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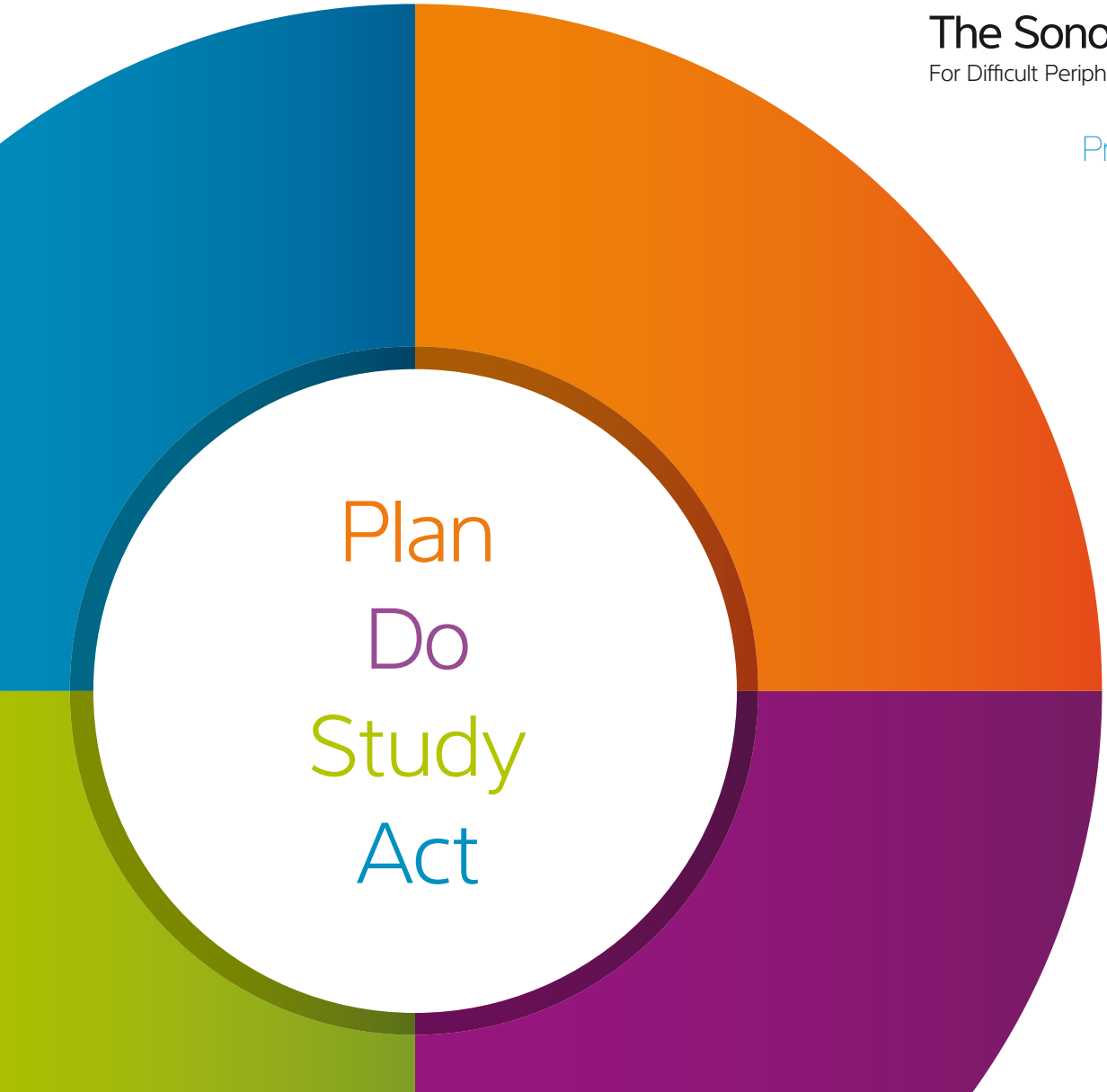
SonoSite

The SonoSite Solution

For Difficult Peripheral IV Insertion

Program Overview



SonoSite Solutions is designed to be a collaboration between SonoSite and you. The objective is to provide a ready-made, but highly modifiable and scalable, clinical pathway to improve success rate of difficult Peripheral IV Insertions and reduce the need for CVCs. through the aid of point-of care ultrasound. As part of your FUJIFILM SonoSite, Inc. product purchase, FUJIFILM SonoSite, Inc. makes SonoSite Solutions available to you.

