The European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

ESRA ITALIAN CHAPTER

30° NATIONAL MEETING

13-15 NOV 2025

NAPOLI
HOTEL RAMADA

Presidents:
Giuseppe Servillo, Fabrizio Fattorini

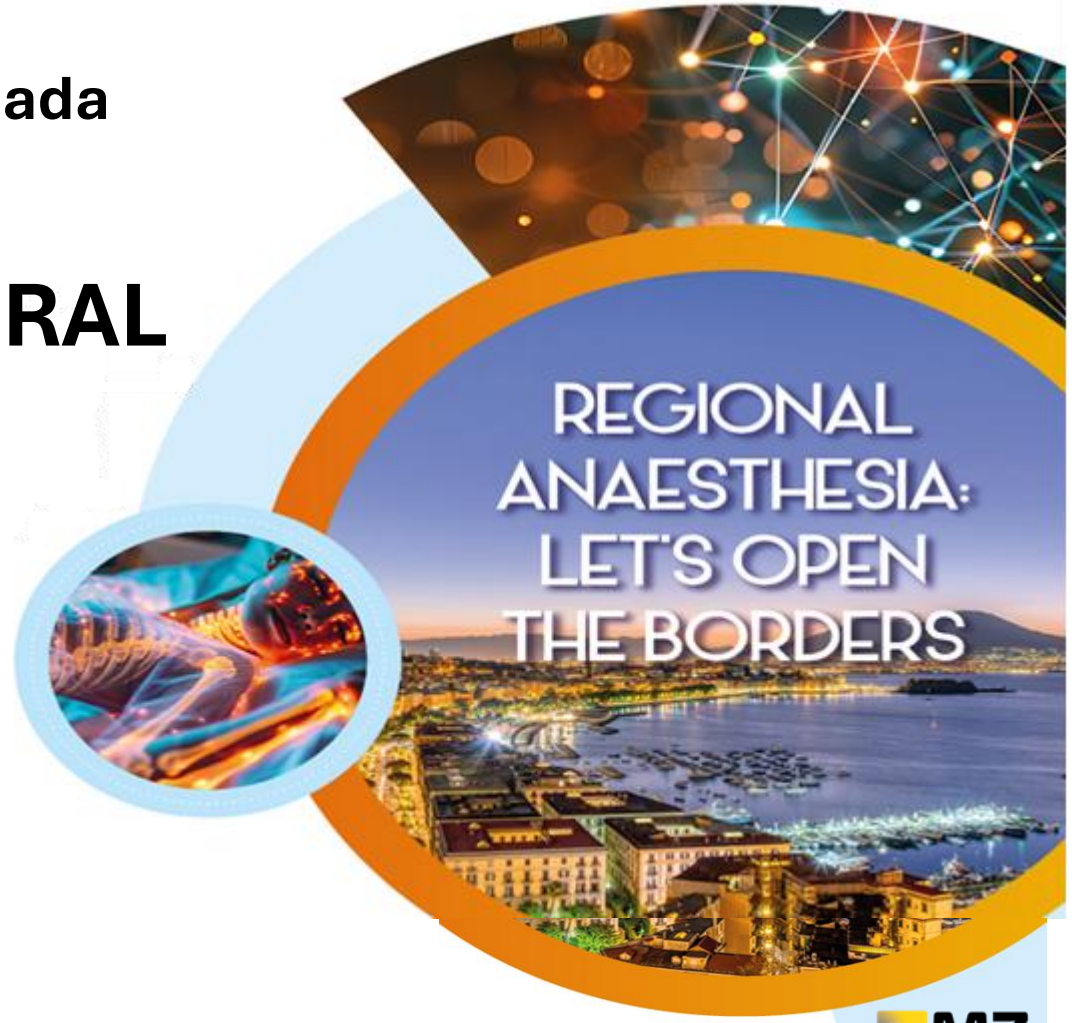
MZ EVENTS

The European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

ESRA ITALIAN CHAPTER | 30° NATIONAL MEETING
13-15 NOV 2025, NAPOLI

Naples, 14 November Hotel Ramada

ULTRASOUND-GUIDED PERIPHERAL VENOUS ACCESS: MINI MIDLINE AND MIDLINE

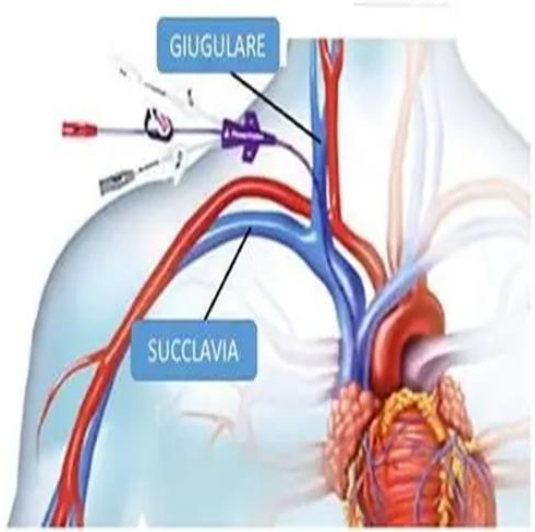


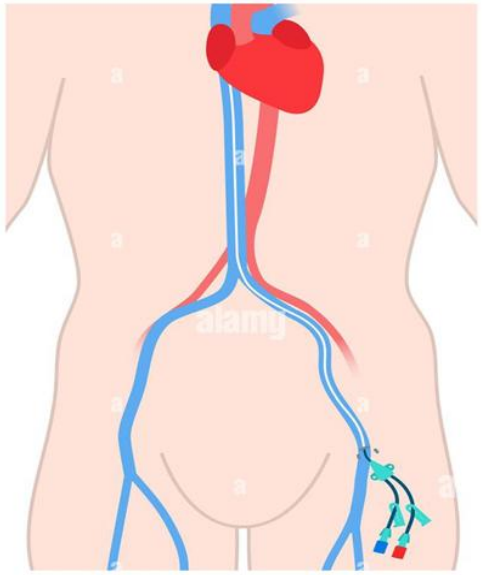
Prepared and presented by Emanuele Ricciardi
Nurse at the Respiratory Intensive Care Unit (RICU)
Fatebenefratelli Hospital

MZ EVENTS

When we refer to peripheral venous access, we mean all venous accesses whose tip is **not positioned**

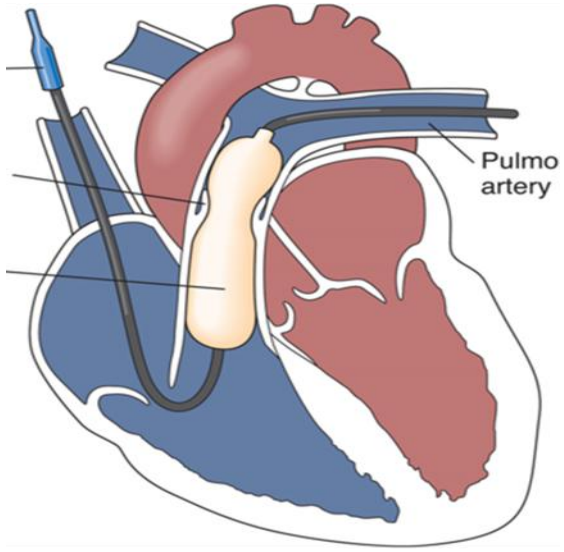
IN THE S. VENA CAVA





IN THE I. VENA CAVA

IN THE RIGHT ATRIUM



Review

JVA The Journal of Vascular Access

The Journal of Vascular Access
1–18

DOI: 10.1177/11297298211023274
journals.sagepub.com/home/jva
SAGE

European recommendations on the proper indication and use of peripheral venous access devices (the ERPIUP consensus): A WoCoVA project

Mauro Pittiruti[1], Ton Van Boxtel[2], Giancarlo Scoppettuolo[1], Peter Carr[3], Evangelos Konstantinou[4], Gloria Ortiz Miluy[5], Massimo Lamperti[6], Godelieve Alice Goossens[7], Liz Simcock[8], Christian Dupont[9], Sheila Inwood[10], Sergio Bertoglio[11], Jackie Nicholson[12], Fulvio Pinelli[13] and Gilda Pepe[1]

