



Which peripheral access in the DiVA patient ?

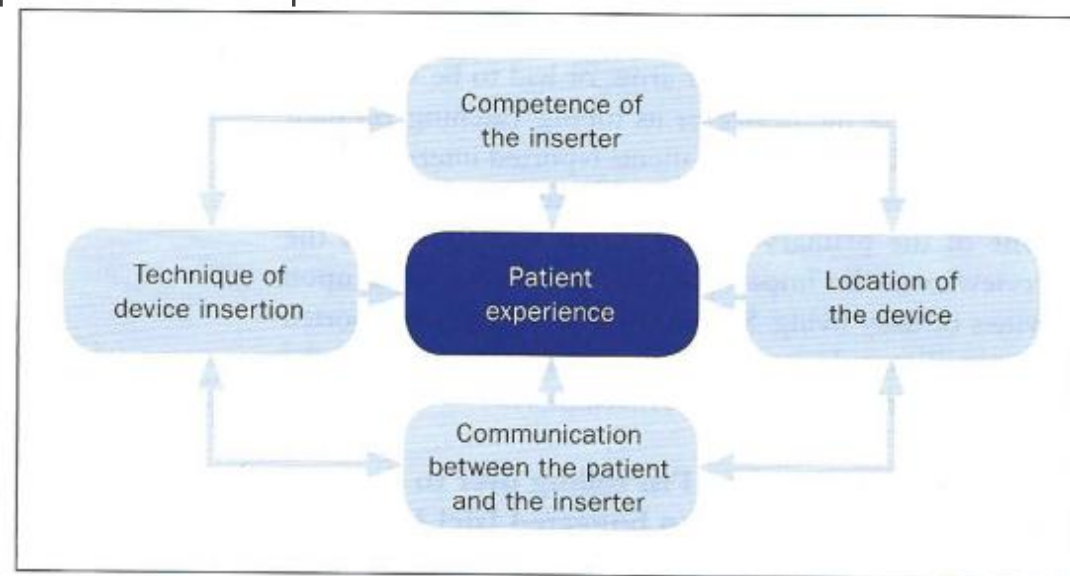
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Experiences of peripheral IV insertion in hospital: a qualitative study

Emily Larsen, Samantha Keogh, Nicole Marsh, Claire Rickard

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- 10 participants.
- The aim of this study was to gain an understanding of patients' experiences of PVC insertion through interview





'They don't listen when you tell them you've got no veins, and they just keeping probing and prodding all over.'

Interview 4

'When they just keep going in and in all the time and moving it around, that's the part that

'Because I've got no veins. I haven't had veins at all, um, not even as a kid ... but no, when I come in, they don't take notice and they just jab wherever they feel like it.'

Interview 4

'And others, they're almost arrogant with the way they, they just ignore what you say and "I know better than you" sort of thing ... the reason I told them that was to save all that drama.'

Interview 7

'Maybe they need to take a little more time to make sure they've got the—the vein tapped out correctly.'

Interview 1

'A person who in my mind is competent has

minimal movement, the movement is very focused and the concentration is very intense and the speed at which the procedure is delivered is very rapid.'

Interview 9



KEY POINTS

- Patients want an experienced peripheral venous catheter (PVC) inserter who listens to them
- Communication failures and a perceived mistrust of patients' own knowledge result in frustration and increased discomfort from repeated insertion attempts
- Patients can clearly identify nurses/other clinicians who are confident and competent PVC inserters
- Forearm-inserted PVCs result in better patient experiences

Peripheral cannulation in 2017

For those of a nervous disposition please look away now

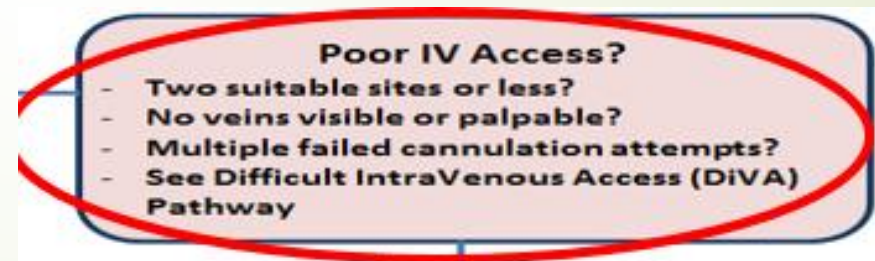


What is a DiVA?