The program is rooted in quality improvement science and includes a Resource Center that can help guide your practice through an entire improvement cycle.

The available tools and resources are organized in a **Plan-Do-Study-Act (PDSA)** cycle format. The result is a self-guided, quality improvement project that will help increase success rate of PIVs, improve patient satisfaction and eliminate the need for unnecessary CVCs.

Plan

SonoSite Solutions provides you with the evidence and practice guidelines to plan your quality-improvement project. Use this information to prepare a list of tasks to begin your implementation of the SonoSite Six-Point Bundle for Peripheral IVs.

The bundle includes:

1. Select the correct patient
USGPIV are used when the traditional technique fails or is expected to fail.

2. Select the best target
Use ultrasound to confirm an accessible and compressible vein.

3. Select the Catheter Size
Choose size that allows at least one half of the catheter to remain in the vein.

4. Prepare the Skin and Probe
Prep the skin with chlorhexidine, and use sterile gel on a clean vascular probe.

5. Insert the Catheter
Visualize the catheter tip entering the vein, and confirm placement.

6. Secure the Catheter
Wipe area clean, apply chlorhexidine, and place an occlusive dressing.

Overview document

Safety Impact of Point-of-Care Ultrasound

SONOSITE
PERIPHERAL INTRAVENOUS TRAINING PROGRAM

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Improve Peripheral IV Access Through Ultrasound Guidance

Do you experience patients with difficult peripheral IV access?

Do you want to lessen the chance for multiple IV attempts and improve the patient's experience?

Ultrasound guidance can help resolve these issues.

Evidence indicates that, with the use of ultrasound guidance, the success rate of insertions can be as high as 99%[1], patient satisfaction can be improved[2], and nurses with ultrasound visualization skills can help reduce the number of invasive central venous catheters needed for vascular access.

The SonoSite Peripheral Intravenous Training Program is designed to help hospitals increase patient safety and satisfaction, as well as improve the quality of care, by teaching best practices for increasing success rates of peripheral IV insertions particularly in those with difficult access, such as elderly, obese, and other patients who have had multiple IVs.

This comprehensive course includes a combination of online pre-coursework and on-site professional training. Taught by clinical experts (physicians or nurses), the program is supported by highly skilled SonoSite Clinical Application Specialists. The on-site portion of the Peripheral Intravenous Training Program can be customized and scaled to accommodate the desired number of attendees from your facility.

Recommended For: Nurses, nurse practitioners, physician assistants, and other healthcare professionals who place peripheral IVs. (Although ultrasound-guided peripheral IV access is applicable for all areas of the hospital, this course is especially beneficial for ED, ICU, and difficult IV teams.)

Course Hours: 4 hours. However, SonoSite's Education Team will work with you to determine the number of classes and course hours that would best meet your needs.

Discover for yourself why leading medical centers throughout the U.S. have adopted ultrasound for deep peripheral IV placement and have experienced significant benefits. If your institution is interested in this educational program, speak today with your local SonoSite sales representative.

COURSE CONTENT

Online Pre-training
Online content is available for study prior to classroom and lab training.

- Ultrasound Technique
- Physics and Technology
- Clinical Evidence Summaries

On-site Classroom and Lab Components
Professional training and hands-on practice take place at the sponsoring clinical facility.

- The Case for Improving Peripheral IV Access
- Ultrasound Physics as it relates to Peripheral IV Access
- Ultrasound-Guided Techniques for Peripheral IV Catheter Insertion
- Peripheral IV Insertion Checklist
- Ultrasound System Instrumentation
  - Basic Controls
  - Optimization
  - Transducer Selection
- Scanning Workshops on Human Models
- Needle Insertion Practice on High-Fidelity Phantoms

REFERENCES:
1. Gregg SC, et al. Ultrasound-guided peripheral intravenous access in the intensive care unit. J Crit Care 2010;25(3):514-9.
2. Schoenfeld EM, et al. Ultrasound-guided peripheral intravenous access in the emergency department: patient-centered survey. West J Emerg Med 2011;12(4):475-7.
ADDITIONAL REFERENCES:
Constantino TG, et al. Ultrasonography-guided peripheral intravenous access versus traditional approaches in patients with difficult intravenous access. Ann Emerg Med 2005;46(5):456-61.
Miles G, et al. Implementation of a successful registered nurse peripheral ultrasound-guided intravenous catheter program in an emergency department. J Emerg Nurs 2011. [Epub ahead of print].