A peripheral VAD (PVAD) can be defined as any VAD with the tip not located in SVC or RA or IVC. This definition includes not only VADs that – due to their length and to the venous approach – are meant to be peripheral, but also VADs that are meant to be used as CVAD but whose tip is not in a central vein because of primary or secondary malposition (for example: a PICC that after accidental partial dislodgement has become "too short" and its tip is now in the brachiocephalic vein; or, a central VAD whose tip has migrated into the ipsilateral internal jugular vein).

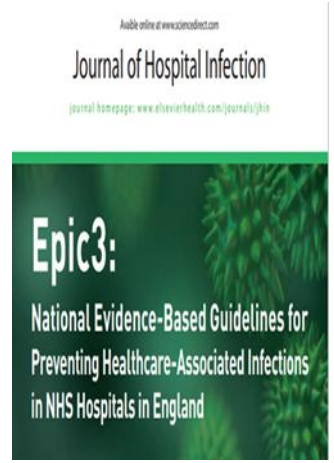
Results
Section 1 – Definition and classification pag. 4

Epic3:
National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England

IVAD28	Peripheral vascular catheter insertion sites should be inspected at a minimum during each shift, and a Visual Infusion Phlebitis score should be recorded. The catheter should be removed when complications occur or as soon as it is no longer required. **New recommendation** *Class D/GPP*

IVAD29	Peripheral vascular catheters should be re-sited when clinically indicated and not routinely, unless device-specific recommendations from the manufacturer indicate otherwise. **New recommendation** *Class B*

GUIDELINES, INCLUDING THE ***EPIC*** AND THE ***INS*** STANDARDS OF PRACTICE, HAVE ISSUED UPDATED RECOMMENDATIONS REGARDING THE INSERTION AND MANAGEMENT OF TRADITIONAL PERIPHERAL VASCULAR ACCESS DEVICES (VADS)



1. The selection of non-joint implantation sites to prevent mechanical complications.
2. Skin antisepsis with 2% chlorhexidine in 70% isopropyl alcohol prior to the insertion of any PVAD.
3. Implementation of sutureless devices
4. Securing and protecting the exit site with transparent semipermeable dressings.
5. The use of pre-assembled polyurethane catheters with extensions is recommended to improve compatibility and reduce the risk of infections.

