



III Convegno Nazionale sui PICC-port

Il protocollo GAVeCeLT per l'impianto sicuro dei PICC-port

Fabrizio Brescia
SOC Anestesia e Rianimazione – Team Accessi Vascolari
Centro di Riferimento Oncologico di Aviano - Pordenone



ROMA 2023
11-12 Dicembre

Sistemi venosi centrali a lungo termine

Chest-port - **PICC-port** - FICC-port

Cateteri Cuffiati Tunnellizzati - CCT

Cateteri tunnellizzati non cuffiati
stabilizzati con SAS

Cateteri per emodialisi a lungo termine
tunnellizzati-cuffiati

Ambiente

Il posizionamento dei sistemi totalmente impiantabili non può avvenire 'bedside' ma richiede un ambiente dedicato quale la sala procedure di un day hospital o di una terapia intensiva

Valutazione ecografica preliminare

Ecografia per venipuntura e tip navigation

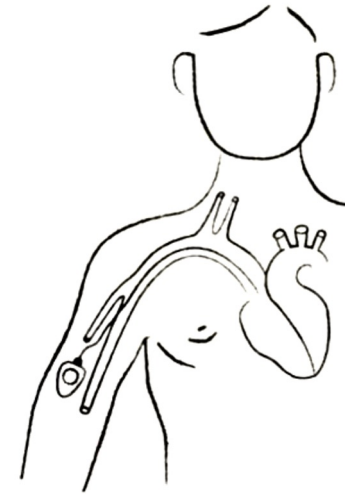
Tip location con ECG IC/ecocardioscopia

Uso dei microintroduttori

Pochi operatori ben addestrati

Bundle di inserzione ben definito

Insertion bundle



**Ridurre al minimo le
complicanze correlate al
posizionamento di un catetere
venoso centrale**

- Complicanze legate alla venipuntura
- Malposizionamenti
- Aritmie
- Trombosi venose catetere-correlate
- Infezioni catetere-correlate

Massimo Lamperti
Andrew R. Bodinhan
Mauro Pittiruti
Michael Balogh
John C. Laguarda
Mahmoud Elbarbary
Thierry Frohic
Dimitris Karakostas
Jack LeDuc
Stephanie Drogier
Giancarlo Soggetti
David Falcó-Segura
Wolfram Schumacher
Roberto Hill
Erik Smeets
Lawrence A. Meeker
Susan T. Verghese

International evidence-based
recommendations on ultrasound-guided
vascular access

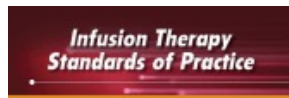
EJA

Eur J Anaesthesiol 2020; 37:344–376

GUIDELINES

European Society of Anaesthesiology guidelines on peri-operative use of ultrasound-guided for vascular access (PERSEUS vascular access)

Massimo Lamperti, Daniele Guerino Biasucci, Nicola Diama, Mauro Pittiruti, Christian Breschan, Davide Valati, Matteo Subert, Vima Traskaitė, Andrius Macas, Jean-Pierre Estebe, Regis Fuzier, Emmanuel Boselli and Philip Hopkins



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10th Edition
Revised 2021

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Valutazione ecografica preliminare

Venipuntura

Diagnosi immediata di complicanze da venipuntura

Tip navigation - corretta direzione del catetere

Tip location - posizione della punta del catetere

Uso globale dell'ecografia

Massimo Lamperti
Andrew R. Bodinhan
Mauro Pittiruti
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John G. Laguardia
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Infusion Therapy
Standards of Practice

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2019 EDITION
REVISED 2021

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Oltre l'ecografia...

Antisepsi cutanea con clorexidina al 2% in alcool

Massime precauzioni di barriera

Scelta corretta della sede della tasca

Punti intradermici e colla in cianoacrilato

Strategie che aumentano la sicurezza
e l'economicità della procedura

**PICC-port:
per i pazienti
oncologici**

**Indicazioni, corretta tecnica
di impianto e gestione** hanno
sempre un impatto sulla
funzionalità del dispositivo e
sull'incidenza delle complicanze,
anche quelle tardive

Indicazioni

Original research article

A multicenter retrospective study on 4480 implanted PICC-ports: A GAVeCeLT project

Sergio Bertoglio^{1,2}, Maria Giuseppina Annetta³, Fabrizio Brescia⁴, Alessandro Emoli⁵, Fabio Fabiani⁴, Maria Fino⁴, Domenico Merlicco⁶, Andrea Musaro⁷, Marina Orlandi⁸, Laura Parisella⁴, Fulvio Pinelli⁸, Simona Reina², Valentina Selmi⁸, Nicola Solari², Fausto Tricarico⁹ and Mauro Pittiruti¹⁰

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Original research article

PICC-PORT totally implantable vascular access device in breast cancer patients undergoing chemotherapy

Sergio Bertoglio^{1,2}, Ferdinando Cafiero², Paolo Meszaros³, Emanuela Varaldo^{1,2}, Eva Blondeaux⁴, Chiara Molinelli⁴ and Michele Minuto^{1,2}

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Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com



PICC-PORT: Valid indication to placement in patient with results of extensive skin burns of the neck and chest in oncology. The first case in the scientific literature

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A multicenter retrospective study on 4480 implanted PICC-ports: A GAVeCeLT project

Sergio Bertoglio^{1,2}, Maria Giuseppina Annetta³, Fabrizio Brescia⁴, Alessandro Emoli⁵, Fabio Fabiani⁴, Maria Fino⁴, Domenico Merlicco⁶, Andrea Musaro⁷, Marina Orlandi⁸, Laura Parisella⁴, Fulvio Pinelli⁸, Simona Reina², Valentina Selmi⁸, Nicola Solari², Fausto Tricarico⁹ and Mauro Pittiruti¹⁰

Insertion and maintenance of the device

PICC-ports insertion was consistently performed by properly trained clinicians (physicians or nurses), in a dedicated procedural room, adopting maximal barrier and antiseptic precautions, as required by local institutional protocols. The procedure was usually performed under local anesthesia only; intravenous sedation was added only in non-compliant or uncooperative patients.

