

Implementing an Ultrasound-Guided Peripheral Intravenous Access Clinical Practice Guideline

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Problem Statement

Patients frequently present to emergency department with difficult intravenous access (DIVA)

- Common occurrence
- Patients require multiple peripheral IV attempts
- Results in delays in time-to-IV access, time-to-lab requisition
- Results in increased need for provider interventions

In a level 1 academic centers adult emergency department with an active ultrasound-IV (USIV) training program for nursing staff, baseline data revealed that 13%(53/174) of patients with DIVA had delays in obtaining IV access and lab work >3 hours

Project Purpose and Goals

Purpose: Implementation of an evidence-based (EB) USIV algorithm to facilitate identification of patients with DIVA and facilitation of USIV's placed by nursing staff

Goals:

- The aims of this project are to decrease time-to-IV's and time-to-lab requisition
- Introduce an EB algorithm to facilitate identification of patients with DIVA
- Provide awareness of the issue to nursing and medical staff
- At least 90% of patients with DIVA requiring USIV access will have obtained IV access within 3 hours

Development and Methods

Population and setting:

- All patients with DIVA from August 28, 2023 to November 26, 2023
- 60-bed adult emergency department within a large academic center's emergency department

Intervention:

- EB algorithm using expert internal/external evidence
- Nursing staff educational competency
- Workflow/process changes

Strategies and Tactics:

- Electronic and in-person communication with nursing staff
- Identify champions and stakeholders
- Strategic placement of algorithm and process posters throughout the department
- Frequent peer rounding and recognition
- Process, workflow, and equipment changes to assist facilitation

Methods

Measurement:

- Weekly electronic health record audits of USIV placements
- Chart examination to determine time of order for need for IV access
 - ie. Lab work, medications, computed tomography/magnetic resonance imaging
- Time-to-lab requisition data collection began at week 5
- Exploratory outcome measure of USIV-related blood culture requisitions were collected



