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Alternate Site Glucose Testing: Close, but Not Close Enough?

Clara A. Winfield, MSN, RN, CNL, CAPA

Paula Schenck, BSN, RN, CAPA

University of Virginia Health System, Charlottesville, VA, USA

Purpose: Monitoring of blood glucose in the perioperative diabetic patient requires fingerstick blood sample. Suggestions from patients regarding less pain with alternative site testing (AST) prompted initial study comparing standard fingerstick with AST. Previous study indicated AST to be less painful compared with standard method, with little difference in glucose values ($R=.98$). Though statistically significant, change from standard practice to AST requires $R=.99$ per institutional recommendations. In an effort to support previous findings, a replication study was conducted with a power analysis generating a larger volume of subjects. The hypothesis, "Would an increased sample size support similar findings from previous study and also a higher R ?"

Methods: Prospective Convenience study - Two methods of obtaining blood glucose sample were studied. Fingerstick compared with sample from palm of dominant hand. Eligible patients were randomized. Variables controlled by decreasing number of research team members from six data collectors to two, scripting, and blood glucose monitoring competency were created. Time between palm stick and fingerstick was limited to two minutes.

Results: Phase two results reinforced findings from original study. On average, participants rated pain about one category lower than standard site (Mean diff – 1.29(0.15)). Blood glucose results also similar to original study (partial correlation = 0.98).

Conclusion: Findings support less pain experienced with AST compared with standard site. Further analysis still needed to confirm accuracy of AST blood glucose values compared to standard site. Value of $R=.98$ support AST as alternative method for glucose monitoring however, $R=.99$ required for practice change. Investigation into vendor and product availability which support AST as alternative to standard fingerstick to be explored. In addition, consider conducting same-subject fingerstick blood glucose comparison study. Though statistically significant findings related to less pain and proven accuracy of AST compared to fingerstick glucose were supported, barriers to implementation of change in practice include funding and regulatory constraints.

Title:

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Keywords:

Alternative site testing (AST), Blood glucose monitoring and Pain

Abstract Summary:

Replication study conducted to compare pain and accuracy of blood glucose samples from fingertip and palm, an alternative site (AST) if effort to support previous study

findings. Though findings were statistically significant (R=.98), change in practice utilizing AST require R=.99.

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First Secondary Presenting Author

Corresponding Secondary Presenting Author

Clara A. Winfield, MSN, RN, CNL, CAPA
University of Virginia Health System
Registered Nurse
Charlottesville VA
USA

Author Summary: Clara Winfield is a direct patient care clinician with over 30 years of experience in the perioperative areas. As an active nurse researcher and mentor, she has conducted and published several evidence-based nursing research studies, leading to changes in nursing practice.

Second Primary Presenting Author

Primary Presenting Author

Paula Schenck, BSN, RN, CAPA
University of Virginia Health System
Registered Nurse
Charlottesville VA
USA

Author Summary: Paula Schenck is a direct patient care provider with 30 years of experience in the perianesthesia area. As an active nurse researcher, Paula has conducted and published a previous evidence-based nursing research project related to alternative site testing.