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MACOVA 2020

Multidisciplinary Advanced Course
on Vascular Access



Holistic approach to vascular access in the emergency department

Prof. Baudolino Mussa
IVAS President



Emergency Department: news...

MACOVA 2020

LIVE
BREAKING
NEWS

Emergency Department: news...

MACOVA 2020

- Increased survival for chronic patients



Emergency Department: news...

MACOVA 2020

- *Medium age of population increased*



Emergency Department: news...

MACOVA 2020

- *Short hospital stay in postoperative period*



Emergency Department: news...

MACOVA 2020

- *High rate of previous EV treated patients*



Venous access: what type, when and for how long?



Venous access: what type?

Devices:



- **peripherally-inserted central catheters (PICCs)**
- **centrally-inserted central catheters (CICCs and FICCs)**
- **peripheral intravenous catheters (PIVCs)**

Devices:



- **peripherally-inserted central catheters (PICCs)**

Are all the same for quality and durability?

- **peripheral intravenous catheters (PIVCs)**

REVIEW ARTICLE

Short- and Intermediate-Term Use of Peripherally Inserted Central Catheters in Europe: A Systematic Literature Review

Baudolino Mussa, MD

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Kim Alsbrooks, BSN, RN, RT (R), VA-BC™

Becton Dickinson, Franklin Lakes, NJ

Robert Hutcheson, MSc

Certara, Montreal, QC, Canada

Literature Extraction

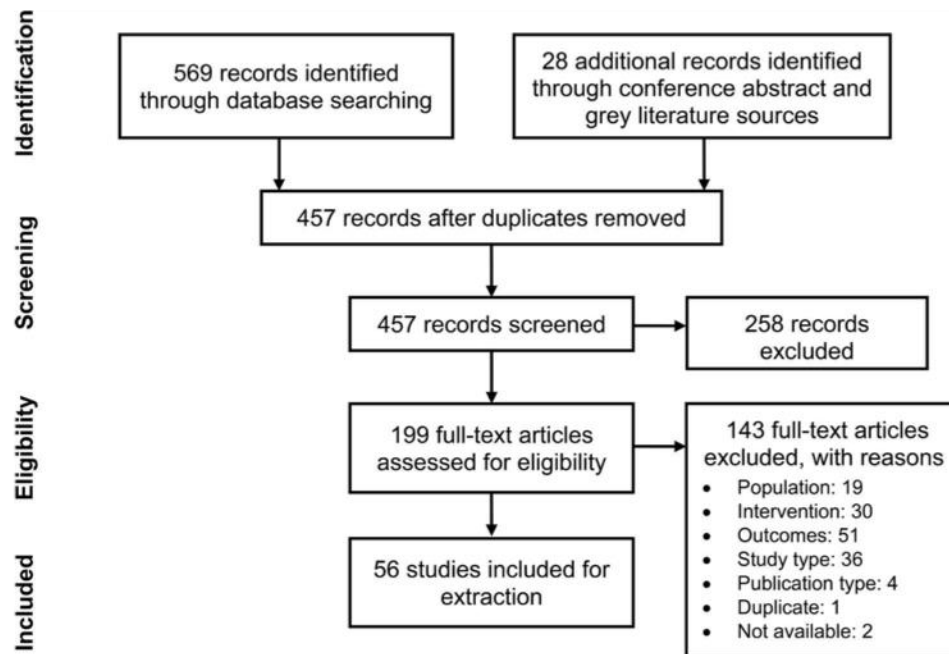


Figure. PRISMA flowchart of the study selection process.

Results

Table 3. Summary of Efficacy Outcomes with PICCs and Comparators

Type of intervention	Patient comfort and satisfaction, % (<i>n</i>)	Pain during catheter insertion, % (<i>n</i>)	Number of venipunctures for catheter insertion (<i>n</i>)	Mean catheter days (<i>n</i>)	Mean catheter dwell time/ duration in days (<i>n</i>)	Placement complications, % (<i>n</i>)
PICC	96.8 (1)	0–18 (5)	1.15*–1.16 (2)	7.9–176.1 (6)	9.4–127 (21)	0–7.4 (16)
PIVC	79.3 (1)	23.4 (1)	2.27 (1)	NR	4.4–7.3 (2)	NR
CICC	NR	12.2 (1)	1 (1)	22.5–98.5 (2)	6.83–324.92 (6)	NR

n = number of interventions; NR = not reported.