Both the right and the left upper limb were utilized for insertion, the choice being guided by pre-procedural scan of the veins, also considering possible local contraindications (previous venous thrombosis, previous axillary dissection, abnormalities of the limb, etc.)^{7,10} and the patient's preference. Catheter insertion was performed by ultrasound-guided puncture and cannulation of deep veins (basilic, brachial, or axillary vein) at the proximal third of the upper arm (the "yellow zone," according to Dawson's ZIM—Zone Insertion Method) (Figure 2).¹¹ The accessed vein was measured and a catheter/vein ratio ≤ 0.33 was considered appropriate.¹² Location of the catheter tip in the proximity of the cavo-atrial junction was consistently verified by intra-procedural methods (preferably by intracavitary ECG, or—as an alternative—by ultrasound-based tip location or fluoroscopy).

Progetto GAVeCeLT

5 Centri italiani - 4480 PICC-ports

Table 1. Patients' characteristics and insertion procedure.

Patients' characteristics			
Number of patients	4,480		
Mean age (range)	53.9 (12-91) years		
Gender	Male	887	19.8
	Female	3593	80.2
Disease	Breast cancer	2742	61.2
	Colon cancer	694	15.5
	Head and neck cancer	220	4.9
	Lung cancer	189	4.2
	Ovarian cancer	117	2.6
	Miscellaneous cancer	391	8.7
	Non-cancer disease	127	2.8
Insertion procedure			
Mean duration (range)	28 min (15–42)		
Technical details	Local anesthesia only	4466	99.7
	Local anesthesia + sedation	14	0.3
	Tip location by intracavitary ECG	4,128	92.1
	Tip location by ultrasound or fluoroscopy	352	7.9
	Subcutaneous tunnel	2810	62.7
	No tunnel	1670	37.3

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Table 2. Immediate/early adverse events (first 30 days after insertion).

	TAE		SAE	
	n	%	n	%
Transient ecchymosis	806	18	—	—
Symptomatic CRT	33	0.7	—	—
Local infection	24	0.5	7	0.2
CRBSI	2	0.04	1	0.02
Hematoma	9	0.2	1	0.02
Unpaired wound healing	10	0.2	1	0.02
Catheter occlusion	2	0.04	—	—
Chamber flip	4	0.09	—	—
Cardiac arrhythmia	3	0.07	—	—
Subcutaneous abnormal reaction	2	0.04	—	—
TOTAL	904	20.2	10	0.2

TAE: transient adverse event (i.e. not requiring removal); SAE: serious adverse event (i.e. requiring removal); CRT = catheter related thrombosis; CRBSI = catheter related bloodstream infection.

Table 3. Late adverse events (more than 30 days after insertion).

	TAE		SAE	
	n°	%	n°	%
Symptomatic CRT	60	1.3	1	0.02
PWO	55	0.4	—	—
Local infection	20	0.4	7	0.2
CRBSI	18	0.4	18	0.4
Skin decubitus and reservoir exposition	4	0.1	4	0.1
Catheter dislodgment with tip malposition	6	0.1	6	0.1
Catheter occlusion	4	0.1	1	0.02
Drug extravasation	5	0.1	5	0.1
Cardiac arrhythmia	4	0.1	—	—
TOTAL	176	3.9	42	0.9

TAE: transient adverse event (i.e. not requiring removal); SAE: serious adverse event (i.e. requiring removal); CRT: catheter related thrombosis; PWO: persistent withdrawal occlusion; CRBSI: catheter-related bloodstream infection.

Tecnica di impianto

Original research article

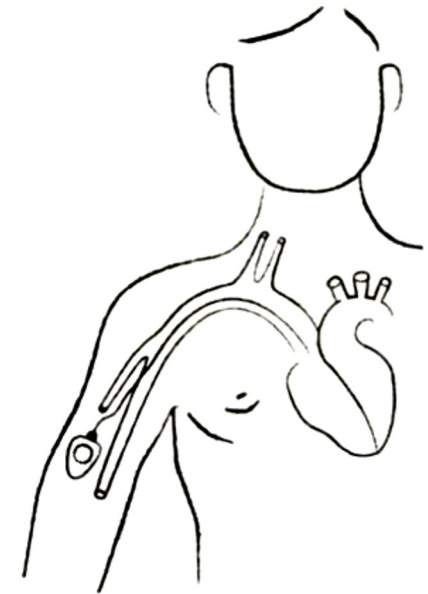
A GAVeCeLT bundle for PICC-port insertion: The SIP-Port protocol

Fabrizio Brescia¹ , Maria Giuseppina Annetta² ,
Fulvio Pinelli³  and Mauro Pittiruti⁴ 

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Poche e chiare raccomandazioni basate su evidenze scientifiche capaci di agire sinergicamente per fornire massima sicurezza, efficacia ed economicità di una determinata procedura

Tecnica di impianto

8 steps

Original research article

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A GAVeCeLT bundle for PICC-port insertion: The SIP-Port protocol

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Table 1. The eight steps of the SIP-P protocol.

