabolism disorders. Seizure disorders and cerebral palsy can also be associated with bone problems. In addition, organ transplant recipients who are treated with prednisone for long periods may experience bone loss. Furthermore, children with disordered phosphate, calcium and vitamin D metabolism suffer from poor bone mineralization and require careful treatment and follow-up to ensure optimal bone quality.

## Diagnostic testing

With specialized expertise and access to the most advanced diagnostic and therapeutic resources, UCLA Pediatric Bone Program physicians can provide an exceptionally high level of care for these patients. In addition to monitoring circulating biochemical levels, imaging tests and bone biopsy results are used to diagnose bone disease and guide treatment.

While dual-energy X-ray absorptiometry (DEXA) is widely used in adults, it has limitations in diagnosing osteoporosis in children and is known to produce some false-positive results. UCLA assesses bone density in children by the more accurate quantitative computed tomography (QCT) of the hip and spine. In addition to identifying low bone density in children, this test is able to discriminate which part of the skeleton (long bones or axial skeleton) is affected by the disease process.

Bone biopsy reports and recommendations from UCLA experts help referring physicians provide treatment with a better understanding of the disease underlying symptoms of fracture, pain and bone deformity. Members of the Pediatric Bone Program work in close collaboration with other UCLA specialists in orthopaedic surgery, genetics and other relevant fields to provide comprehensive consultation.

Bone biopsy requires special expertise to read and interpret test results, and UCLA's physicians are among the most respected experts in the country. Because of its ongoing research activities, UCLA performs hundreds of bone biopsies each year, gaining a wealth of experience that contributes to its capabilities in clinical laboratory testing. It has also enabled UCLA to compile baseline data on normal bone biopsies for comparison with test samples.

In recent years, UCLA researchers have developed new techniques that allow them to use molecular biology methods to reveal even more about patients' underlying conditions. UCLA physicians are able to apply immunohistochemistry to gain further insight into bone disease.

## Participating Physicians

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