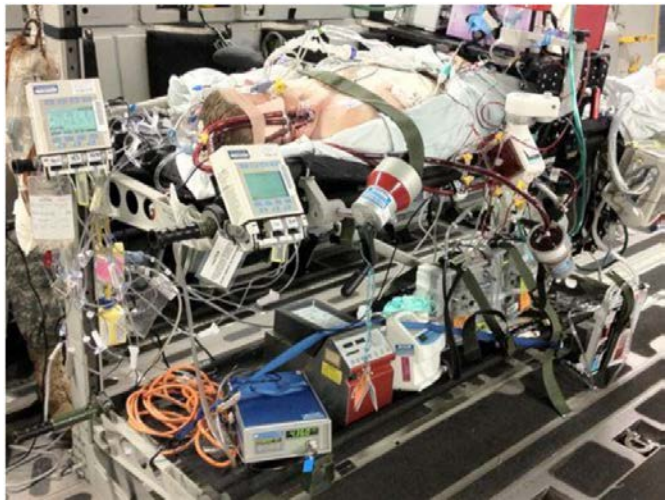
10ème congrès du GIFAV

PICC en réanimation : situation actuelle en Espagne



Paloma Ruiz Hernández
Gloria Ortiz Miluy

Cofondateurs du Groupe Multidisciplinaire de l'Accès Vasculaire (GruMAV)

RÉVOLUTION AU COURS DES DERNIÈRES ANNÉES

- Pose des cathéters sous échographie : utilisation globale de l´écho
- Technique de EKG intra-cavitaire pour la localisation optimale du cathéter
- Mesures de protection maximum
- Matériaux plus secures et biocompatibles
- Standardisation des procédures dans l´insertion et l´entretien

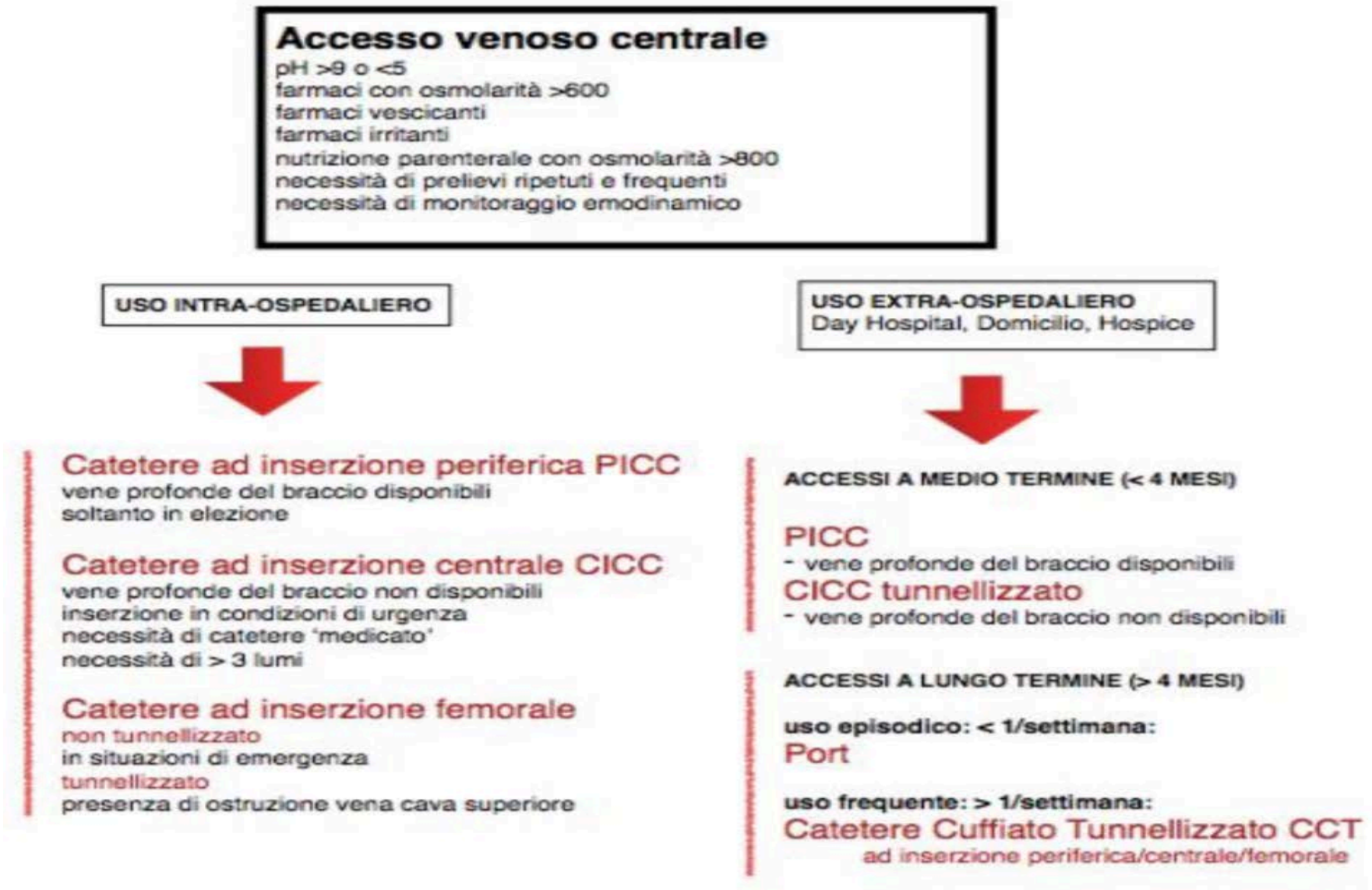
GruMAV
Grupo Multidisciplinar en Acceso Vascular

