**Introduction:**
Reduction of bone mineral density and/or muscle mass can be short and long-term complications in critical patients admitted in Intensive Care Unit (ICU). The study aims to evaluate, during a 12-month period, the following parameters: 1) the alterations of bone metabolism and quantitative and qualitative parameters of bone tissue, 2) the proportion of subjects with bone fragility, and 3) the identification of specific risk factors.

**Methods:**
An observational-longitudinal monocentric study is being conducted in adult patients hospitalized in ICU. The evaluations performed at baseline, 6 and 12 month visits include analysis of biochemical and instrumental exams.

**Results:**
A specific clinical-care pathway was created between Bone Metabolic Diseases Unit and ICU, in order to perform specific anamnestic collection, biochemical analysis of bone metabolism, and instrumental exams. 31 patients were enrolled and evaluated at the baseline visit. Biochemical exams, performed within 72 hours of hospitalization, showed that 64% (N:20) of subjects had a deficit of 25OHvitaminD <20 ng/dl, associated with normal corrected serum calcium levels and of these 42% (N:13) had high PTH levels. Bone alkaline phosphatase was increased in 26% (N:8) of patients.

**Conclusion:**
Critical patients are “fragile” subjects, which should be monitored with a short and long-term follow-up. The creation of a clinical pathway that includes specialists of bone metabolism may be a virtuous way to identify patients who report bone mass loss and increased fracture risk. This study will allow to implement the knowledge regarding specific risk factors of bone fragility and the most appropriate therapeutic choices as prevention and treatment.