*Calculated as a weighted average.

Results

Table 3. Summary of Efficacy Outcomes with PICCs and Comparators

	Patient comfort and	Pain during	Number of reinsertions		Mean catheter dwell time/	Placement
PIVC	79.3 (1)	23.4 (1)	2.27 (1)	NR	4.4–7.3 (2)	NR
CICC	NR	12.2 (1)	1 (1)	22.5–98.5 (2)	6.83–324.92 (6)	NR

Conclusions: This review showed that PICCs offer several advantages compared to CICCs and PIVCs, including greater patient satisfaction, fewer complications leading to removal, and less catheter migration/dislocation, despite a moderately higher rate of venous thrombosis.

n = number of interventions; NR = not reported.

*Calculated as a weighted average.

What about Port a Cath?



- Long term discontinued therapy (best for use every 28 days)
- All power injectable device

For valved power Pac flushing every 3 months available

J Vasc Access, 2017 Jul 14;18(4):325-327. doi: 10.5301/jva.5000740. Epub 2017 Jun 20.

SAGE journals

Port in oncology practice: 3-monthly locking with normal saline for catheter maintenance, a preliminary report.

Solinas G¹, Platini F¹, Trivellato M¹, Rigo C¹, Alabiso O^{1,2}, Galetto AS^{1,2}.

What about Picc Port?



- Device with same defects of PAC and PICC (underskin, low flow, pain for use).
- The only indication is saltuary therapy in patient with thorax area not available for implant (Bilateral mammarian cancer, thorax RT ecc.)
- Actually implanting kit is incomplete and procedure more difficult than picc and Port (catheter without spindle ecc.)

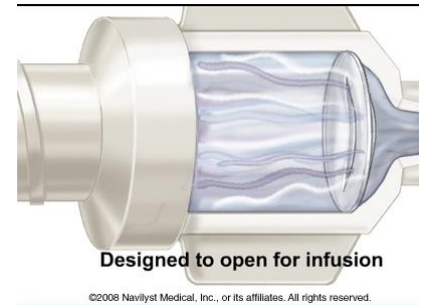
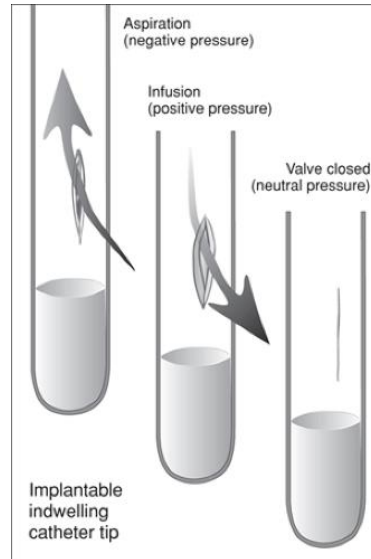
What about Tunnelled Cvc?



- Long term continued therapy (best for use every day)
- Silicon device can be repaired (long term use)
- Usable also by patient himself (2 hands available)
- In our experience on NPT patients longest survival of device

What is the difference in Picc World?

