When vascular access is challenging, IO access can be used for emergency POC analyses to help guide clinical decision-making. However, the limitations of IO POC analyses must be carefully considered” Jousi et al (2019).

Abstract:

BACKGROUND: Intraosseous (IO) access is used for fluid and medication administration in emergency situations when difficulties with vascular access are encountered. IO access would be readily available to take samples for point-of-care (POC) analysis, but there is scarce evidence about the reliability of POC analysis of IO samples among emergency patients. The aim of this study was to evaluate the feasibility and reliability of POC analysis of IO samples in critically ill pre-hospital patients.

METHODS: We performed a prospective, observational study in 35 critically ill pre-hospital patients. After inserting a humeral IO needle, we immediately drew an IO sample. We compared the results to an arterial sample drawn from the same patient within 5 (blood gases) or 15 (other parameters) minutes. Samples were analyzed with an i-STAT® POC analyzer for blood gases, acid-base balance, electrolytes, glucose, and haemoglobin. The agreement between each patient’s IO and arterial samples was analyzed using the Bland-Altman method. The results were compared to responses about acceptable bias on a questionnaire sent to 16 experienced emergency physicians.

RESULTS: The analysis was successful for 23 patients (70%). Higher age was associated with failed analyses. The average bias was acceptable for base excess, pH, standard bicarbonate, glucose, ionized calcium, and sodium. IO potassium values were systematically higher than arterial values. IO haemoglobin values had widely varying agreement.

CONCLUSION: When vascular access is challenging, IO access can be used for emergency POC analyses to help guide clinical decision-making. However, the limitations of IO POC analyses must be carefully considered.

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