WoCoVA
World Congress Vascular Access

"Clinicians have become more conscious of the different indications between peripheral versus central VADs, particularly in terms of the chemical characteristics of the infusate and its potential damage to the endothelium. Both INS and GAVeCeLT have released tables that specify which intravenous infusions can be delivered safely by the peripheral route, and which infusions preferably require a central line."[1]

1. *JVA European recommendations on the proper indication and use of peripheral venous access devices (the ERPIUP consensus): A WoCoVA project – Introduction pag, 2*

SOLUTIONS COMPATIBLE WITH PERIPHERAL ADMINISTRATION FOR SHORT- AND MEDIUM-TERM INFUSION

- Solutions with pH between 5 and 9
- Drugs with osmolarity <600 mOsm/L
- Parenteral nutrition with osmolarity <800 – 850 mOsm/L
- Any drug or solution not associated with potential endothelial damage

Are there any exceptions?

Irritants

Cause an inflammatory reaction but no permanent damage.

Vesicants

May cause cellular damage and tissue destruction, potentially leading to exposure of deeper structures.

INS INFUSION NURSES SOCIETY
Setting the Standard for Infusion Care®

NONCYTOTOXIC VESICANT MEDICATIONS and SOLUTIONS

RED LIST Well-recognized vesicants with multiple citations and reports of tissue damage upon extravasation	YELLOW LIST Vesicants associated with fewer published reports of extravasation; published drug information and infusate characteristics indicate caution and potential for tissue damage
Calcium chloride	Acyclovir
Calcium gluconate	Amiodarone
Contrast media - nonionic	Arginine
Dextrose concentration ≥ 12.5%	Dextrose concentration ≥ 10% to 12.5%
Dobutamine	Mannitol ≥ 20%
Dopamine	Nafcillin
Epinephrine	Pentamidine
Norepinephrine	Pentobarbital sodium
Parenteral nutrition solutions exceeding 900 mOsm/L	Phenobarbital sodium
Phenylephrine	Potassium ≥ 60 mEq/L
Phenytoin	Vancomycin hydrochloride
Promethazine	
Sodium bicarbonate	
Sodium chloride ≥ 3%	
Vasopressin	

Drugs in R&D
https://doi.org/10.1007/s40268-020-00329-w
Accepted: 9 November 2020

ORIGINAL RESEARCH ARTICLE

Standardization and Chemical Characterization of Intravenous Therapy in Adult Patients: A Step Further in Medication Safety

DRUG	CONCENTRATION	DILUENT	MEAN OSMOLALITY[a]	DENSITY[b]	MEAN OSMOLARITY[c]	pH	VESICANT
ACYCLOVIR (amp 25 mg/ml 10 ml) TEDEC-MEIJI FARMA, S.A.	5 mg/mL (500 mg/100 mL)	D5W	287±0.58	1.043	300	10.46±0.02	YES
		NS	279±2.08	1.032	288	11.04±0.03	YES
ALBUMIN HUMAN (5% vial 250 mL, 20% ALBUNORM® vial 100 mL) OCTAPHARMA	5%	-	274±1.53	1.042	286	7.12±0.02	NO
	20%	-	274±0.58	1.059	290	7.04±0.01	NO
AMIKACIN (vial 500 mg/2 mL) B.BRAUN MEDICAL, S.A.	5 mg/mL (500 mg/100 mL)	D5W	308±1.00	1.047	322	4.42±0.01	NO
		NS	283±1.53	1.034	293	4.87±0.01	NO
	10 mg/ml	-	304±2.31	1.037	316	4.55±0.03	NO
AMIODARONE (TRANGOREX® amp 150 mg/3 mL) SANOFI-AVENTIS, S.A.	2.4 mg/mL (600 mg/250 mL)	D5W	298±1.53	1.020	304	3.84±0.01	YES
	3.6 mg/mL (900 mg/250 mL)	D5W	298±1.53	1.020	304	3.80±0.01	YES
AMOXICILLIN SODIUM-CLAVULANATE (vial 1 g) SANDOZ FARMACEUTICA, S.A.	10 mg/mL (500 mg/50 mL)	NS	350±1.53	1.036	363	8.91±0.01	NO
	20 mg/mL (2 g/100 mL)	NS	425±0.58	1.040	442	8.90±0.03	NO
AMPICILLIN (GOBEMICINA® vial 500 mg, vial 1 g) LABORATORIOS NORMON	10 mg/mL (1 g/100 mL)	NS	309±0.58	1.034	320	9.03±0.01	NO
	20 mg/mL (2 g/100 mL)	NS	347±2.08	1.038	360	9.04±0.03	NO