Step 1	Pre-procedural assessment—systematic ultrasound examination of the veins of the arms (according to the RaPeVA protocol) so to choose the most appropriate vein and the best location for the reservoir
Step 2	Appropriate antiseptic technique—strict policy of hand hygiene, skin antiseptics with 2% chlorhexidine in 70% isopropyl alcohol, and use of maximal barrier precautions
Step 3	Choice of vein size and tunneling options—assessment of the diameter of the vein (considering that the ideal catheter-vein ratio should be of 1:3 or less), and evaluation of the opportunity of tunneling the catheter (considering that the reservoir should be in the green zone or on the border between yellow and green zone—according to Dawson's ZIM: thus, if the most appropriate vein is in the yellow zone the catheter must be tunneled)
Step 4	Clear identification of median nerve and brachial artery—identify each structure before venipuncture, using ultrasound
Step 5	Ultrasound-guided venipuncture—ultrasound-guided puncture and cannulation of a deep vein of the arm (either basilic, brachial, or axillary vein), preferably adopting the short axis/out-of-plane approach, always using a micro-introducer kit
Step 6	Ultrasound-based tip navigation—assess the correct direction of the guidewire by a supra-clavicular ultrasound scan (see the ECHOTIP protocol)
Step 7	Intra-procedural assessment of tip location—use intracavitary ECG and/or ultrasound (subcostal or apical view, using the “bubble test”: see the ECHOTIP protocol)
Step 8	<i>Appropriate placement of the reservoir</i> —subcutaneous placement of the reservoir above the biceps muscle, creating the pocket by hydro-dissection with local anesthetic and normal saline), closing the incision with intradermal absorbable sutures and cyanoacrylate glue

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Valutazione ecografica preliminare - RaPeVA

Strumento clinico rapido ed efficace per una valutazione ecografica sistematica delle vene del braccio e della regione cervico-toracica, con l'obiettivo di scegliere l'approccio migliore e il miglior sito di venipuntura

Editorial

The SIP protocol update: Eight strategies, incorporating Rapid Peripheral Vein Assessment (RaPeVA), to minimize complications associated with peripherally inserted central catheter insertion

Fabrizio Brescia¹, Mauro Pittiruti²,
Timothy R Spencer³ and Robert B Dawson⁴

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The seven steps of the Rapid Peripheral Vein Assessment (RaPeVA).

Step 1	Visualization of the cephalic vein at the antecubital fossa
Step 2	Identification of the artery and brachial veins and of the confluence between the antecubital vein and basilic vein
Step 3	Identification of the basilic vein in the bicipital-humeral groove
Step 4	Examination of the nerve-vascular bundle of the arm
Step 5	Visualization of the cephalic vein over the biceps muscle
Step 6	Examination of the axillary vein in the infraclavicular area
Step 7	Examination of the internal jugular, the subclavian, and the brachio-cephalic vein in the supraclavicular area

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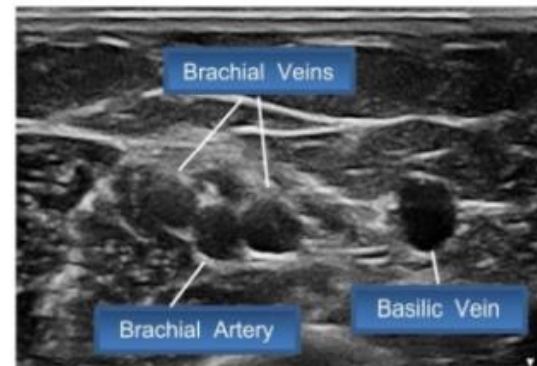
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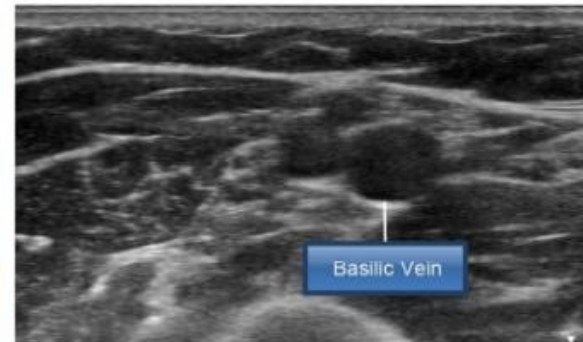
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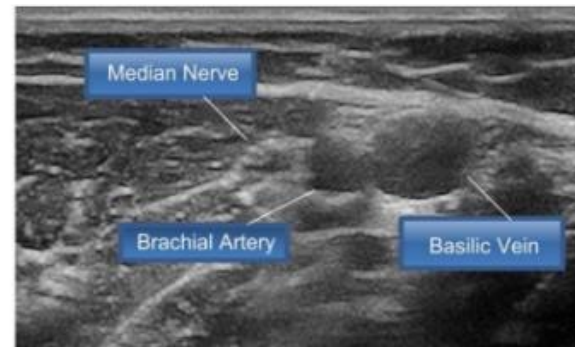
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Step 4	Examination of the nerve-vascular bundle of the arm

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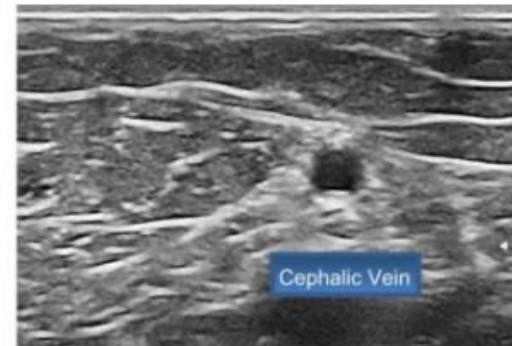
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Step 5	Visualization of the cephalic vein over the biceps muscle