NOUVEAU NOMENCLATURE WoCoVA

- PICC : cathéter central d'insertion périphérique (bras)
- CICC : cathéter central d'insertion centrale (cou, thorax)
- FICC : cathéter central d'insertion fémorale (entrejambe)

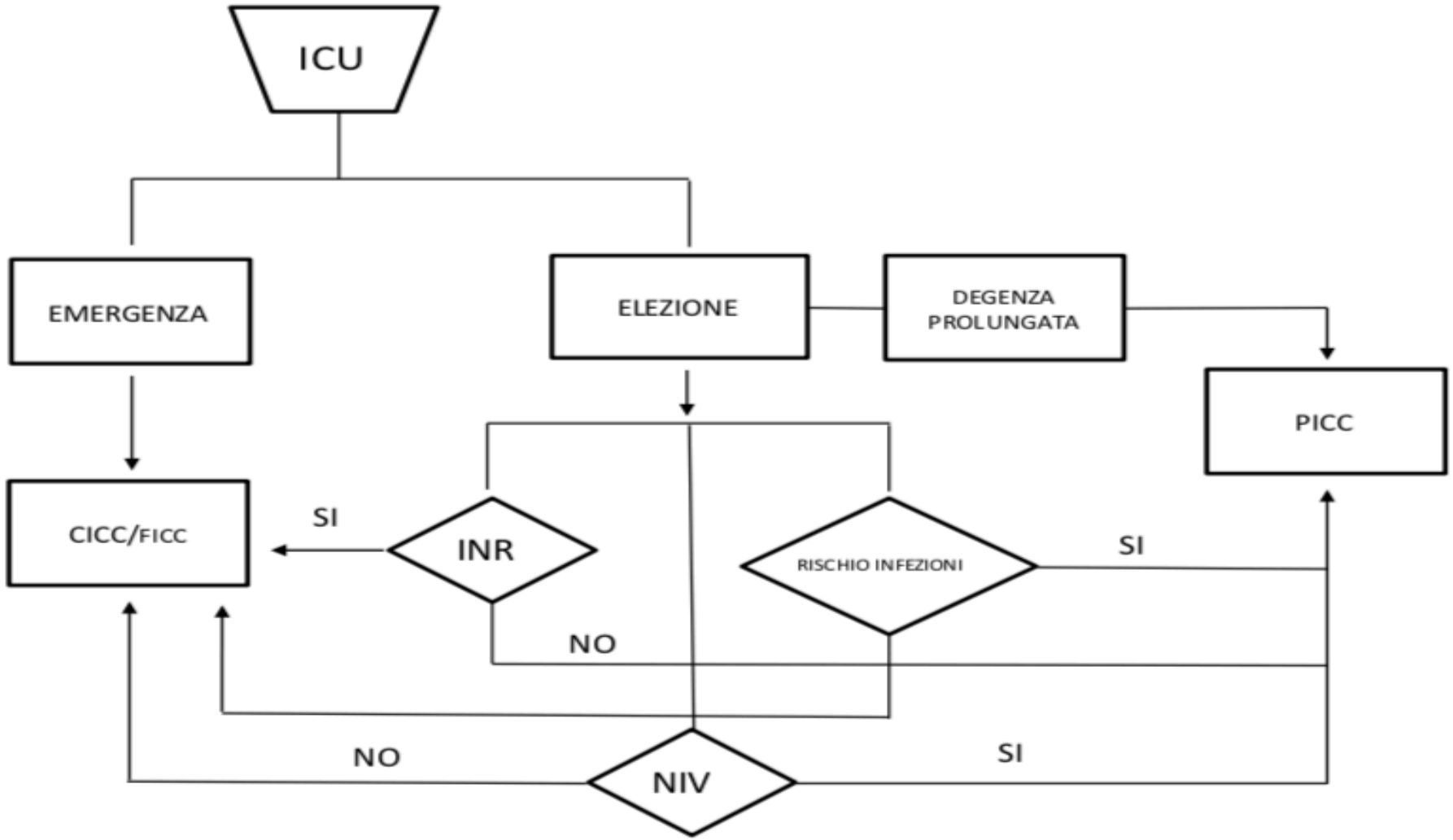
GruMAV
Grupo Multidisciplinar en Acceso Vascular