In emergency settings, the peripheral administration of vasopressors, inotropes, or potassium-enriched solutions may be acceptable as a temporary measure, provided that close monitoring and prompt transition to central access are ensured.[2]

Chemotherapeutic agents In cases where a CVAD is temporarily contraindicated or the patient declines its use, certain vesicant drugs may be administered via a peripheral VAD under the following strict conditions:

- The PVAD must be freshly inserted specifically for this infusion.
- The infusion should be of short duration and conducted under close medical supervision.
- The PVAD must be removed immediately after the infusion is completed.[3,4]

2. Rippey JC, Carr PJ, Cooke M, et al. Predicting and preventing peripheral intravenous cannula insertion failure in the emergency department: clinician 'gestalt' wins again. Emerg Med Australas 2016; 28(6): 658–665.
3. Yoshida Y, Hoshino S, Aisu N, et al. Administration of chemotherapy via the median cubital vein without implant- able central venous access ports: port-free chemotherapy for metastatic colorectal cancer patients. Int J Clin Oncol 2015; 20(2): 332–337.
4. JVA European recommendations on the proper indication and use of peripheral venous access devices (the ERPIUP consensus): A WoCoVA project – Indication pag, 5

PERIPHERAL VENOUS DEVICES ARE DIVIDED INTO THREE CATEGORIES

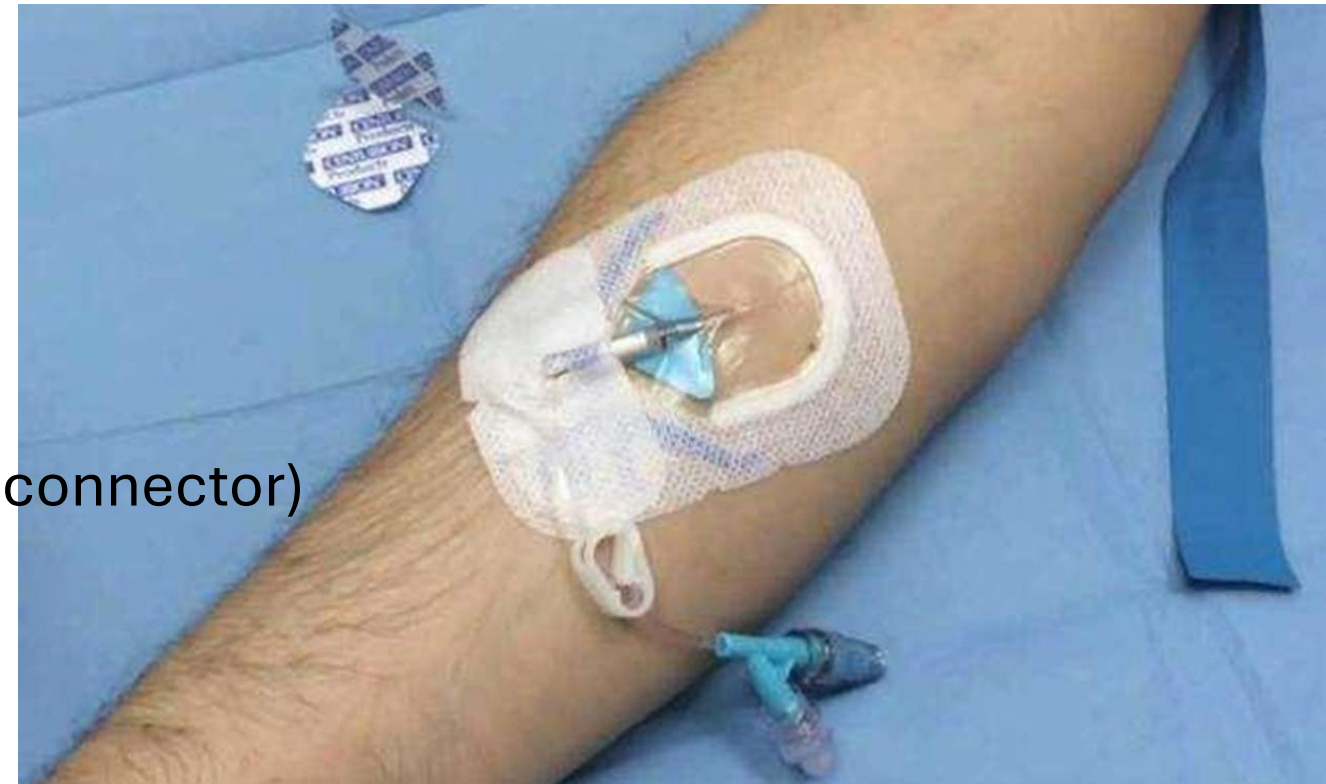
SHORT PERIPHERAL CANNULA

LONG PERIPHERAL CANNULA/MINIMIDLINE

MIDLINE/MIDCLAVICULAR

SHORT PERIPHERAL CANNULA

- **Greater safety for the operator**
  - Safety systems to prevent needlestick injuries (no-stick)
  - Blood-stop systems
- **Improved materials**
  - Polyurethane
- **Better design**
  - Larger wings
  - Pre-assembled extension set
  - Pre-assembled NFC (needle-free connector)