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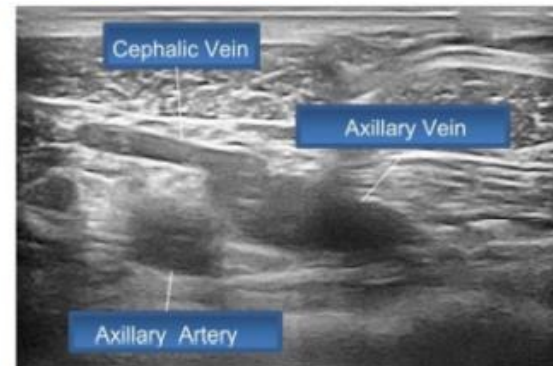
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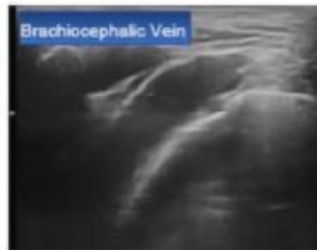
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Step 4	Examination of the nerve-vascular bundle of the arm
Step 5	Visualization of the cephalic vein over the biceps muscle
Step 6	Examination of the axillary vein in the infraclavicular area
Step 7	Examination of the internal jugular, the subclavian, and the brachio-cephalic vein in the supraclavicular area

Editorial

The SIP protocol update: Eight strategies, incorporating Rapid Peripheral Vein Assessment (RaPeVA), to minimize complications associated with peripherally inserted central catheter insertion

Fabrizio Brescia¹, Mauro Pittiruti²,
Timothy R Spencer³ and Robert B Dawson⁴

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Step 1

Table 1. The eight steps of the SIP-P protocol.

Step 1	Pre-procedural assessment—systematic ultrasound examination of the veins of the arms (according to the RaPeVA protocol) so to choose the most appropriate vein and the best location for the reservoir
--------	--

Valutazione ecografica preliminare - RaPeVA

Escludere anomalie venose quali trombosi, stenosi, compressione esterna, variazioni anatomiche di dimensioni e forma delle vene

Valutazione strutture circostanti – nervi e arterie

Original research article

A GAVeCeLT bundle for PICC-port insertion: The SIP-Port protocol

Fabrizio Brescia¹, Maria Giuseppina Annetta²,
Fulvio Pinelli³ and Mauro Pittiruti⁴

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Editorial

The SIP protocol update: Eight strategies, incorporating Rapid Peripheral Vein Assessment (RaPeVA), to minimize complications associated with peripherally inserted central catheter insertion

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Step 2

Table 1. The eight steps of the SIP-P protocol.

Step 2	Appropriate antiseptic technique—strict policy of hand hygiene, skin antisepsis with 2% chlorhexidine in 70% isopropyl alcohol, and use of maximal barrier precautions
--------	--

Massime precauzioni di barriera



epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England

H.P. Loveday^{a*}, J.A. Wilson^a, R.J. Pratt^a, M. Golsorkhi^a, A. Tingle^a, A. Bak^a, J. Browne^a, J. Prieto^a, M. Wilcox^a

Copricapo non sterile, maschera non sterile, camice sterile, guanti sterili, telo sterile a grandezza naturale sopra il paziente, adeguata protezione sterile della sonda dell'ecografo

4.7 Maximal Sterile Barrier Precautions during Catheter Insertion

Maximal sterile barrier precautions for the insertion of central venous catheters reduces the risk of infection

The importance of strict adherence to hand decontamination and the aseptic technique as the cornerstone for preventing catheter-related infection is widely accepted. Although this is considered adequate for preventing infections associated with the insertion of short peripheral venous catheters, it is recognised that central venous catheterisation carries a significantly greater risk of infection.

Studies examined by HICPAC concluded that if MSB precautions were used consistently during CVC insertion, catheter contamination and subsequent catheter-related infections could be reduced significantly.^{343,352,443,444} A prospective randomised trial that tested the efficacy of MSB precautions to reduce infections associated with long-term, non-tunnelled subclavian silicone catheters, compared with routine procedures, found that they decreased the risk of CR-BSI significantly.⁴⁴³

MSB precautions involve wearing sterile gloves and gown, cap and mask, and using a full-body sterile drape during insertion of the catheter.³⁵⁴ It has been generally assumed that CVCs inserted in the operating theatre pose a lower risk of infection than those inserted on inpatient wards or other patient care areas.³⁷² However, data examined by HICPAC from two prospective studies suggest that the difference in risk of infection depended largely on the magnitude of barrier protection used during catheter insertion, rather than the surrounding environment (i.e. ward vs operating theatre).^{345,443}

A systematic review of the value of MSB precautions to prevent CR-BSI defined the components as: the person inserting the catheter should wear a head cap, face mask, sterile body gown and sterile gloves, and use a full-size sterile drape.

Step 3

Table 1. The eight steps of the SIP-P protocol.

Step 3	Choice of vein size and tunneling options—assessment of the diameter of the vein (considering that the ideal catheter-vein ratio should be of 1:3 or less), and evaluation of the opportunity of tunneling the catheter (considering that the reservoir should be in the green zone or on the border between yellow and green zone—according to Dawson's ZIM: thus, if the most appropriate vein is in the yellow zone the catheter must be tunneled)
--------	---

Scelta della vena e tunnelizzazione del catetere

Scegliere un rapporto catetere/vena appropriato (rapporto ideale 1:3 o meno) in modo da ridurre il rischio di trombosi venosa correlata al catetere

Intensive Care Med
DOI: 10.1007/s00134-012-2597-x

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International evidence-based recommendations on ultrasound-guided vascular access

Infusion Therapy Standards of Practice

Uma A. Gargal, MD, BA, BCOS BC, CRNP, FAHA
Lynn Hedberg, MS, RN, NPD BC, CRNP
Mary E. Hapke, PhD, RNAC, FAAN
Daphne Broadhurst, RN, BS, CMAAC
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Mary Alexander, MA, RN, CRNP, CDE, FAAN

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Eur J Anaesthesiol 2020; 37:344–376

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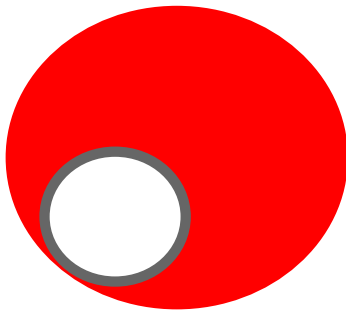
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--------	---

