Title: A Pilot Study of Low Magnitude Vibration Therapy to Increase Bone Density and Size in Patients with Thalassemia Induced Osteoporosis

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Synopsis:
Osteoporosis, or weak bones, affects patients with all types of thalassemia syndromes at all ages. It has been estimated nearly 70% of adults with thalassemia have osteopenia or osteoporosis which can lead to fracture, bone pain and decreased quality of life.

The most effective way to treat osteoporosis is through prevention, build strong, dense bones in childhood and adolescence. Cardiovascular, weight bearing physical activity strengthens bone by increasing mineralization as well as bone size. However, adherence to regular exercise can be difficult for patients with thalassemia due to low hemoglobin and energy levels or pre-existing cardiomyopathies.

Recent advances in the field have shown that low magnitude mechanical stimulation or "vibration therapy", can also strengthen bone. This simple therapy can be conducted in the home and does not increase strain on the heart.

The primary aim of this proposal is a 6 month pilot and feasibility trial to evaluate "vibration therapy" as an anabolic stimulus to bone in 20 patients with thalassemia. The cross-over intervention design will consist of 20 minute daily sessions in the home standing on an active vibration platform or placebo. The study will examine bone density, size and strength by peripheral quantitative computed tomography and dual energy xray absorptiometry instrumentation at baseline and 6 months. Factors which may respond more quickly to the intervention (markers of bone turnover), and those which may modify the effect of the intervention (growth hormone, vitamin D and sex hormone levels) will be measured at baseline 3 and 6 months.