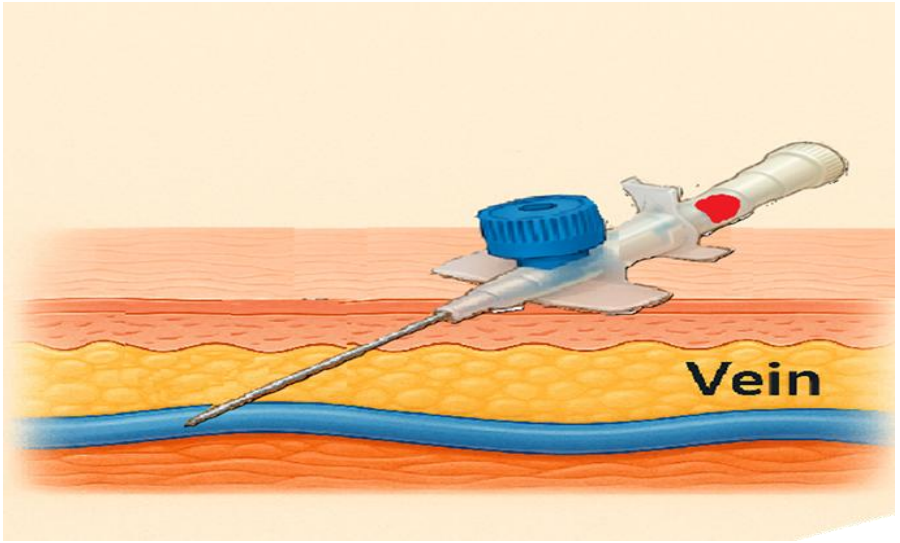
TODAY, THERE ARE TWO ALTERNATIVES!

	STANDARD CANNJULAS	ADVANCED CANNULAS
CATHETER MATERIALS	Typically made of Teflon (PTFE)	Polyurethane
DESIGN	Usually without wings and extension tubing	Wide wings and pre-assembled extension tubing
INDICATION FOR USE	Emergency / short-term access	Intended for prolonged intravenous therapy
CLINICAL SETTING	Emergency Department, Operating Room, Radiology	Inpatient care settings.
EXPECTED DWELL TIME OF THE DEVICE	24-48 hours	1-7 Days
DEVICE COST	Low	High

SHORT CANNULAS WERE NOT DESIGNED FOR ULTRASOUND-GUIDED INSERTION INTO DEEP VEINS

BEING SHORT AND RIGID, THEY HAVE A VERY LIMITED DWELL TIME:

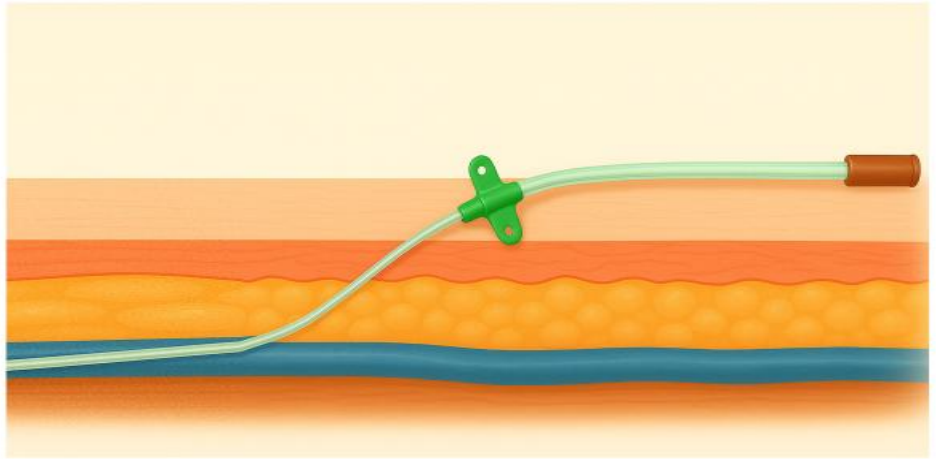
- PRONE TO DISLODGEMENT
- PRONE TO INFILTRATION/EXTRAVASATION
- PRONE TO THROMBOSIS/PHLEBITIS