Scelta della vena e tunnellizzazione del catetere



Reducing catheter-related thrombosis using a risk reduction tool centered on catheter to vessel ratio

Timothy R. Spencer  & Keegan J. Mahoney

Journal of Thrombosis and Thrombolysis 44, 427–434 (2017) | [Cite this article](#)

$$1 \text{ Fr} = 1/3 \text{ mm}$$

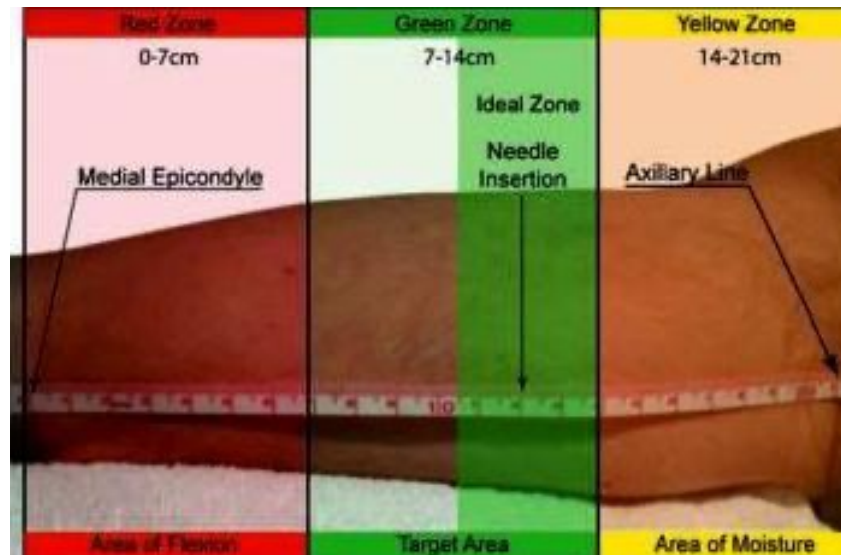
French	Mm	Optimal vein size
3	1	3 mm
4	1.33	4 mm
5	1.66	5 mm
6	2	6 mm
7	2.33	7 mm

Step 3

Table 1. The eight steps of the SIP-P protocol.

Step 3	Choice of vein size and tunneling options—assessment of the diameter of the vein (considering that the ideal catheter-vein ratio should be of 1:3 or less), and evaluation of the opportunity of tunneling the catheter (considering that the reservoir should be in the green zone or on the border between yellow and green zone—according to Dawson's ZIM: thus, if the most appropriate vein is in the yellow zone the catheter must be tunneled)
--------	---

Scelta della vena e tunnellizzazione del catetere



PICC Zone Insertion Method™ (ZIM™): A Systematic Approach to Determine the Ideal Insertion Site for PICCs in the Upper Arm

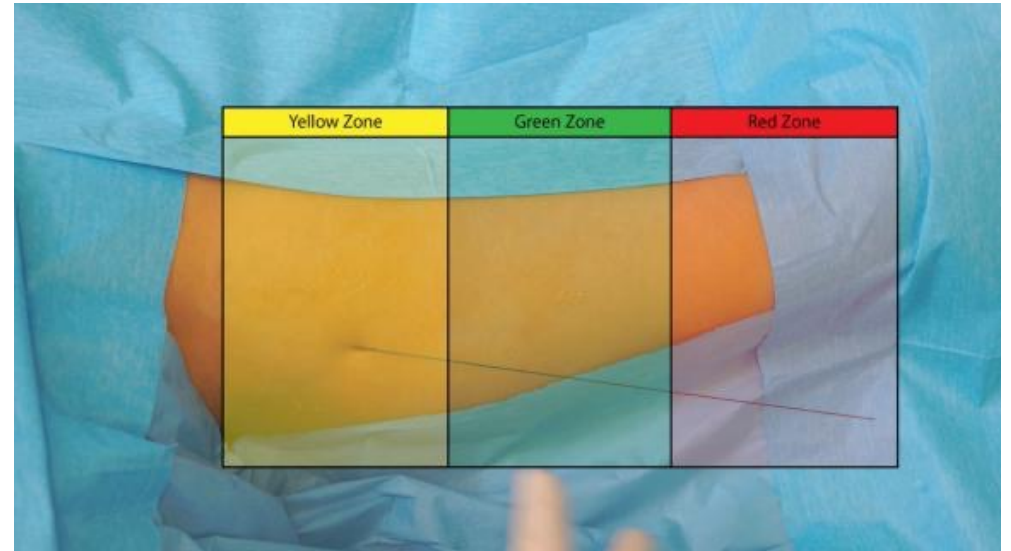
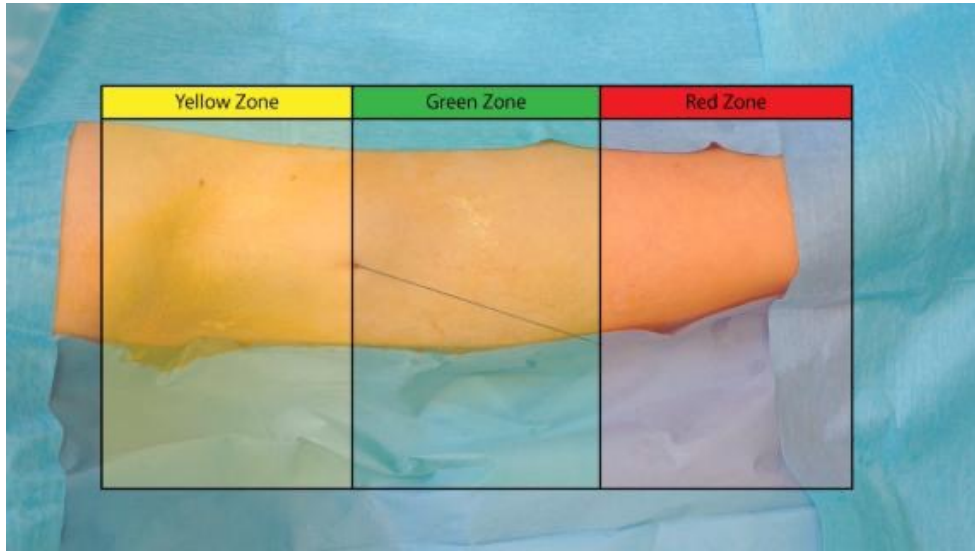
Robert B. Dawson
MSA, BSN, RN, CRNI, CPUI, VA-BC

Step 3

Table 1. The eight steps of the SIP-P protocol.