ALGORITHME D´ÉLECTION



GruMAV
Grupo Multidisciplinar en Acceso Vascular

PICC in ICU: Algoritmo Decisionale



GruMAV
Grupo Multidisciplinar en Acceso Vascular

CARACTÉRISTIQUES PATIENT

- Administration prolongée de substances veino-toxiques
- Perfusion de solutés hypertoniques
- Alimentation parentérale
- Mesure de la pression veineuse centrale (PVC)
- Certains traitements intraveineux en médicine intensive
- Prises de sang répétées…
- Support extracorporelle:
  - Hépatique
  - Respiratoire
  - Dyaliser.

GruMAV
Grupo Multidisciplinar en Acceso Vascular

L'ACCÈS VEINEUX IDÉAL EN RÉANIMATION

- Sûr
- Crédible
- Plusieurs voies
- Permet l´administration de haut flux
- Mesure des paramètres vitaux
- Coût-efficacité
- Facile de canuler (bedside)
- Baisse du taux de complications

TOUT CELA EST POSSIBLE AVEC LE PICC THE DERNIÈRE GÉNÉRATION

GruMAV
Grupo Multidisciplinar en Acceso Vascular

EN RÉANIMATION LA QUESTION EST : CICC OU PICC?

- CICC :
  - Risque élevé pendant l´insertion:
    - Pneumothorax
    - Hémothorax
  - Brève utilisation (jours ou semaines)
  - Non *power injection*
  - Opérateurs qui font la canalisation occasionnellement
  - Risque plus élevé de CRBSI

EN RÉANIMATION LA QUESTION EST : CICC OU PICC?

- PICC :
  - Flux limité
  - Voies: 1-3
  - Surveillance hémodynamique
  - Procédure d'insertion "longue" (time consuming)
  - Risque accru de malposition
  - Associé avec un risque accru de TVP

AVANTAGES EN GENERAL : PICC vs CICC

- Moins de risques pendant l´insertion :
  - Dommages potentiels locaux de l´artériel ou du nerf (< 0.01%)
  - Non risque de hémothorax, pneumothorax, hémorragies, hémopéricarde, embolie pulmonaire, etc….
- Meilleure acceptation pour le patient
- Durée plus longue
- Usage en réanimation ou intra hospitalier
- Insertion secure même chez les patients “fragiles” (cardio-respiratoire, hémostase modifiée , trachéotomie, anormalités de cou ou thorax, etc.)