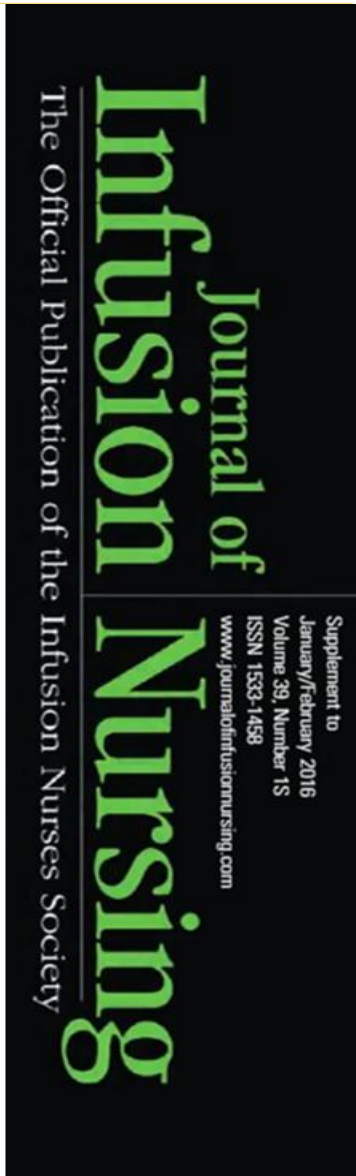
on catheter survival. Longer catheter length (ie, 12 cm) is reported to have longer survival than 5-cm catheter length.[22,23] (III)

Section four: Infusion Equipment Paragraph 22 Vascular Visualization

INS 2016



GREATER LENGTH = LOWER RISK OF DISLODGEMENT



LONG PERIPHERAL CANNULAS OR MINI-MIDLINE

MAIN FEATURES	
MATERIALS	PUR (Polyurethane) PE (Polyethylene) PEBA (Polyether block amide)
LENGTH	6-15 cm
GAUGE	18-20
INSERTION SITE	Arm, forearm
INSERTION TECHNIQUE	Generally direct Seldinger technique
PLACEMENT	Also designed for ultrasound-guided insertion into deep veins (>7 mm depth) in DIVA (Difficult Intravenous Access) patients
EXPECTED DWELL TIME	1-3 Week

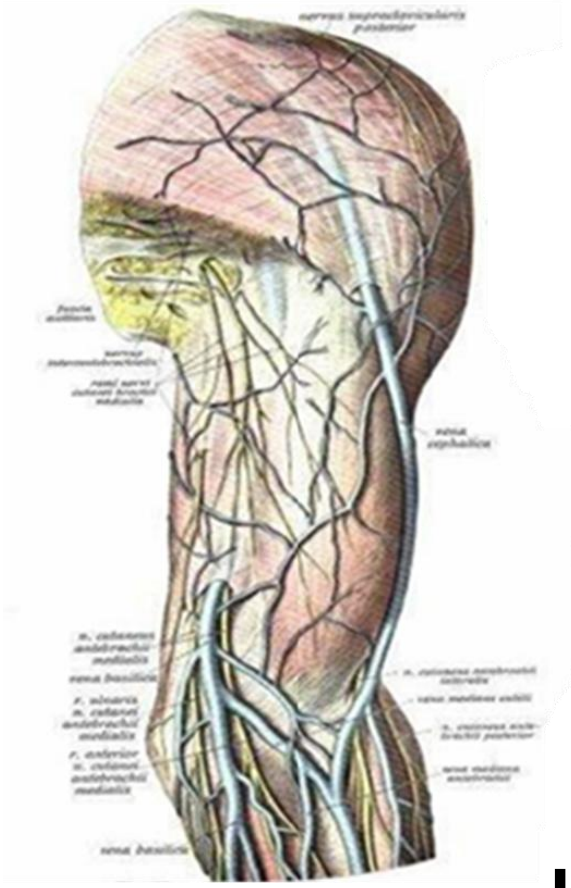
THERE ARE DIFFERENT MINI-MIDLINE CATHETERS BASED ON DESIGN