Step 3	Choice of vein size and tunneling options—assessment of the diameter of the vein (considering that the ideal catheter-vein ratio should be of 1:3 or less), and evaluation of the opportunity of tunneling the catheter (considering that the reservoir should be in the green zone or on the border between yellow and green zone—according to Dawson's ZIM: thus, if the most appropriate vein is in the yellow zone the catheter must be tunneled)
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Scelta della vena e tunnellizzazione del catetere



Step 3

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--------	---

Scelta della vena e tunnellizzazione del catetere



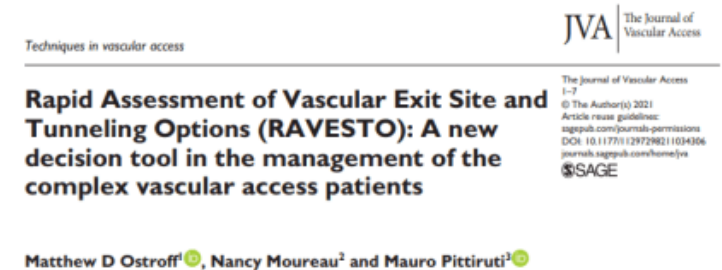
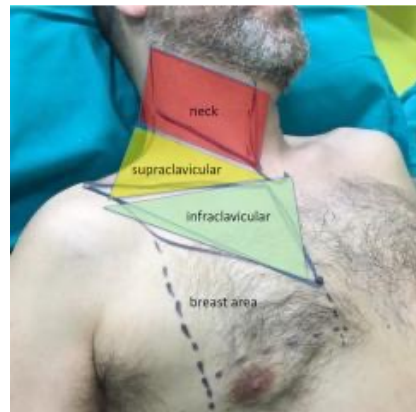
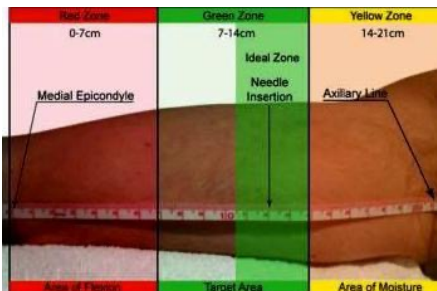
Step 3

Table 1. The eight steps of the SIP-P protocol.

Step 3	Choice of vein size and tunneling options—assessment of the diameter of the vein (considering that the ideal catheter-vein ratio should be of 1:3 or less), and evaluation of the opportunity of tunneling the catheter (considering that the reservoir should be in the green zone or on the border between yellow and green zone—according to Dawson's ZIM: thus, if the most appropriate vein is in the yellow zone the catheter must be tunneled)
--------	---

Scelta della vena e tunnellizzazione del catetere

RaPeVA - RaCeVA - RaFeVA ➡ Scegliere il sito di venipuntura ottimale



PICC ZIM - Central ZIM - Femoral ZIM ➡

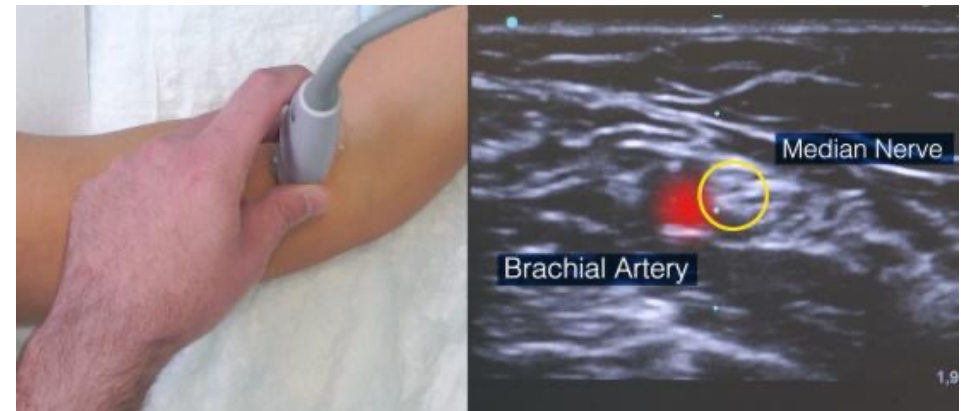
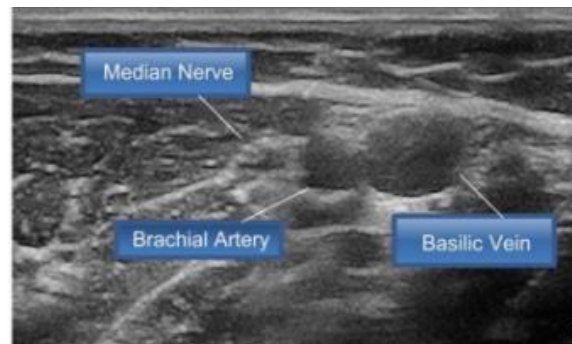
Pianificare il sito di localizzazione adeguato del reservoir

Step 4

Table 1. The eight steps of the SIP-P protocol.

