**Inter-method variability in bone alkaline phosphatase measurement: clinical impact on the management of dialysis patients**

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 Running title : variation of BAP measurement

**Abstract**

**Background**: Bone-specific alkaline phosphatase (BAP) is now recommended to assess bone turnover in hemodialysis (HD) patients. However, little is known about potential variability between methods available to measure BAP.

**Methods**: We measured BAP in 76 HD patients with six different assays (Beckman-Coulter Ostase IRMA, IDS iSYS Ostase, IDS Ostase enzyme immunoassay, DiaSorin Liaison Ostase and Quidel MicroVue BAP).

**Results**: We observed a high correlation between all the assays ranging from 0.9948 (IDS iSYS vs. IDS EIA) to 0.9215 (DiaSorin Liaison vs. Quidel Microvue). However, using the regression equations, the equivalent concentration of a Beckman-Coulter Access value of 10 µg/L can range to 7.7 – 14.4 µg/L and of 20 µg/L can range to 16.9 – 27.9 µg/L with other assays. According to Beckman-Coulter Access, 13%, 50% and 37% of the patients presented BAP values ≤10, between 10 and 20 and ≥20 µg/L, respectively. Discrepancies are observed when other assays are used (concordance from 10 to 100%).

**Conclusions**: Analytical problems leading to inter-method variation should be overcome to improve the usefulness of this marker in clinical practice. According to correlation results, recalibration of BAP assays is necessary but should not be a major issue.