MATÉRIAUX

- PICC :

  Matériau amélioré, 3^{éme} génération de PUR, meilleure résistance, finesse, parois plus minces, plus grand diamètre interne

- CICC :

  PUR de génération précédente

POWER INJECTABILITY

- PICC : assurée dans le plupart de PUR de 3ème génération.
- CICC : assurée seulement dans quelques CICC

FLUX ET PRESSIONS

- PICC :
  - Power injectable
  - Résistance aux pressions: 250-325 psi = possibilité de haut flux (2-5 ml/seg → 300ml/min → 1800ml/h)

VOIES

- CICC: 1 -5
- PICC: de 1 – 3
  - 3Fr (1)
  - 4Fr (1-2)
  - 5Fr (1,2,3)
  - 6Fr (1,2,3)

IVAD6 Use a catheter with the minimum number of ports or lumens essential for management of the patient.

Class A

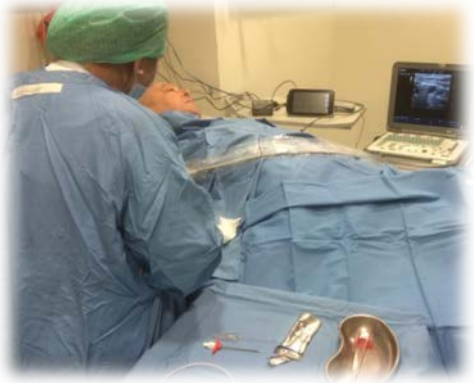
IVAD7 Preferably use a designated single-lumen catheter to administer lipid-containing parenteral nutrition or other lipid-based solutions.

Class D/GPP

EPIC 2014

GruMAV
Grupo Multidisciplinar en Acceso Vascular

AMÉLORATION DE LA TECHNIQUE D'INSERTION POUR PICC



- Vaisseaux sanguins profonds du bras
- Choix de veine (diamètre, position, profondeur)
- Conditions d´asepsie
- Utilisation de l´échographie
- Localisation du bout du cathéter intra-opératoire
- Stabilisation du cathéter