Definition- DiVA

- INS 2016: **Multiple unsuccessful** venepuncture attempts (ie, maximum of 4) to cannulate a vein
- the need for special interventions to establish venous cannulation based on a known history of difficulty due to diseases, injury, and/or **frequent unsuccessful** venepuncture attempts
- a history of difficulties obtaining venous access **based on more than two attempts** to insert an intravenous line and (2) no visible or palpable veins.
- Liverpool – Sydney Aus.



- No real consensus ?- except that the patient has been or has had repeated attempts
- Pt seem to have to prove that they are difficult



Guidance

► INS 2016:

Make no more than **2 attempts** at short peripheral intravenous access per clinician, and limit total attempts to no **more than 4**

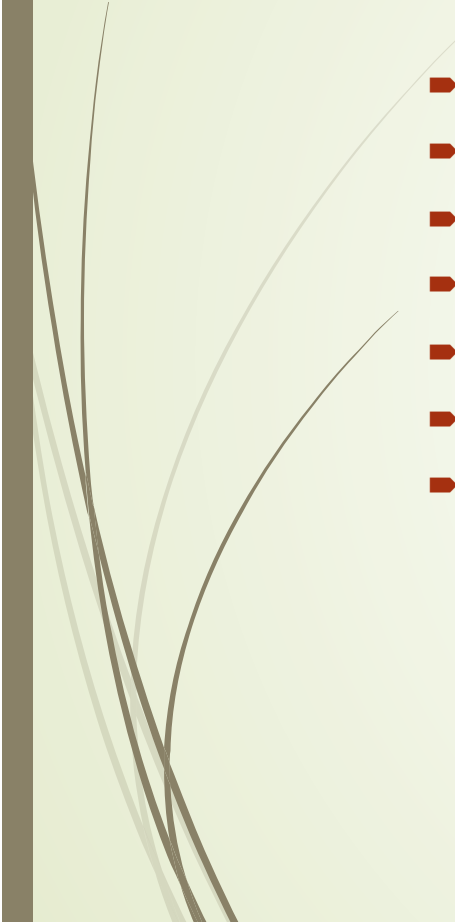
► NSW (Australia) 2013 Peripheral Intravenous Cannula (PIVC) Insertion and Post Insertion Care in Adult Patients:

Inexperienced clinicians should make **no more than two attempts** at cannulation

Local policies – x 2 attempts



Present practice

- Variable
 - PIVC – everyone's role
 - Vascular specialist or not
 - Assessment ?
 - Multiple attempts – acceptable
 - Competitive culture
 - U/S default alternative – but only after attempts
- 



Present practice

➤ Non DiVA

- Can you see a vessel ? Yes
- Can you feel it ? – Yes
- Cannulate it

➤ DiVA

- Can you see a vessel ? No
- Can you feel a vessel ? No
- Attempt to cannulate it – up to 4 times



Posso farcela

Posso farcela

Posso farcela





What does this recipe / approach achieve ?

- Hurting patients
- Creating fear
- Damaging vessels
- Delays
- Complications

Is it not time to change the approach ?
Routinely Add technology to the mix

CVC

- NICE.2002. Guidance on the use of ultrasound locating devices for placing central venous catheters
- Why 15 years later does this not apply to all vascular access - peripheral
- Why is it acceptable to repeatedly stab our patients
- U/ Sound is not the only option
- Training. Time. Experience.