Step 4	Clear identification of median nerve and brachial artery—identify each structure before venipuncture, using ultrasound
--------	--

Chiara identificazione ecografica dell'arteria brachiale e del nervo mediano prima di procedure con la venipuntura

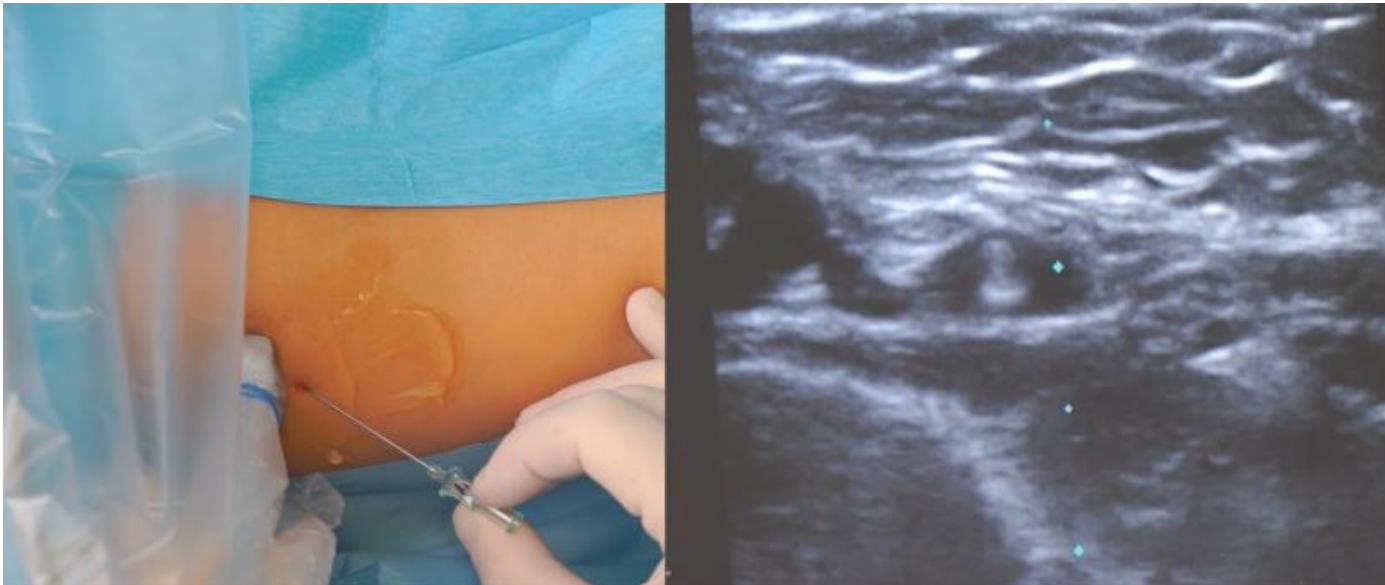


Step 5

Table 1. The eight steps of the SIP-P protocol.

Step 5	Ultrasound-guided venipuncture—ultrasound-guided puncture and cannulation of a deep vein of the arm (either basilic, brachial, or axillary vein), preferably adopting the short axis/out-of-plane approach, always using a micro-introducer kit
--------	---

Venipuntura ecogui data



*Short axis
out-of-plane*

Step 5

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--------	---

Venipuntura ecoguidata

Kit da microintroduzione



Vantaggi

Venipuntura con ago mininvasivo

La cannulazione con filo guida morbido consente di superare più facilmente qualsiasi ostacolo

L'utilizzo del microintroduttore/dilatatore permette una dilatazione della vena meno traumatica

Step 6

Table 1. The eight steps of the SIP-P protocol.

Step 6	Ultrasound-based tip navigation—assess the correct direction of the guidewire by a supra-clavicular ultrasound scan (see the ECHOTIP protocol)
--------	--

Tip Navigation

Ecografia “real time” per controllare la corretta direzione della guida metallica e/o del catetere

Editorial

ECHOTIP: A structured protocol for ultrasound-based tip navigation and tip location during placement of central venous access devices in adult patients

Antonio La Greca¹, Emanuele Iacobone², Daniele Elisei³,
Daniele Guerino Biasucci³, Vito D'Andrea⁴,
Giovanni Barone⁵, Geremia Zito Marinosci⁶
and Mauro Pittiruti¹

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Eur J Anaesthesiol 2020; **37**:344–376

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European Society of Anaesthesiology guidelines on peri-operative use of ultrasound-guided for vascular access (PERSEUS vascular access)

Massimo Lamperti, Daniele Guerino Biasucci, Nicola Disma, Mauro Pittiruti,
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Step 7

Table 1. The eight steps of the SIP-P protocol.

Step 7	Intra-procedural assessment of tip location—use intracavitary ECG and/or ultrasound (subcostal or apical view, using the “bubble test”: see the ECHOTIP protocol)
--------	---

Tip location

- E. Use methods for identifying CVAD tip location during the insertion procedure (ie, “real-time”) due to greater accuracy, more rapid initiation of infusion therapy, and reduced costs.³⁸⁻⁴⁷ (III)

1. Use electrocardiogram (ECG) methods with either a metal guidewire or a column of normal saline inside the catheter lumen and observe the ECG tracing to place the CVAD tip at the CAJ. Follow manufacturers’ directions for use with other ECG-based technology using a changing light pattern to detect tip location.^{1,2,4,11,23,24,26,27,43,44,48-61} (II)
6. Postprocedure radiograph imaging is not necessary if alternative tip location technology confirms proper tip placement.^{46,50,71} (II)



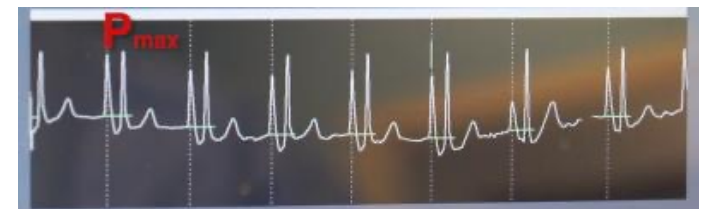
Review

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Intracavitary electrocardiography for tip location during central venous catheterization: A narrative review of 70 years of clinical studies

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Mauro Pittiruti¹, Filippo Pelagatti² and Fulvio Pinelli³



“Intra-procedural control of tip location is preferred to post-procedural control”

“The safest, simplest, most cost-effective and most accurate intra-procedural method for tip location is intracavitary electrocardiography (IC-ECG)”

Step 7

Table 1. The eight steps of the SIP-P protocol.

