SERUM AND PLASMA NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN (NGAL) LEVELS ARE NOT EQUIVALENT IN PATIENTS ADMITTED TO INTENSIVE CARE

BACKGROUND
Neutrophil gelatinase-associated lipocalin (NGAL) is proposed as a biomarker of acute kidney injury. NGAL has been studied in a range of body fluids including serum and EDTA-plasma. The aim of the present study was to investigate whether measurements of NGAL concentrations in serum and EDTA-plasma are directly comparable in patients admitted to intensive care units.

METHODS
NGAL was measured in 40 paired samples of serum and EDTA plasma from 25 patients admitted to intensive care with a commercial particle-enhanced turbidimetric immunoassay (The NGAL Test™, BioPorto Diagnostics A/S) on a Roche Hitachi 917 (Roche-Hitachi Inc., Tokyo, Japan) analyzer.

RESULTS
Serum NGAL concentrations ranged from 26.8 to 1808 ng/ml (median 281 ng/ml, interquartile range (IQR) 453 ng/ml). EDTA-plasma NGAL concentrations ranged from 25.7 to 1752 ng/ml (median 225 ng/ml, IQR 352 ng/ml). The difference in NGAL concentrations in paired serum and EDTA-plasma samples (serum-plasma) ranged from -13.8 to 321 ng/ml (median 79 ng/ml IQR 116 ng/ml; difference from 0, p<0.0001, Wilcoxon’s signed rank test).

Although serum and EDTA-plasma values were correlated (Spearman’s r=0.95, p<0.0001), Deming regression analysis showed a slope of 1.1 that was not significantly different from unity (95% confidence interval (CI) 1.0-1.1), but a highly significant intercept of 67.9 ng/ml with a wide confidence interval (95% CI 29.8-106).

CONCLUSION
NGAL concentration measured in serum and EDTA plasma cannot be directly compared and should not be used as equivalents in studies of patients admitted to intensive care.

CONFLICT OF INTEREST STATEMENT
Itenov TS, Bestle MH and Jensen JU: None declared.
Bangert K and Uttenthal LO: Hold positions at BioPorto Diagnostics A/S which manufactures The NGAL Test™ and are the inventors of patents and patent applications relating to the diagnostic use of NGAL determination.
Christensen PH: Hold a position at Dako A/S which manufactures Cystatin C Immunoparticles. BioPorto Diagnostics A/S provided reagents for NGAL analysis. Dako A/S provided reagents for Cystatin C analysis. Itenov TS and Bestle MH had full access to all data.

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