

**Title:** Exploring the Accuracy and Precision of Noninvasive and Intra-Arterial Blood Pressure Measurement in Neurocritical Care Patients

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**Presentation Audience Type:** Nursing students, nurses, clinicians

**Status of the project/research:** Complete

#### Reference list

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#### Abstract

**Description/Overview:** Health care providers base clinical decisions regarding treatment on blood pressure (BP) readings. Intra-arterial blood pressure (IABP) monitoring is considered as the standard due to recording BP in live time. Non-invasive blood pressure (NIBP) monitoring is common for measuring and monitoring the BP of critically ill patients. Having inaccurate BP readings can lead to inappropriate decision making due to inter-observer variability, equipment quality, and skills and competency of the clinician.

**Purpose:** The purpose of this study is to describe the accuracy and precision of noninvasive and intra-arterial blood pressure measurements in neurocritical care patients.

**Methods:** This was a prospective, non-randomized observational sub-study of the IRB approved study conducted in a university hospital. Eighty critically ill patients were enrolled from the neurosciences intensive care unit. Near-simultaneous NIBP measurements, and IABP if available, were taken from four different upper extremity sites along with demographics and medical history. Pearson's correlation was used to compare NIBP site measurements, and a one-way repeated measure ANOVA was used to observe the difference between systolic, diastolic and mean arterial pressure (MAP) BP measurements.

**Results:** Pearson correlation coefficients for systolic BP ranged from -0.0245 to 0.8823; diastolic BP were -0.0226 to 0.8402 and MAP ranged from -0.0749 to 0.9486. There is no agreed upon best practice for BP site selection.

**Conclusion:** There is not a set standard on the location of measuring NIBP and IABP in neurocritical care patients. Clinicians should continue to take BP from multiple sites and look at BP trends rather than being dependent on a single measurement.