



Comparing a point-of-care (POC) test using the capillary blood obtained from skin puncture with conventional laboratory tests”
Kim and Kim (2017).

Abstract:

Objective: Comparing a point-of-care (POC) test using the capillary blood obtained from skin puncture with conventional laboratory tests.

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Methods: In this study, which was conducted at the emergency department of a tertiary care hospital in April–July 2017, 232 patients were enrolled, and three types of blood samples (capillary blood from skin puncture, arterial and venous blood from blood vessel puncture) were simultaneously collected. Each blood sample was analyzed using a POC analyzer (epoc® system, USA), an arterial blood gas analyzer (pHOx®Ultra, Nova biomedical, USA) and venous blood analyzers (AU5800, DxH2401, Beckman Coulter, USA). Twelve parameters were compared between the epoc and reference analyzers, with an equivalence test, Bland-Altman plot analysis and linear regression employed to show the agreement or correlation between the two methods.

Results: The pH, HCO₃, Ca²⁺, Na⁺, K⁺, Cl⁻, glucose, Hb and Hct measured by the epoc were equivalent to the reference values (95% confidence interval of mean difference within the range of the agreement target) with clinically inconsequential mean differences and narrow limits of agreement. All of them, except pH, had clinically acceptable agreements between the two methods (results within target value ≥80%). Of the remaining three parameters (pCO₂, pO₂ and lactate), the epoc pCO₂ and lactate values were highly correlated with the reference device values, whereas pO₂ was not. (pCO₂: R [2] = 0.824, $y = -1.411 + 0.877 \cdot x$; lactate: R [2] = 0.902, $y = -0.544 + 0.966 \cdot x$; pO₂: R [2] = 0.037, $y = 61.6 + 0.431 \cdot x$).

Conclusion: Most parameters, except only pO₂, measured by the epoc were equivalent to or correlated with those from the reference method.

Reference:

Kim, C. and Kim, H. (2017) Emergency medical technician-performed point-of-care blood analysis using the capillary blood obtained from skin puncture. The American Journal of Emergency Medicine. December 9th. .

DOI: <http://dx.doi.org/10.1016/j.ajem.2017.12.025>

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