Ultrasonography-Guided Peripheral Intravenous Access Versus Traditional Approaches in Patients With Difficult Intravenous Access

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From the Drexel University College of Medicine, Department of Emergency Medicine, Philadelphia, PA (Costantino, Parikh, Fojtik) and Temple University School of Medicine, Department of Emergency Medicine, Philadelphia, PA (Costantino, Satz).

Study objective: We assess the success rate of emergency physicians in placing peripheral intravenous catheters in difficult-access patients who were unsuccessfully cannulated by emergency nurses. A technique using real-time ultrasonographic guidance by 2 physicians was compared with traditional approaches using palpation and landmark guidance.

Methods: This was a prospective, systematically allocated study of all patients requiring intravenous access who presented to 2 university hospitals between October 2003 and March 2004. Inclusion criterion was the inability of any available nurse to obtain intravenous access after at least 3 attempts on a subgroup of patients who had a history of difficult intravenous access because of obesity, history of intravenous drug abuse, or chronic medical problems. Exclusion criterion was the need for central venous access. Patients presenting on odd days were allocated to the ultrasonographic-guided group, and those presenting on even days were allocated to the traditional-approach group. Endpoints were successful cannulation, number of sticks, time, and patient satisfaction.

Results: Sixty patients were enrolled, 39 on odd days and 21 on even days. Success rate was greater for the ultrasonographic group (97%) versus control (33%), difference in proportions of 64% (95% confidence interval [CI] 39% to 71%). The ultrasonographic group required less overall time (13 minutes versus 30 minutes, for a difference of 17 [95% CI 0.8 to 25.6]), less time to successful cannulation from first percutaneous puncture (4 minutes versus 15 minutes, for a difference of 11 [95% CI -2 to 19.4]), and fewer percutaneous punctures (1.7 versus 3.7, for a difference of 2.0 [95% CI -0.2 to 2.82]) and had greater patient satisfaction (8.7 versus 5.7, for a difference of 3.0 [95% CI 1.2 to 4.29]) than the traditional landmark approach.

Conclusion: Ultrasonographic-guided peripheral intravenous access is more successful than traditional "blind" techniques, requires less time, decreases the number of percutaneous punctures, and improves patient satisfaction in the subgroup of patients who have difficult intravenous access. [Ann Emerg Med. 2005;46:456-461.]

First time insertion success rate 42%

Ultrason-Guided Brachial and Basilic Vein Cannulation in Emergency Department Patients With Difficult Intravenous Access

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Study objective: Emergency department patients who require intravenous access but lack peripheral intravenous sites frequently require central line placement. Blind percutaneous brachial vein cannulation has been proposed as an alternative in these patients but is associated with high failure and complication rates. We evaluated an ultrasound-guided approach to percutaneous deep brachial vein or basilic vein cannulation in ED patients with difficult intravenous access.

Methods: We prospectively enrolled ED patients who required intravenous access in whom there had been 2 unsuccessful attempts at establishing a peripheral intravenous line. Using a 5.5-MHz ultrasound probe, the deep brachial vein or basilic vein was identified and then cannulated with a 2-in, 18- to 20-gauge intravenous catheter. Time from probe placement to cannulation, number of attempts, and complications were recorded.