ALL IN ONE SYSTEM

CATHETER OVER GUIDEWIRE

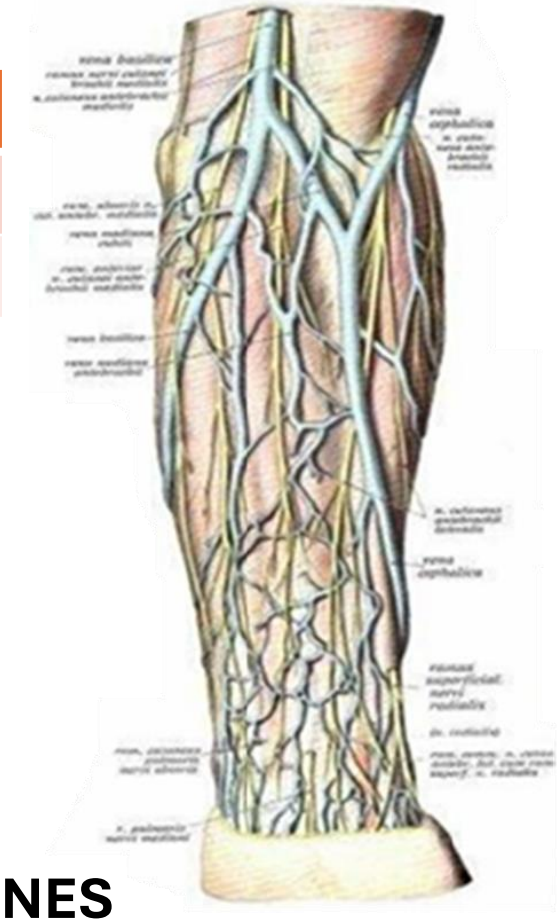
CATHETER OVER-NEEDLE

INSERTION SITE



First Choice
Cephalic vein in the forearm
Basilic vein in the forearm

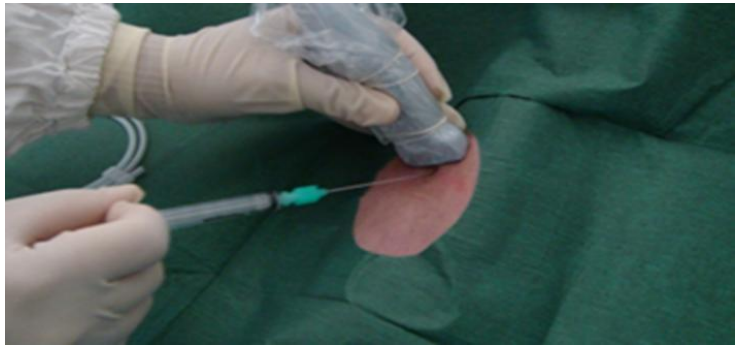
Second Choice
Cephalic vein in the arm
Basilic / brachial / axillary vein in the arm

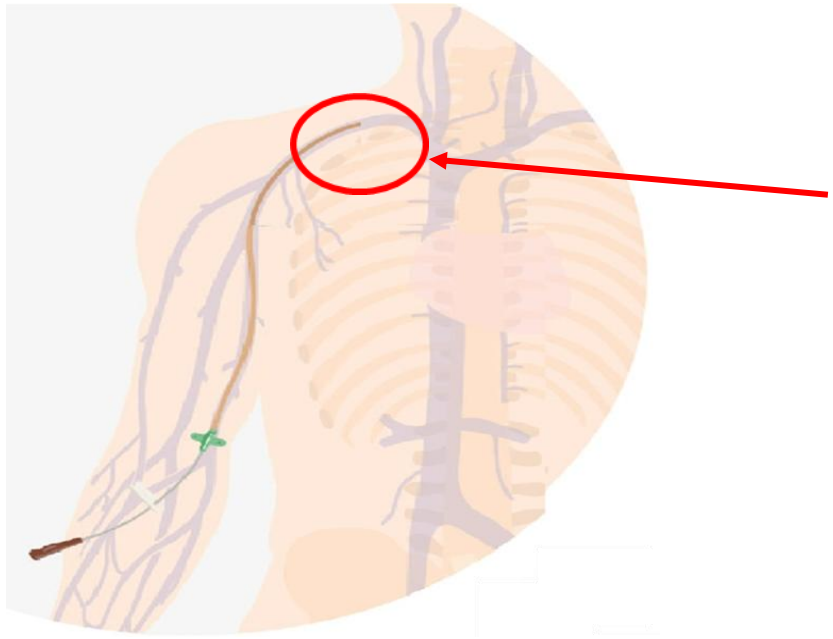


USUALLY RESERVED FOR PICCS AND MIDLINES

MIDLINE/MIDCLAVICULAR

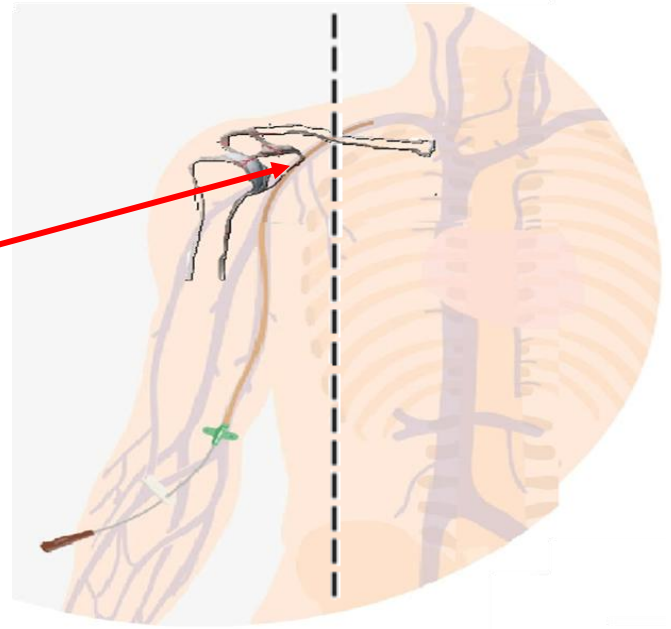
Owing to technological progress and the introduction of the modified Seldinger technique in the early 2000s, this device has undergone a resurgence in clinical use.