- **Valve design**

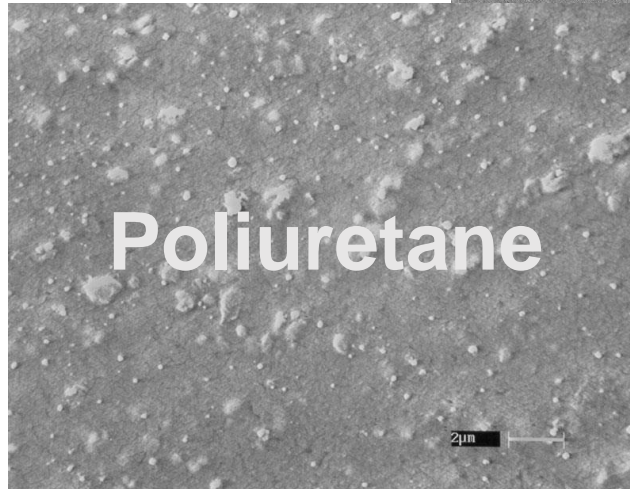
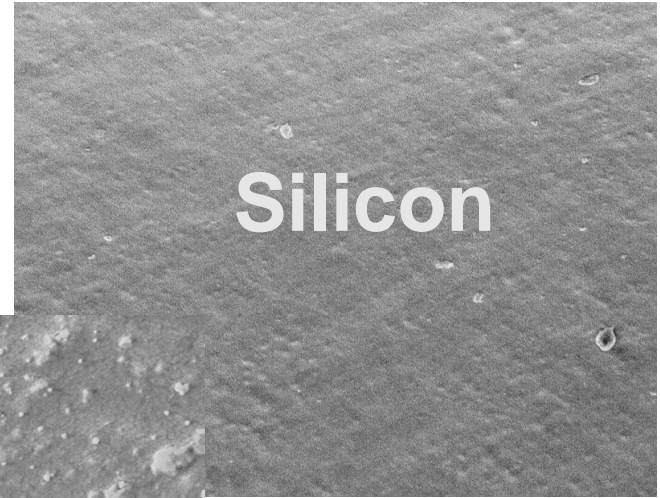


- **Material**

What is the difference in Picc World?

- Valve design

- **Material**



A prospective, randomized comparison of three different types of valved and non-valved peripherally inserted central catheters

Mauro Pittiruti¹, Alessandro Emoli², Patrizia Porta², Bruno Marche², Rosa DeAngelis², Giancarlo Scoppettuolo³

TABLE I - PATIENTS AND PICCS

	Solo valve (n=61)	PASV (n=60)	No valve (n=59)
Age (m±SD)	64 (12.1)	61 (10.1)	62 (14.5)
Sex (%male)	36%	38%	33.3%
Side (%right)	65%	54%	69%
Length cm (m±SD)	38.5 (5)	40.2 (4.7)	36.7 (6.1)
PICC days (m±SD)	56 (23)	64 (31)	65 (27)
Total PICC days	2780	3699	3422

TABLE II - PRIMARY ENDPOINTS

	Solo valve (n=61)	PASV (n=60)	No valve (n=59)
Irreversible occlusions	1	0	0
Transient occlusions	2	1	2
PWO	1	0	1
Difficulty with gravity infusion	19 (31%)	39 (65%)	0
Removed for occlusion	1	0	0

TABLE III - SECONDARY ENDPOINTS

	Solo valve (n=61)	PASV (n=60)	No valve (n=59)
Infection (CRBSI)	-	-	-
Symptomatic thrombosis	-	1	-
Asymptomatic thrombosis	2	1	1
Dislocation	-	-	-
Intravascular rupture	3	-	-
Removal due to rupture	3	-	-



CONCLUSION

There were no significant advantages related to the presence of a proximal valve, either of the 'Solo' type (Bard) or of the 'PASV' type (Navilyst).

Open- vs Closed-Tip Valved Peripherally Inserted Central Catheters and Midlines: Findings from a Vascular Access Database



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Palliative Care, A.O. Melegnano, Milan, Italy

Marta Gianoli, RN

Oncology, A.O. Melegnano, Milan, Italy

Table 1. Number of Patients and Implant Days

Sex	No. of patients	1000 catheter-days
Male	666	62.445
Female	750	73.325
Total	1416	135.778

Table 7. Complications for Catheter Type

Catheter type	Total occlusions			PWO			Thrombosis		
	No	%	1000 catheter-days	No	%	1000 catheter-days	No	%	1000 catheter-days
PICC Open tip	11	7.97	0.0007	12	6.9	0.0008	5	2.8	0.0003
PICC Groshong	9	6.52	0.00009	53	8.5	0.0005	13	2	0.0001
Midline Open tip	4	2.90	0.005	6	1.9	0.0008	9	2.8	0.0011
Midline Groshong	1	0.72	0.0001	13	4.2	0.0009	2	0.6	0.0002

PWO = Persistent withdrawal occlusion; PICC = Peripherally inserted central catheter.

- Valved, closed-tip catheters, despite being used in more complex situations (eg, cancer patients) and for a longer period, registered a clear superiority in terms of overall reliability with fewer complications calculated in days of catheterization. In our opinion a valved catheter is the best solution for PWO because we noted fewer removals resulting in an incomplete course of therapy.