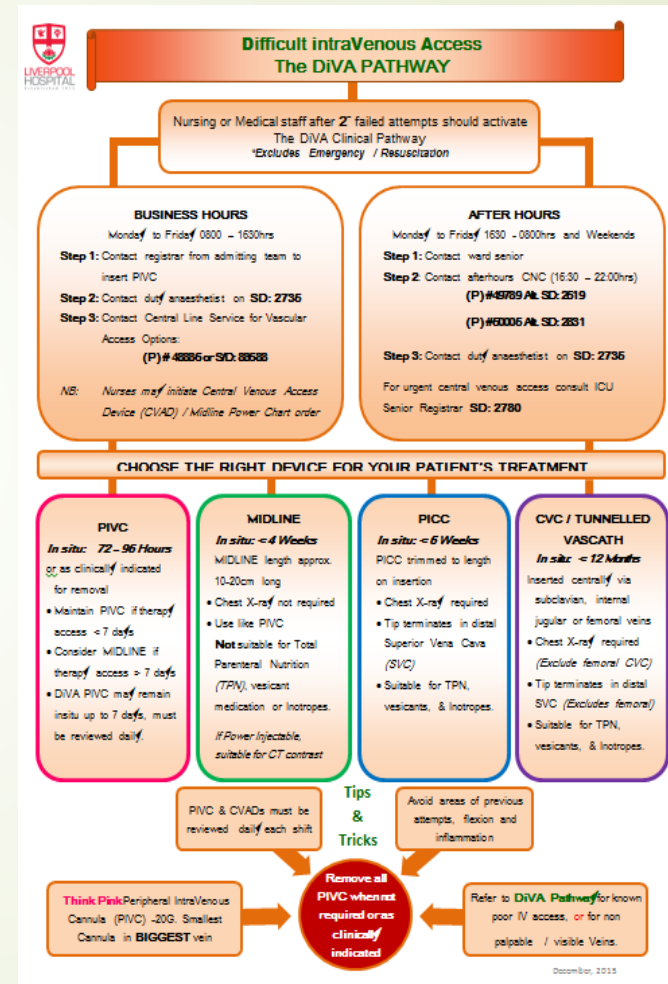
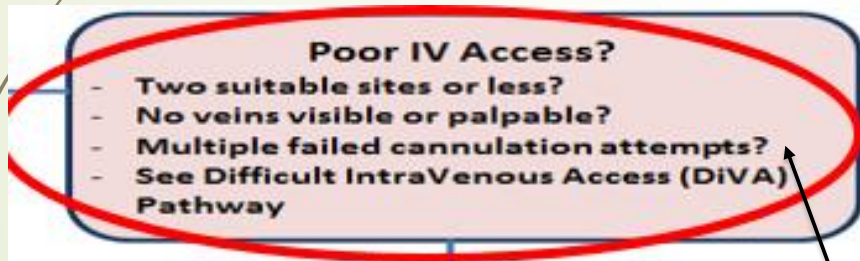
Results: One hundred one patients were enrolled, of whom 50 were injection drug users and 21 were obese. Cannulation was successful in 91 patients (91%) and accomplished on the first attempt in 73 (73%). The mean ($\pm$ SD) time required for cannulation was 77 seconds ($\pm$ 129, range 4 to 600 seconds). The line infiltrated or fell out within 1 hour of cannulation in 8 (8%) patients. One patient reported severe pain. There were 2 (2%)

First time insertion success rate 73%

Publications, pathways to grade DiVA

► IMPLEMENTATION OF A DIFFICULT VENOUS ACCESS (DiVA) PATHWAY

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RESEARCH ARTICLE

Open Access



A clinical pathway for the management of difficult venous access

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Abstract

Background: Many patients are admitted to hospital with non-visible or palpable veins, often resulting in multiple painful attempts at cannulation, anxiety and catheter failure. We developed a difficult intravenous pathway at our institution to reduce the burden of difficult access for patients by increasing first attempt success with ultrasound guidance. The emphasis was to provide a solution for hospitalised patients after business hours by training the after-hours clinical support team in ultrasound guided cannulation.

Methods: Inception cohort study of patients referred to the after-hours clinical support team including outcomes such as number of attempts at cannulation before and after referral, insertion site, type of device inserted and recorded pain score for attempts prior to referral and for attempts by the after-hours clinical support team.