Step 7	Intra-procedural assessment of tip location—use intracavitary ECG and/or ultrasound (subcostal or apical view, using the “bubble test”: see the ECHOTIP protocol)
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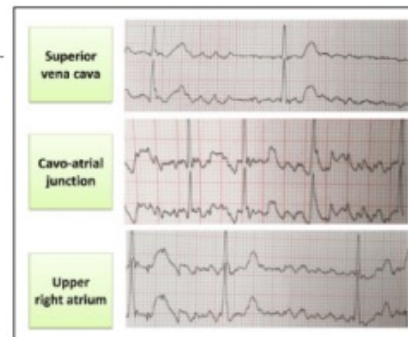
Tip location

Original research article

A modified intracavitary electrocardiographic method for detecting the location of the tip of central venous catheters in atrial fibrillation patients

Maria Calabrese¹, Luca Montini², Gabriella Ariotta¹, Antonio La Greca³, Daniele G Biasucci², Francesca Bevilacqua¹, Enrica Antonucci¹, Andrea Scapigliati¹, Franco Cavaliere¹ and Mauro Pittiruti²

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Editorial

ECHOTIP: A structured protocol for ultrasound-based tip navigation and tip location during placement of central venous access devices in adult patients

Antonio La Greca¹, Emanuele Iacobone², Daniele Elisei², Daniele Guerino Biasucci³, Vito D'Andrea⁴, Giovanni Barone⁵, Geremia Zito Marinocchi⁶ and Mauro Pittiruti¹

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“The applicability of the IC-ECG method has been extended more recently to patients with atrial fibrillation”

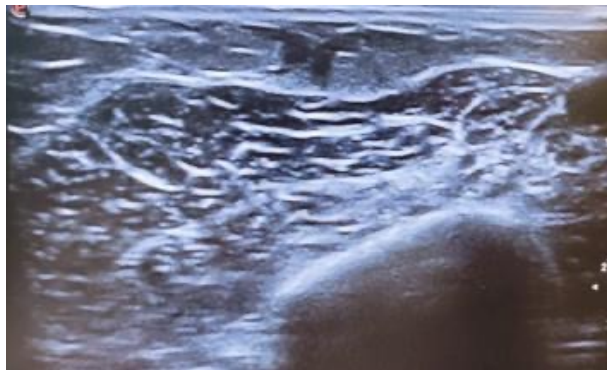
“Ultrasound scan using the “bubble test” (a rapid infusion of a few milliliters of “agitated” saline solution that allows for a better visualization of the catheter tip with US)”

Step 8

Table 1. The eight steps of the SIP-P protocol.

Step 8	<i>Appropriate placement of the reservoir—subcutaneous placement of the reservoir above the biceps muscle, creating the pocket by hydro-dissection with local anesthetic and normal saline), closing the incision with intradermal absorbable sutures and cyanoacrylate glue</i>
--------	--

Formazione di un'adeguata tasca sottocutanea, chiusura della tasca con punti intradermici riassorbibili e applicazione di colla in cianoacrilato



Protezione dal rischio di sanguinamento

Protezione dal rischio di contaminazione extraluminare

Tecnica di impianto



Bundle di inserzione ben definito

Ambiente dedicato (sala procedurale)

Uso dei microintroduttori

Ecografia per venipuntura e tip navigation

Tip location con ECG IC/ecoscopia

Pochi operatori ben addestrati

Tecnica di impianto

Bundle di inserzione ben definito



Fluoroscopia

Sala operatoria

Sala radiologica

Rx torace post-procedura

Insertion bundle

Sicurezza

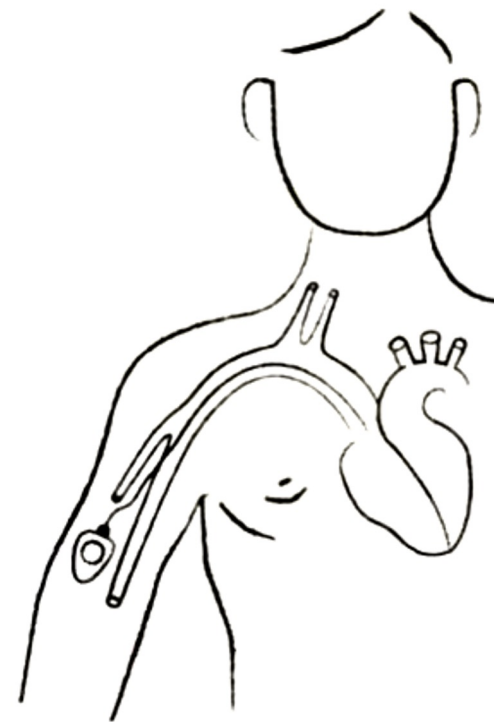
Efficacia

Costo-efficacia

Original research article

A GAVeCeLT bundle for PICC-port insertion: The SIP-Port protocol

Fabrizio Brescia¹ , Maria Giuseppina Annetta² ,
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Fabrizio Brescia

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ROMA 2023
11-12 Dicembre

III Convegno Nazionale sui PICC-port



Grazie per
l'attenzione