A registry... we need it

The Need for Comparative Data in Vascular Access: The Rationale and Design of the PICC Registry

Constance Girgenti, RN, VA-BC

Presence St Joseph Medical Center, Joliet, IL

Nancy L. Moureau, BSN, CRNI

PICC Excellence, Inc, Hartwell, GA


Approximately 4.3 million peripherally inserted central catheters (PICCs) are placed each year. Currently, there are no national-level comparative data registries to gather information regarding PICC placement, care, or maintenance, and there are no benchmarks or quality measures for vascular access specialists. As the specialty of vascular access

Picc Registry

- Big numbers.... Right answers
- Real situation in Italy experience
- Concrete help for choose the right device



A retrospective study of the safety of over 100,000 peripherally-inserted central catheters days for parenteral supportive treatments

Sara Campagna PhD, RN¹ | Silvia Gonella RN, MSc, PhD student²  | Paola Berchialla PhD³ |
Carla Rigo RN⁴ | Giacomo Morano MD⁵ | Pietro Antonio Zerla RN⁶ |
Raffaella Fuzzi RN⁷ | Gianvito Corona MD⁸ | Silvana Storto RN^{2,9} |
Valerio Dimonte RN, MSc, Professor of Nursing Sciences^{1,2} | Baudolino Mussa MD^{2,10}

Results:

TABLE 1 Patient and PICC characteristics according to the reason for PICC removal: Bivariate analysis ($n = 1,250$)

Variables	All patients ($n = 1,250$)	PICC removal because of ($n = 178$)	PICC removal because of other reasons ($n = 1,072$)	<i>p</i>
Patient characteristics				
Female sex, <i>n</i> (%) ($n = 914$)	520 [59.6]	89 [60.5]	431 [56.2]	0.376
Age, years (median [IQR]) ($n = 830$)	78 [67–84]	74 [61–82]	79 [68–85]	<0.001
Onco-hematological disease, <i>n</i> (%)	701 [56.7]	77 [43.3]	624 [58.2]	<0.001
PICC characteristic				
PICC system, <i>n</i> (%) ($n = 1,250$)				0.618
Open	212 [17.0]	33 [18.5]	179 [16.7]	
Valved	1,038 [83.0]	145 [81.5]	893 [83.3]	
Insertion location, <i>n</i> (%)				
Left side ($n = 1,249$)	307 [24.6]	57 [32.0]	250 [23.3]	0.017
Accessed vein ($n = 1,250$)				0.810
Basilic	982 [78.6]	137 [77.0]	845 [78.8]	
Brachial	252 [20.2]	39 [21.9]	213 [19.9]	
Cephalic	16 [1.3]	2 [1.1]	14 [1.3]	
Dwell-time, days (median [IQR]) ($n = 1,249$)				
Open-system	46 [19–120]	67 [28–180]	43 [18–113]	<0.001
Valved system	33 [21–75]	29 [13–88]	33 [22–70]	0.283
	52 [19–124]	89 [32–254]	48 [18–120]	<0.001

Note. AEs: adverse events; IQR: interquartile range; PICC: peripherally-inserted central catheter.

^aAEs were defined as one or more of the following: Occlusion, exit-site infection, or symptomatic thrombosis.

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First conclusions....

*PICC, CICC and PIVC all could be used safely in
Emergency department.*



Some idea.....

- 1) *Question: how many flow do I need?*
- 2) *How many lines do I need?*
- 3) *Has patient a VAD?*
- 4) *Is the VAD working correctly?*
- 5) *Is the VAD useful for our use?*
- 6) *Does VAD must used after ED?*



Some idea.....

1) *Question: how many flow do I need?*

For high flow better a CICC

For low flow better a Picc

If there is a VAD check and use, for more flow

Powerglide or Power Midline



Some idea.....

2) *How many lines do I need?*

Picc lines have until 3 lines.

Midline also

If VAD present possible to place Powerglide

Or Power Midline



Some idea.....