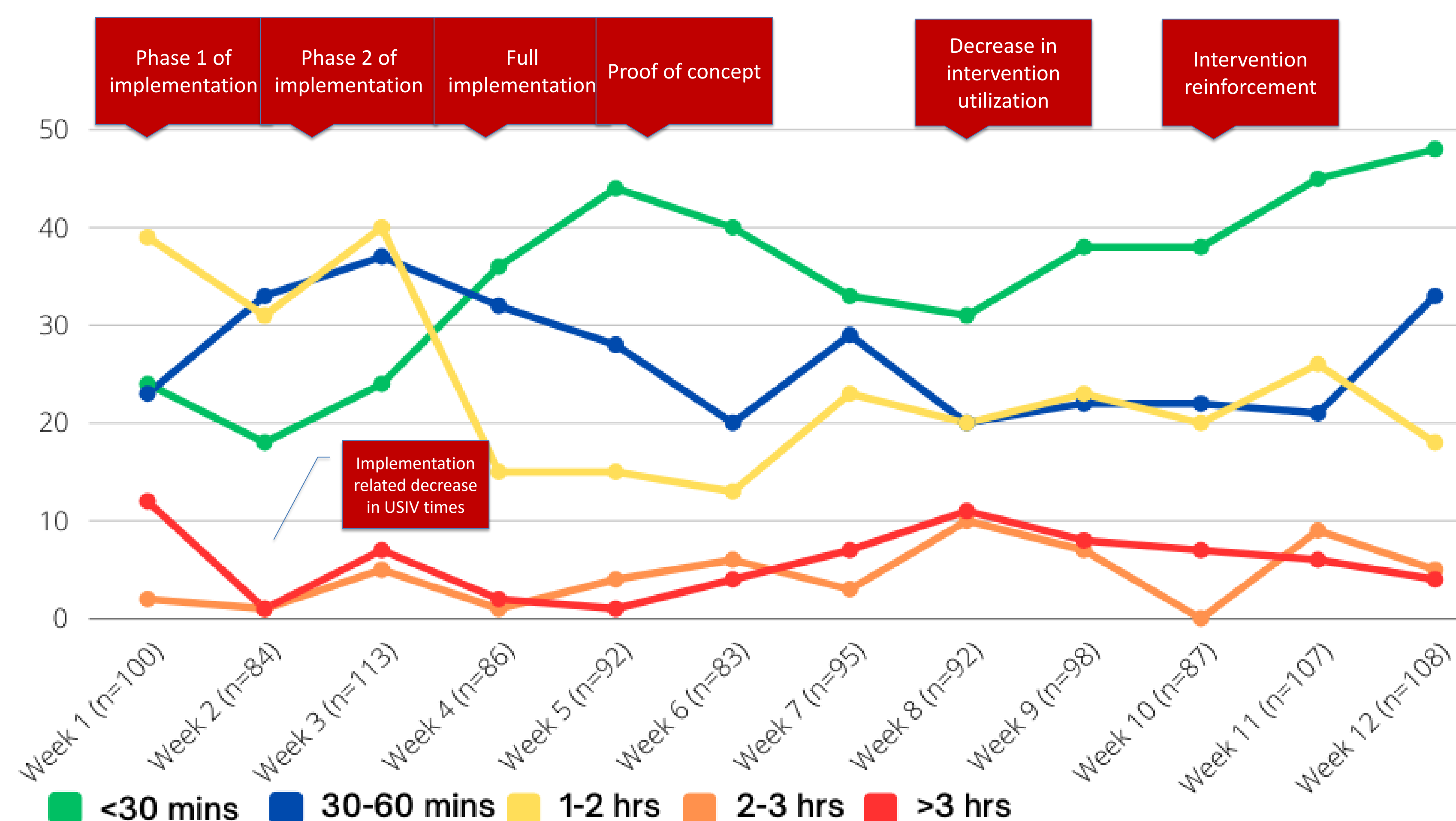
USIV Algorithm

Results

Pre and Post Time-To-USIV's

Times	Pre	Post
<30 min	30% (53/174)	38% (395/1045)
30-60 min	25% (43/174)	28% (297/1045)
60-120 min	28% (49/174)	23% (244/1045)
120-180 min	4% (7/174)	5% (51/1045)
>180 min	13% (22/174)	6% (58/1045)

USIV Time-To-Placement



★ **54% reduction in USIV times > 3 hours**

Discussion

- A decrease in USIV >3 hours was observed following implementation
 - Decreased times for USIV placement peaked at week 5 following full implementation
 - USIV times >3 hours increased and peaked at week 8
 - Causes are multifactorial, most likely related to increased census, patient acuity, and decreased utilization of the intervention
- Best evidence DIVA criteria appears to be a favorable EB indicator for USIV placement
 - As compared to the hospital policy of 2 peripheral IV attempts prior to US utilization
- Finally, a decrease in USIV times >3 hours again began to rise and peaked at the end of the projects implementation phase with reinforcement of the intervention
- Sustainability
 - Process and workflow changes to facilitate USIV placement have proven favorable with staff per frequent rounding
 - Initiative may help with process/workflow barriers to obtaining USIV access in patients with DIVA
- Secondary outcome measures may provide insight into the scope of the impact delayed USIV's may have
 - Specifically, regarding culture requisition in DIVA patients with systemic inflammatory response syndrome (SIRS) criteria

Conclusions

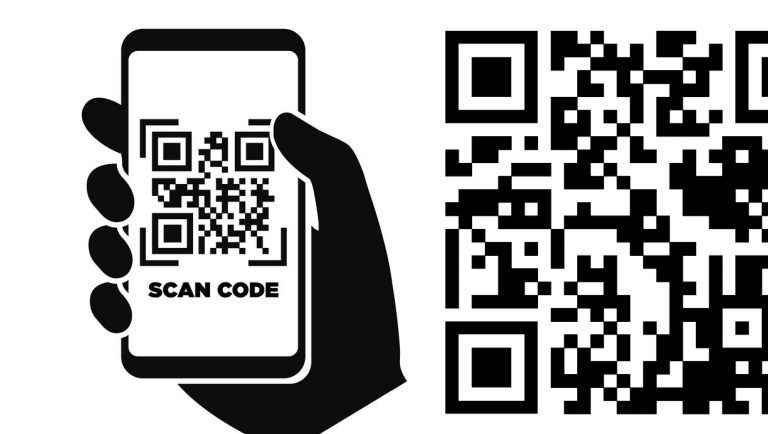
Primary outcome goal was met

- The project has stimulated conversation within administration regarding facilitation of USIV placement

Future potential initiatives include:

- Creation of an USIV nursing assignment
- Training clinical technicians to place USIV's
- Increasing provider placement of USIV's when nursing is unable
- Monthly goal for nurse-related USIV placements
- USIV training for experienced new hires
- USIV-related culture requisition in septic patients QI/PI

References



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