→ ISP 2- protocole

GruMAV
Grupo Multidisciplinar en Acceso Vascular

COÛT- EFFICACITÉ

Nurse-driven insertion increases cost-effectiveness

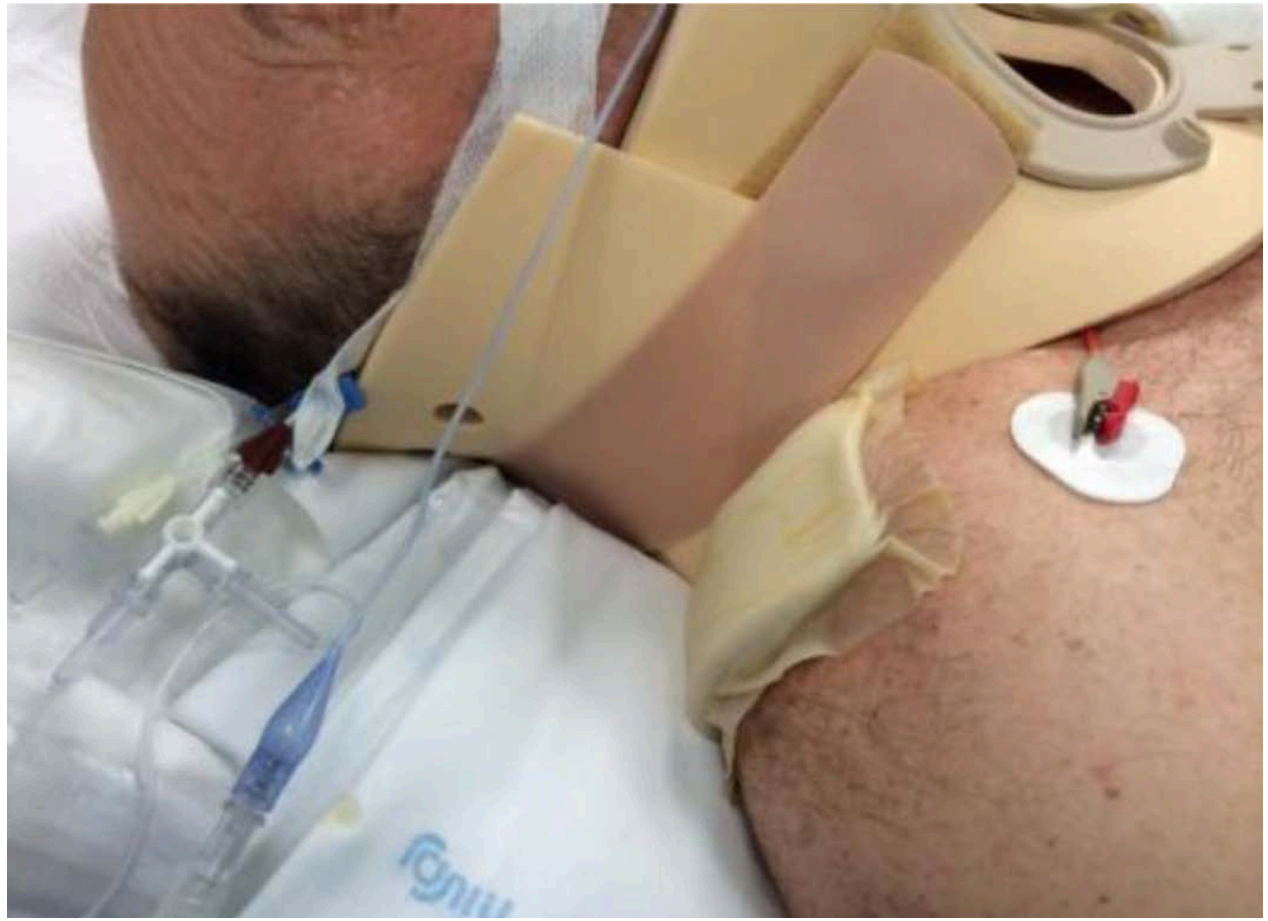
	WHO	WHERE	HOW	
$ 5000	surgeon	operating room	fluoroscopy	+ nurse
$ 2800	radiologist	radiology suite	fluoroscopy	+ technician
$ 1800	anaesthesist	bedside	no fluoro	
$ 875	nurse	bedside	no fluoro	