- 3) *Has patient a VAD?*
- 4) *Is the VAD working correctly?*
- 5) *Is the VAD useful for our use?*
- 6) *Does VAD must used after ED?*

Take in mind patient's future



What is good:

- US guidance for VAD
- ECG check for tip
- Veins saving algorithm
- Reduce infection VAD related
- New class of VAD
- New products



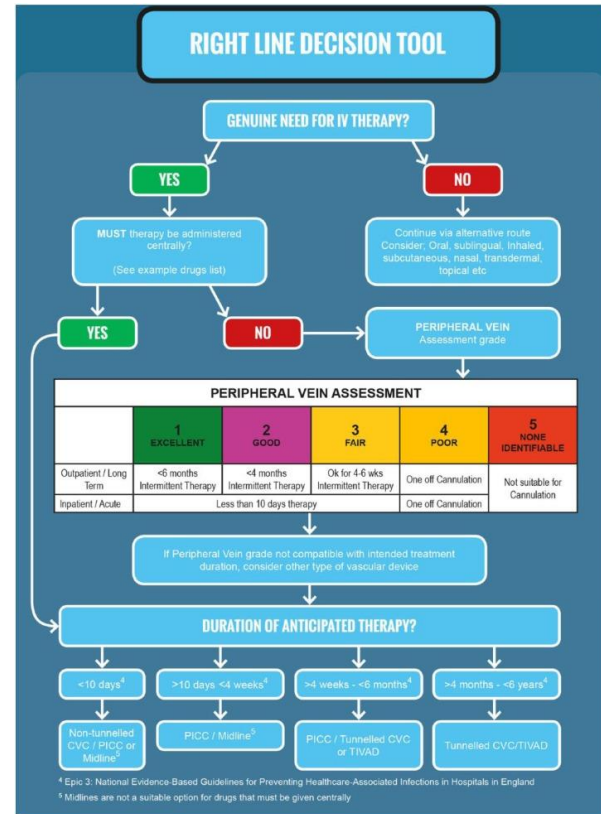
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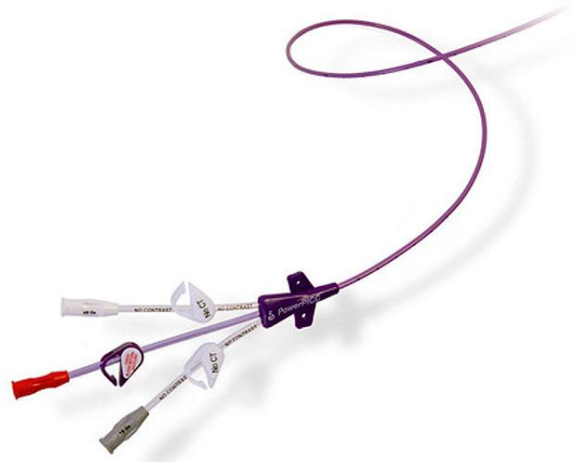
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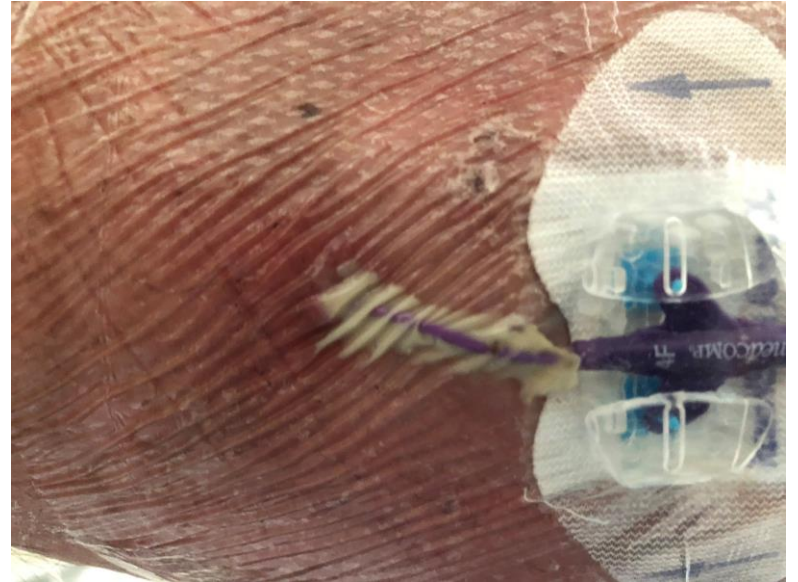
What is BAD:

- Thrombosis
- Difficult treatment for infection
- Bad patient communication
- Too much PIV and too much bad placed



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What is BAD:

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Patient first

