

## **Inaccuracy of Point-Of-Care (POC) Whole Blood INR Compared to Venous Plasma INR at High INR Values**

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POC INR analyzers using whole blood by finger-prick sampling have greatly improved turnaround times resulting in many advantages for patients monitored at home as well as in Anticoagulant Clinics. However the poor correlation of POC INR with plasma INR at high INR values is a management problem.

Methods: In October 2005 we commenced routine testing with the Coaguchek-S (Roche Diagnostics) POC INR analyzer in our Anticoagulant Clinic. Results from published literature and our own validation study had raised concerns about lack of correlation with plasma INR above an INR of 4. We therefore instituted a protocol in which all patients with an INR of 4.0 or more by the Coaguchek-S had a venous plasma INR drawn and assayed at our hospital laboratory (Hemosil Recombiplastin, ISI 0.79). Patients were then dosed on the basis of the laboratory INR result.

Results: From October 2005 to November 2006, 262 INRs generated by the Coaguchek-S that were greater than 4.0 had parallel venous plasma INR testing done (range 4.1 to 8). The correlation between Coaguchek-S and plasma INR was poor ( $r = 0.712$ ). Most of the time the Coaguchek-S results were higher than the venous plasma INR. Approximately 25% of these paired values would have resulted in a discrepancy in the dosing decision.

Conclusion: Our results indicate a significant variation between the INR determined by the Coaguchek-S compared to venous plasma above an INR of 4, making dosage decisions on the basis of the POC-INR difficult. The high ISI of the Coaguchek-S testing strip (ISI 2.0) is the most obvious explanation for this variability. Using POC analyzers with reagent strips that have an ISI closer to 1.0, standardizing finger-prick technique through training, and instituting parallel testing protocols at the higher ranges may be necessary to ensure patient safety.