Comparison of Point-of-Care and Laboratory Glucose Concentrations in Cardiothoracic Surgery Patients: An Example of Professional Practice
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ANA Standard 13: Research
The cardiovascular registered nurse integrates research findings into practice.

Identifies clinical problems:
- A lecture by Dr. Elizabeth Bridges at the 2008 GPC Critical Care Symposium reviewed new research on tight glycemic control (TGC) and intensive insulin therapy.
- Nurses on CSICU were concerned about the variance between the point-of-care glucometers and the lab glucose concentrations.
- The Cardiac Surgery Insulin Infusion Protocol called for TGC using intensive insulin therapy (IIT).

Contributes to nursing knowledge by conducting research that evaluates theories to improve healthcare practice:
Research question was formulated and with the help of the OHSU Research Council, a Principal Investigator was identified.

PURPOSE:
- To quantify the difference between blood glucose concentrations obtained from point-of-care (POC) glucometers as compared to laboratory results.
- To examine the relationship between Hct and the difference between POC and lab glucose concentrations.

Participates in data collection/Conducts formal research:
RESULTS:
- A total of 46 patients were studied over 2 months; the mean age was 60.8 years, 63% had undergone coronary artery bypass grafting, and 28% had a diagnosis of Diabetes Mellitus.
- The mean difference between POC and lab glucose was 12.3 mg/dL (SD 9.8), with POC the higher value (t= 8.5, p < .001).
- Spearman’s rho correlation between the difference scores and hematocrit was -.43, p = .003.
- Using a tercile split, groups with Hct<26 (N=16) and >29 (N=15) were identified. The mean difference was 16.3 in the low Hct group and 7.8 in the high Hct group.

HCT VS. DIFFERENCE SCORES

Uses research findings in the development of policies, procedures and standards of practice in patient care:
- Results of this study prompted an interdisciplinary work group to evaluate current practices of IIT in cardiac surgery patients.
- The Cardiac Surgery Insulin Infusion Protocol was changed from a goal of 80-109 mg/dL to 110-135 mg/dL.
- Nurses on CSICU and the step-down unit received education through posters and in-services on this practice change.

Formally disseminates research findings:
- Poster presentations at 2009 SCCM-GPC Critical Care Symposium, 2010 NTI, Oregon Nursing Research & Quality Consortium.
- Manuscript in process for submission to critical care journal.