The more proximal insertion approach has led to midline catheters—now typically placed in the mid-arm—having their tip positioned within the thoracic segment of the axillary vein, or in some cases, extending into the subclavian vein

Positioned near the midpoint of the clavicle (hence the term midclavicular), this location enhances flow efficiency while the device remains classified as a peripheral venous access



	SHORT PERIPHERAL CANNULAS	LONG PERIPHERAL CANNULAS/MINIMDLINE	MIDLINE/ MIDCLAVICULAR
MATERIALS	< 6 CM	6-15 CM	> 15 CM
LENGTH	TEFLON, PUR	PUR, PE, PEBA	PUR/SILICONE
INSERTION	BLIND	BLIND/ US	US
TECHNIQUE	OVER NEEDLE	OVER GUIDEWIRE	MODIFIED SELDINGER
EMERGENCY USE	YES	YES	NO
OUT-OF-HOSPITAL USE	NO	YES	YES
EXPECTED DWELL TIME	2-7 DAYS	1-3 WEEKS	> 4 WEEKS

CONFUSION IN TERMINOLOGY

A variety of terms have been used across multiple clinical studies to refer to the same device (mini-midline, short midline, midline, etc.). Moreover, the term “PIVC” or simply “PIV” (peripheral intravenous catheter) has become somewhat ambiguous, as it seems to encompass any peripheral VAD, without differentiating among SPCs, LPCs, and MCs.

In North America as well, they have been referred to as “midlines,” leading to some confusion between LPCs and MCs in clinical studies, guidelines, and occasionally in evidence-based recommendations

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Editorial

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1–4

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SAGE

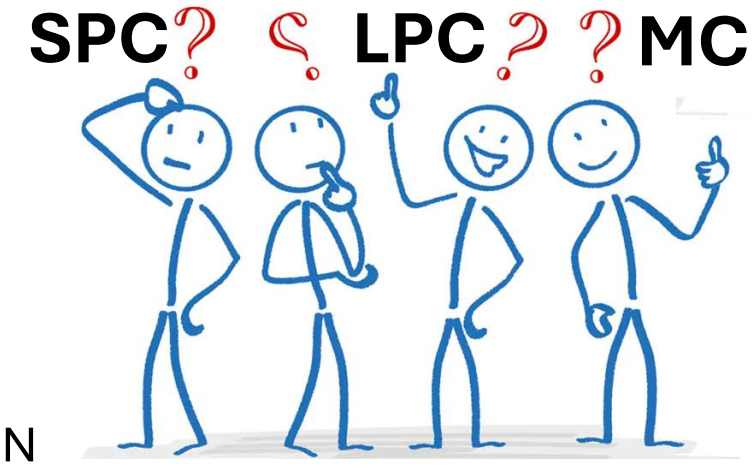
Long peripheral catheters: Is it time to address the confusion?

Kirby R Qin[1], Ramesh M Nataraja[1,2] and Maurizio Pacilli[1,2]

Abstract

Long peripheral catheters are 6–15 cm peripheral dwelling catheters that are inserted via a catheter-over-needle or direct Seldinger (catheter-over-guidewire) technique. When inserted in the upper extremity, the distal tip terminates before reaching the axilla, typically no further than the mid-upper arm. This is distinct from a midline catheter, which is inserted via a modified Seldinger technique and terminates at the axilla. The nomenclature of this catheter is confusing and inconsistent. We have identified over a dozen labels in the literature, all describing the same device. These include '15 cm catheter', 'catheter inserted with a Seldinger method', 'extended dwell/midline peripheral catheter', 'Leaderflex line', 'long catheter', 'long IV catheter', 'long peripheral cannula', 'long peripheral catheter', 'long peripheral venous catheter', 'long polyurethane catheter', 'midline cannula', 'mini-midline', 'peripheral intravenous catheter', 'Seldinger catheter', 'short midline catheter', 'short long line' and 'ultrasound-guided peripheral intravenous catheter'. The purpose of this editorial is to achieve some level of standardisation in the nomenclature of this device. Is it time to address the confusion? We suggest adopting 'long peripheral catheter'. However, we encourage discussion and debate in reaching a consensus.

So, which peripheral intravenous access should be chosen?



PATIENT-CENTERED CARE:

What is the Vascular status?

What is the characteristics of the drug to be infuse?

Will the device be used only in a hospital setting or also in an extra-hospital setting?

Decision-making algorithm →

- **STANDARDIZED CARE DELIVERY**
- **REDUCTION OF THE RISK OF ERRORS**
- **PATIENT SAFETY IMPROVEMENT**


Thank you