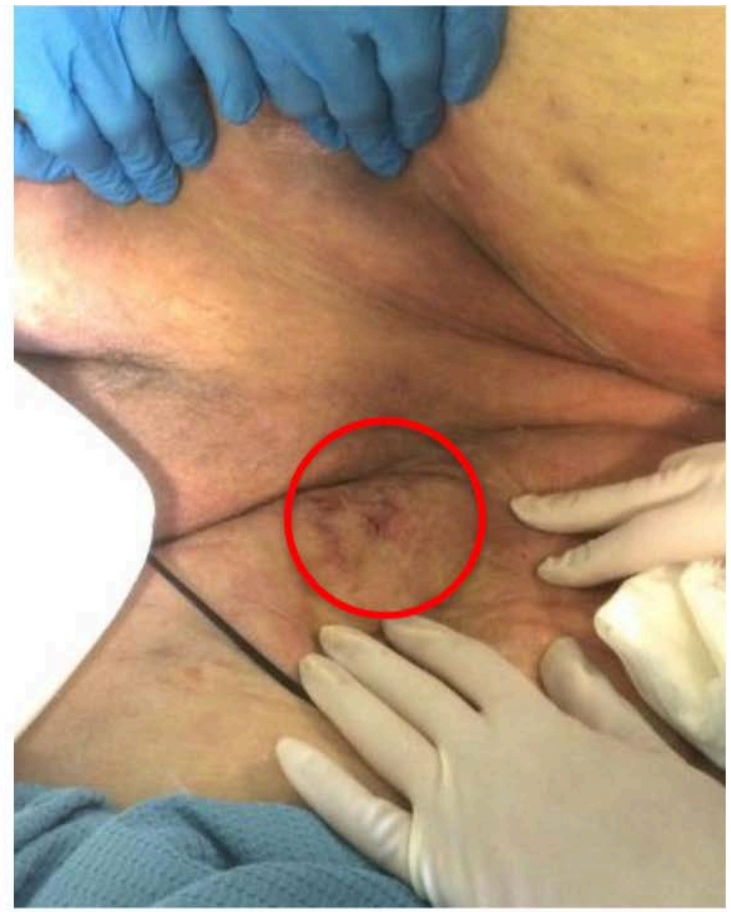
Smith, Wisconsin University 2011

INDICATIONS PARTICULIÈRES DU PICC EN RÉANIMATION

- Risqué élevé d´infection du lieu de sortie : trachéotomie, sécrétions nasales nasales, blessure, greffe, etc.
- Faible possibilité d´un accès vasculaire dans la région cervicale ou claviculaire
- Problèmes de coagulation
- Traitements de moyenne et longue durée
- Insertion simple et sûre : médecins et infirmières formés
- Accès vasculaire additionnel
- Surveillance hémodynamique

UN PICC NE SERAIT-IL PAS PRÉFÉRABLE ?





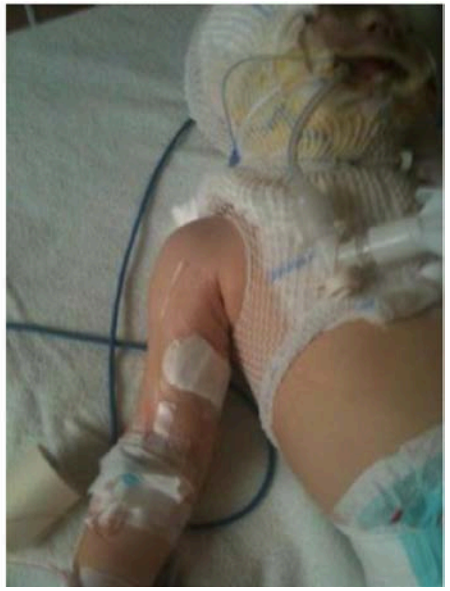

Allows for
lower sealing
pressure

ET BIEN-SÛR ….

- L´utilisation accrue de plus en plus grande en réanimation pédiatrique et néonatale