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Do

To support your execution efforts, you may access sample Peripheral IV insertion protocols used at other institutions and also request on-site, hands-on training on how to perform ultrasound-guided PIVs. **SonoSite Solutions** can even help you organize your own training events on Peripheral IV insertion using ultrasound, allowing for the avoidance of central venous catheters all together.

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Name:_____Date_____

	Ultrasound-Guided Peripheral IV Access Skills Assessment	Yes	No
1	Understand the basic ultrasound system setup and probe selection on the ultrasound system		
2	Select appropriate linear transducer		
3	Select appropriate exam setting		
4	Identify depth markers		
5	Determine the appropriate gain settings by adjusting the Near, Far, and overall Gain buttons		
6	Describe Autogain and when it should be used		
7	Understand the green dot on the screen and its significance to the probe and the image		
8	Turn on and off the center guideline markers (L25 Transducer only)		
9	Describe how the guidelines are used and its relationship to the probe (L25 Transducer only)		
10	Understand the importance of gel and when to use sterile and non-sterile gel		
11	Be able to identify skin, subcutaneous fat, muscles, vessels and nerves on the ultrasound image		
12	Show pulsations of the artery and compression of the vein		
13	Use compression to determine the difference between the vein and the artery		
14	Describe the terms hyperechoic, hypoechoic and anechoic structures and show on an image		
15	Image vessels in the sagittal scan plan		
16	Image vessels in the transverse scan plane		
17	Describe beam thickness		
18	Show good hand position on the transducer		
29	Position vessel directly under probe and center guidelines for skin marking		
20	Position needle into phantom vessel by using the "Sliding Technique" of following the needle tip		
21	Identify the needle tip as it enters the phantom with ultrasound		

SonoSite Specialist_____Date_____

This assessment provides a general overview of the basic ultrasound examination,evaluations, and procedures preformed while performing an ultrasound- guided peripheral IV insertion. This assessment does not constitute professional medical advice or a complete course of training. You should not perform an ultrasound-guided peripheral IV insertion solely in reliance upon the information from this skills assessment.

Protocol Examples:
Peripheral IV Insertion Checklist

Study

Analyzing the data, studying the results, and reflecting upon your organization's experiences are critical components to the success of the **PDSA** cycle. **SonoSite Solutions** not only provides key metrics for benchmark purposes, but also case studies from other sites. Their stories of challenges and successes may help you save time and effort while implementing your own Peripheral IV insertion program.

Case Study:

Results from Successful USGPIV programs

The following poster presentations demonstrate some of the unique programs that different institutions have used when implementing their USGPIV program. These results are shown here as inspiration and to demonstrate that each practice environment requires a unique solution to implement an USGPIV program. The hospital affiliations have been removed. Contact your SonoSite SonoSite representative for help initiating or continuing your USGPIV program.

REDUCING TIME TO DIFFICULT IV STARTS USING ULTRASOUND

EUNJOO AN, RN, BSN, CEN & PHIL BOOTH, RN, MSN, MICN, CEN

- Approximately 90,000 visits to Emergency Department per year.
- Average time spent in Emergency Department is 4 hours.
- Early venous access is a priority in medical and nursing care for high acuity patients.
- Some patients are considered "difficult sticks" due to factors such as obesity, intravenous drug use, and peripheral edema.

HYPOTHESIS

Bedside ultrasonography decreases the time it takes for peripheral venous access in patients without obvious peripheral veins.

Could utilizing bedside ultrasonography decrease the time to peripheral IV access in patients without obvious peripheral veins?

Method Used (Plan-Do-Study-Act)

Plan:

- 17 Registered Nurses self-selected into this performance improvement project.
- Same nurses attended 4 hour class which included lecture and demonstration.
- A Sonosite S-fast® ultrasound imager and a Blue Phantom® practice arm was used in this class.
- 11 patients were identified as "difficult sticks" due to various medical reasons or if nurses could not establish a peripheral IV within 2 attempts.
- Of those 11 patients, 10 had peripheral IVs started using the traditional method with time to IV recorded.

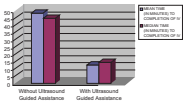
Do:

- After the original nurses were trained, 19 patients were identified as "difficult sticks."
- Using the Sonosite S-fast®, trained Registered Nurses were able to cannulate 17 of the patients successfully with a 20 gauge IV, 1.88 inch catheter.