Results: Between January and December 2016, 379 patients were referred to the after-hours clinical support team for placement of a peripheral intravenous catheter under ultrasound guidance. The median number of unsuccessful attempts before referral was 2 (IQR 2, 4), this ranged between 1 attempt to 10 attempts compared to only 1 attempt (IQR 1, 1, $p < 0.001$) with no more than 2 attempts in total by the after-hours clinical support team. The first time success rate by the after-hours clinical support team was 93% ($n = 348$). The median pain score for attempts with ultrasound use was 2/10 (IQR 1–3) compared to 7/10 (IQR 5–9) for previous attempts without ultrasound ($p < 0.001$).

Conclusion: The use of ultrasound guidance for peripheral intravenous catheter insertion by the after-hours clinical support team for patients with difficult venous access has been successful at our institution with 9 out of every 10 catheters inserted at first attempt with significantly lower recorded pain scores.

Keywords: Intravenous catheter, Peripheral venous catheter, Ultrasound

E-VAN_November_2017

A Vascular Assessment Tool

Submitted by: Jon Bell

Comprehensive-Difficult IV Access (C-DIVA) Score

Score	Visual Appearance	Palpable Appearance	History of Difficult Access	Extenuating Factors
0	Many visible veins	Many palpable veins	No difficulty	None
1	Few visible veins	Few palpable veins	Some reported difficulty	Pediatric, Severity, Urgent needs,
2	No visible veins	No palpable veins	Severe difficulty as evidenced by previous central lines or PICCs.	Comorbidities, Emergency conditions

Score	Risk	Action
0-3	Low	Obtain IV access
4-5	Medium	Obtain access with competent practitioner; consider VAS consult
6+	High	Consider emergency intervention (CVC, IO); consult VAS immediately

Derived from A-DIVA score by van Loon, Puijn, Houterman, & Bouwman

Implemented in the ED at St. Joseph Hospital in Bangor, Maine, in February of 2016

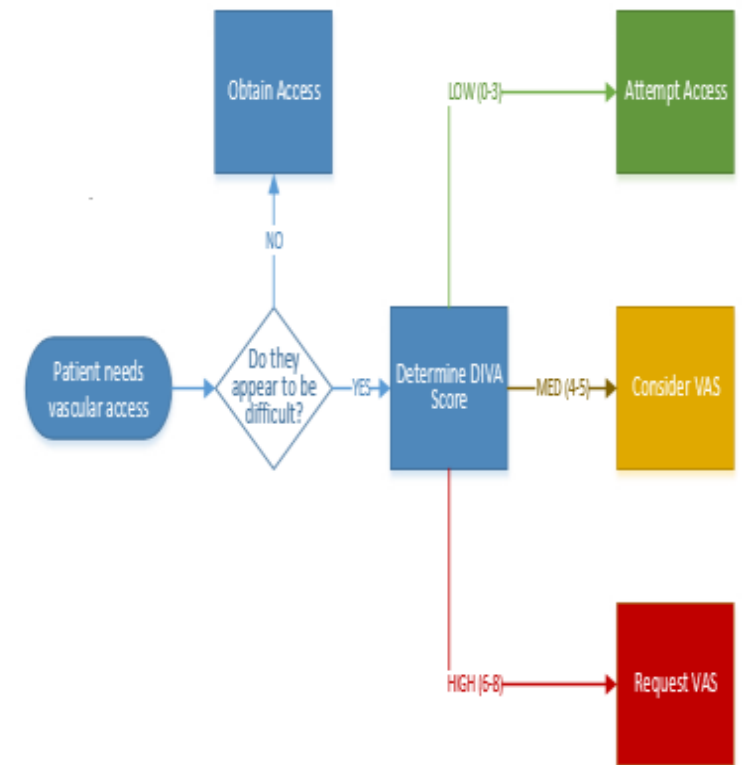
Highly competent IV nurses can attempt **access 1 time** in medium risk patient but a **VAS should be consulted** on many medium risk and all high risk patients.

