Multi-Pronged Approach to Improving Vascular Access

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Purpose and Rationale

To explore and pilot the impact of evidence-based vascular access guidelines around peripheral intravenous insertion and vascular access outcomes in hospitalized patients.

In hospitalized adult patients

POPULATION

does an evidence-based vascular access initiative including difficult intravenous access identification, vascular access team consultation guidelines, and development of specialized unit based vascular access champions

INTERVENTION

compared to traditional vascular access practices

COMPARISON

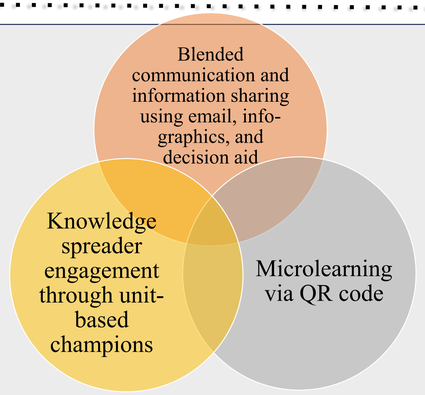
affect peripheral vascular access complication rates, appropriateness of vascular access consultations, and nurse confidence?

OUTCOME(S)

EBP Model

Joanna Briggs Institute (JBI) Model of Evidence-Based Healthcare (Jordan et al., 2016)

Implementation Strategies



Synthesis of Evidence

- Peripheral intravenous (PIV) access is the **most common invasive procedure** patients experience while hospitalized (Campos et al., 2023; Fernandez-Fernandez et al., 2023; Helm et al., 2015; Keleekai et al., 2016; Plohal, 2021; and Schuster et al., 2016).
- More than **1.2 billion PIV catheters (PIVC) are inserted annually** and at any given time 46.7% of hospitalized patients have a PIVC (Fernandez-Fernandez et al., 2023).
- Between **8% to 23% of the population are being referred to as having difficult intravenous access (DIVA) = a clinical challenge** (Campos et al., 2023).
- With each failed attempt to establish vascular access: vein depletion, pain and anxiety for patient, clinical time and costs (Campos et al.; Davis et al., 2020; Plohal, 2021).
- **PIVC failure,** which includes catheter-related bloodstream infections, phlebitis, infiltration, extravasation, occlusion, dislodgement, leakage and pain (Fernandez-Fernandez et al., 2024), **has rates has high as 50%** (Helm et al., 2015).
- Struggles to obtain and maintain PIVC can adversely affect a patient's overall hospital experience (Helm et al., 2015).
- Patients have reported the pain associated with PIVC insertion as one of "**the most painful experiences from the hospitalization**" (Plohal, 2021, p. 29).

Practice Change

1. Identification and early intervention for DIVA
   (Bell & Spencer, 2020; Campos et al., 2023; Davis et al., 2020; Plohal, 2021; Schott et al., 2022; and Stuckey & Curtis, 2016)
2. Clinical pathway for peripheral intravenous access
3. Unit based champion and VAD expert engagement
   (Campos et al., 2023; Goodfriend et al., 2020; Keleekai, et al, 2016; Meyer et al., 2020; Morrow et al., 2022; Nguyen et al., 2020; Quinn et al., 2024; and Schuster et al., 2016)

PIVC Insertion Date/time: _____/_____

A-DIVA

An additive scoring system to calculate the predicted risk for difficult access. The scores for existing risk factors are added to give an appro intravenous access

Scores are added for answering a question with yes response. A yes

Assess using a tourniquet

Factor
Is there a known history of difficult intravenous access?
Do you expect a failed first attempt or a difficult intravenous access?
Is there an inability to identify a dilated vein by palpating the upper e
Is there an inability to identify a dilated vein by visualizing the upper
Has the largest dilated vein a diameter less than 3 millimeters?

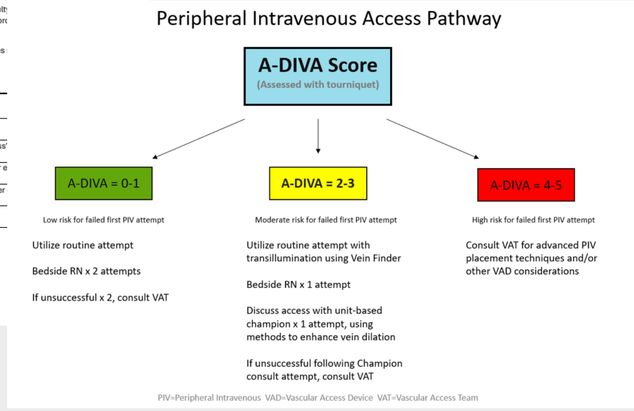
A-DIVA score >/= 4 considered high risk for insertion failure

A-DIVA score: _____

DIVA clinical pathway followed? (circle response) Yes / No

Was PIVC attempt successful? (circle response) Yes / No

Insertion attempts? _____



Plans for Evaluation

- Nurse confidence with Peripheral Intravenous Insertion Assessment, used with permission from Schuster (Schuster et al., 2016)
  Administered pre and post intervention with statistical analysis using paired t-test
- A-Diva and Intravenous Access Pathway utilization
  Manual data review with descriptive and comparative analysis
- Number of invasive lines placed by VA team
  Manual data review with descriptive and comparative analysis

Implications for Practice

Evidence based practice can improve nurse confidence with PIV insertion.

Pilot evaluation and plans for implementation organization wide underway.

Next steps include expanded VA practice improvements including ultrasound guided PIV training/champions.

Scan the QR code for pilot documents, references, and a full project bibliography