Study:

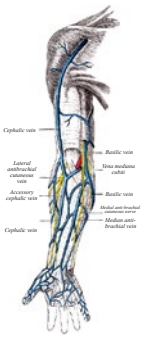
- In the conventional IV group the mean time to IV cannulation was 49.4 minutes (sd = 14.9; median = 45 minutes).
- In the ultrasound guided IV group, the mean time to IV cannulation was 12.1 minutes (sd = 4.1; median = 14 minutes).
- The T-test (equal variances not assumed) revealed a statistically reliable difference between the mean time of IV starts using traditional methods and ultrasound guided venipuncture (T = 8.07, df =11.1, p<0.001).

The bar graph below compares the two groups.

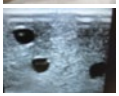


Act:

We are continuing with training and proctoring additional staff to be competent in using bedside ultrasonography for venipuncture in patients without obvious peripheral veins.

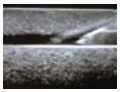


STEP 1.
Identify the vein by using the ultrasound probe.



STEP 2.
Once vein is identified, prep site with chlorhexidine. Place a sterile ultrasound cover on probe and place sterile gel on prepped skin.

STEP 3.
Insert angiocath into vein using ultrasonography to visualize catheter guidance.



STEP 4.
Once catheter is in vein, attach a clave® needleless adapter to catheter.

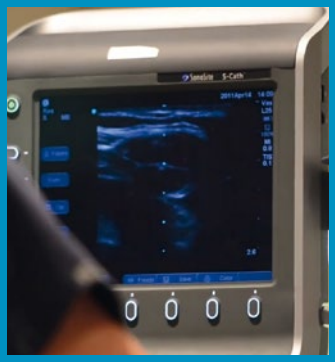
STEP 5.
Flush catheter and secure with sterile dressing,

Conclusion:

- Ultrasound guided vascular access demonstrated significant paired t-test results in reducing the intervention time to a functioning peripheral IV.
- As of February 1st 2011, over 100 successful ultrasound guided IVs have been established.
- Goal: Train over 50% of the Emergency Nurses by the year 2013.
- Add other classes on the use of ultrasound such as bladder scanning to determine urine volume. These classes will be held in cooperation with Emergency Physicians.
- We have enough data to do a follow-up study regarding patients' satisfaction to ultrasound guided IVs.

Act

During the **"Act"** phase, feedback sessions with your implementation team can be conducted to collect new ideas in preparation for the next PDSA cycle. SonoSite is always looking for the latest advancements to help you achieve your patient safety goals. During the **"Act"** phase of your cycle, a SonoSite Representative can introduce these new technologies and techniques to you as they are developed.



SonoSite Products

SonoSite Edge II

The Edge II ultrasound system's enhanced image quality aids your diagnostic confidence. A solid aluminum core helps to protect your investment for the long term. And a splash resistant silicone keyboard makes cleaning and disinfection that much easier. With the Edge II ultrasound system, you have access to a new generation of point-of-care ultrasound visualization.

SonoSite M-Turbo

The M-Turbo® ultrasound system offers striking image quality. Our most versatile system for abdominal, nerve, vascular, cardiac, venous access, pelvic, and superficial imaging. The M-Turbo® ultrasound system gives you striking image quality with sharp contrast resolution and clear tissue delineation. This ultrasound equipment lets you visualize detail, improving your ability to differentiate structures, vessels and pathology.

SonoSite SII

Our mountable ultrasound systems offer a zero footprint. The SII ultrasound system can be mounted to a cart, wall, or ceiling, and have simplified controls that let you focus in on your target areas in a matter of seconds. High-resolution images help you see exactly where to perform procedures and allow for accurate diagnoses when treating patients. The SII ultrasound machine is built to meet U.S. military standards for durability. It boots up quickly, is lightweight, and built with intuitive design for ease of use.

iViz

iViz is your premium imaging solution that connects to hospital medical IT systems and cloud services. iViz gives you access to online resources, applications, and patient vitals information, for all your mobile clinical needs.

The next generation platform that augments the value of ultrasound for clinical users from hospital settings to clinics in remote villages with the ability to perform ultrasound when and where it is needed. iViz delivers fast and improved patient care with superior clarity, mobility, and unprecedented connectivity. Providers can seamlessly access learning resources and patient records, store exams, submit reports, and consult with remote providers for near real-time assessments.

To implement SonoSite Solutions at your institution, visit **www.sonosite.com/solutions**

Edge II

M-Turbo

SII

iViz

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SonoSite Contacts

To request information about **SonoSite Solutions,**
please visit **www.sonosite.com/solutions**

To request information about our company or our products.

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