Less experienced nurses are **advised to consult VAS** early any time that they do not feel confident

Extraneous venepuncture decreased and patients are **rarely stuck more than 2 or 3 times.**

Our VAT now places more than 1,400 ultrasound guided PIVs per year and **boast an overall first stick success (FTS) rate of 88%**

- To be applauded – but while repeated attempts are reduced they still occur



Technologies other than U/S Transillumination / NIR



Difficult peripheral veins: turn on the lights M. Lamperti .M. Pittiruti
British Journal of Anaesthesia 110(6): 891–5(2013)



Technologies – can improve success

- Vascular access specialists responsibility is also to educate, empower others
- For those without the support of specialist teams help to succeed is needed
- Key issues
 - Are they - Easier to use / educate, train
 - Cost effective
 - 1st time success ?
 - Time to cannulate – ER



Future

- Hospital with vascular access specialists – U/S kings & queens
- All other HC workers who cannulate
- Assessed & competent to utilise chosen technology for peripheral IV cannula



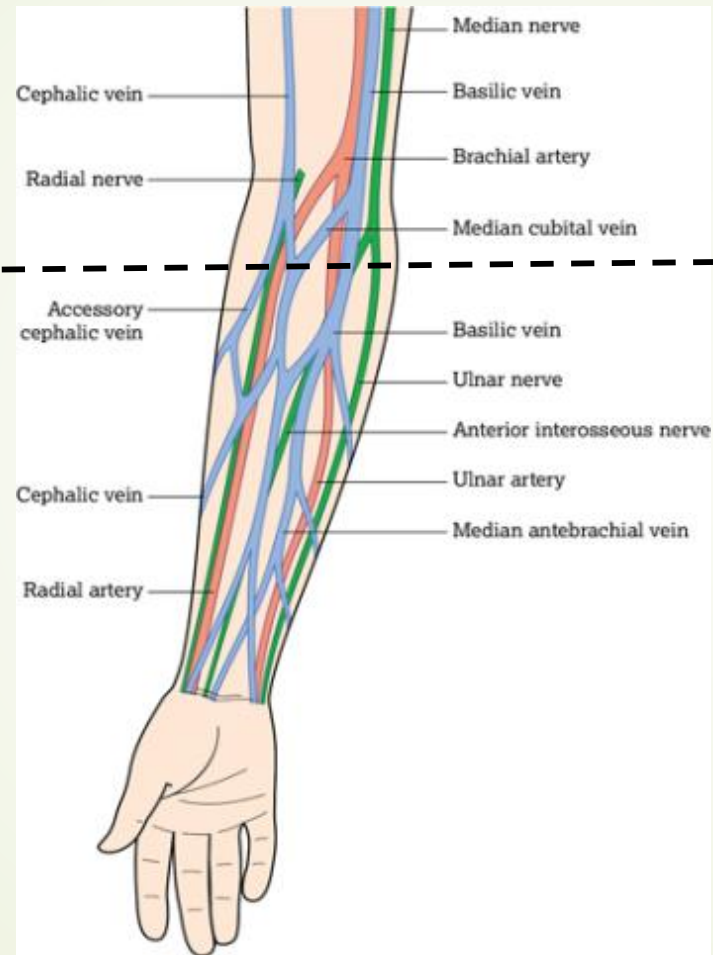
U/S utilised by experienced knowledgeable vascular access specialists



Other chosen technologies in the hands of operators outside vascular access specialists



Suggestion



➤ U/S – for deeper vessels above the antecubital

➤ technologies for superficial vessels below the antecubital fossa



“Superficial peripheral veins are precious

they represent the first choice for resuscitation, short-term intermittent infusion, and some i.v. therapies apart from chemotherapy, high osmolarity and low/high pH infusions, and short-term intermittent therapies

M. Lamperti and M. Pittiruti



To do your best

“It is not enough to do your best
You must know what to do
And then do your best”

W Edwards Deming 1900 -1993

With thanks to P Carr & E Alexandrou

Thank you