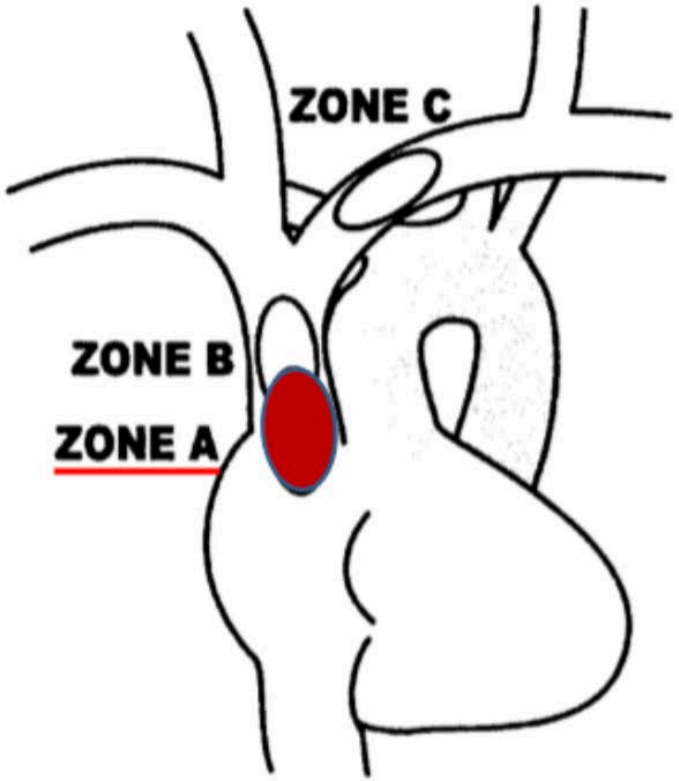




LIMITATIONS D´UTILISATION DU PICC EN RÉANIMATION

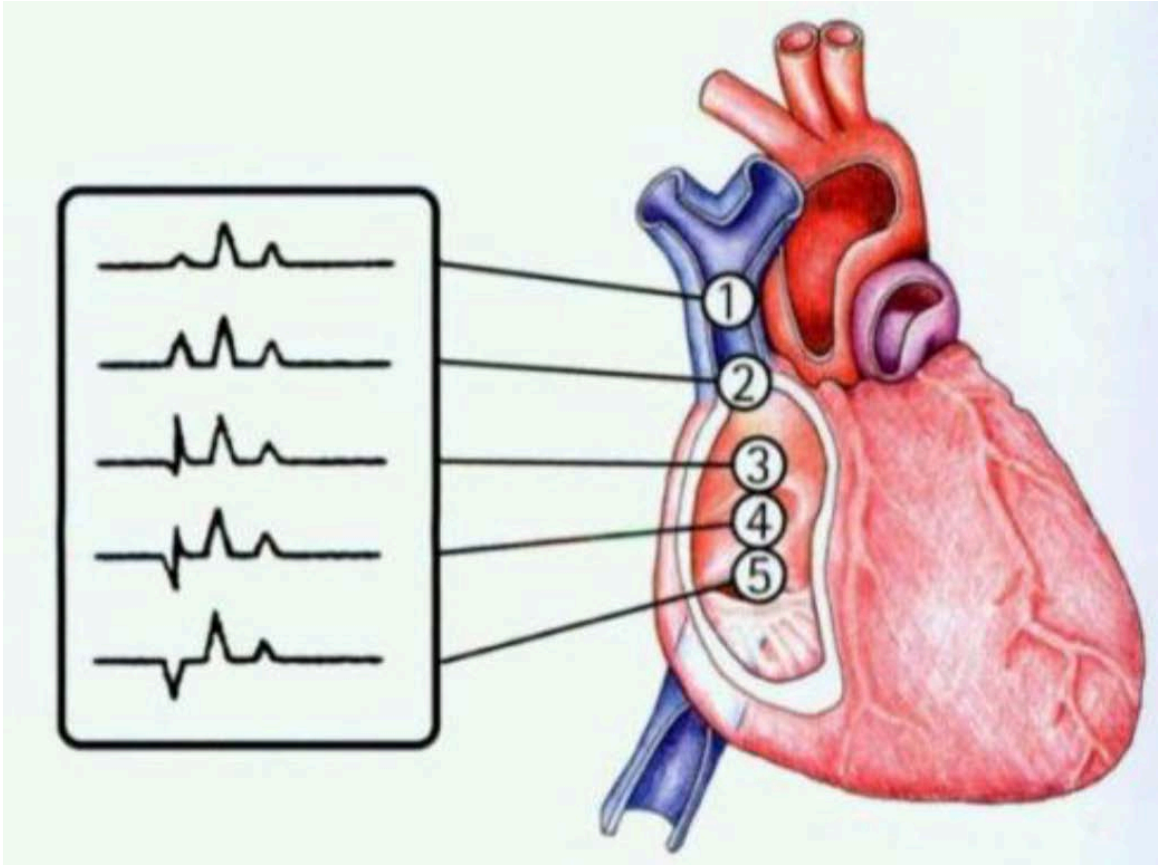
- Situations d´urgence : insertion rapide et simple d´un CICC (Seldinger direct)
- Nécessité d'avoir plus de 3 voies : bien que d´autres PICC puissent être utilisés en combinaison avec CICC
- IRC 3b-5, patients avec ou candidats à fistule AV
- Contre-indications:
  - locales: anomalies muscles squelettiques, cutanées et lymphatiques du bras
  - Ne pas avoir de calibre veineux (ZIM, tunnellisation)
  - Paralysie neurologique du membre (paraplégie, SLA, etc.)
- Traitements de HD/aphérèse/hémofiltration

VÉRIFICATION DE L´EXTREMITÉ DU PICC AVEC ECG-IC



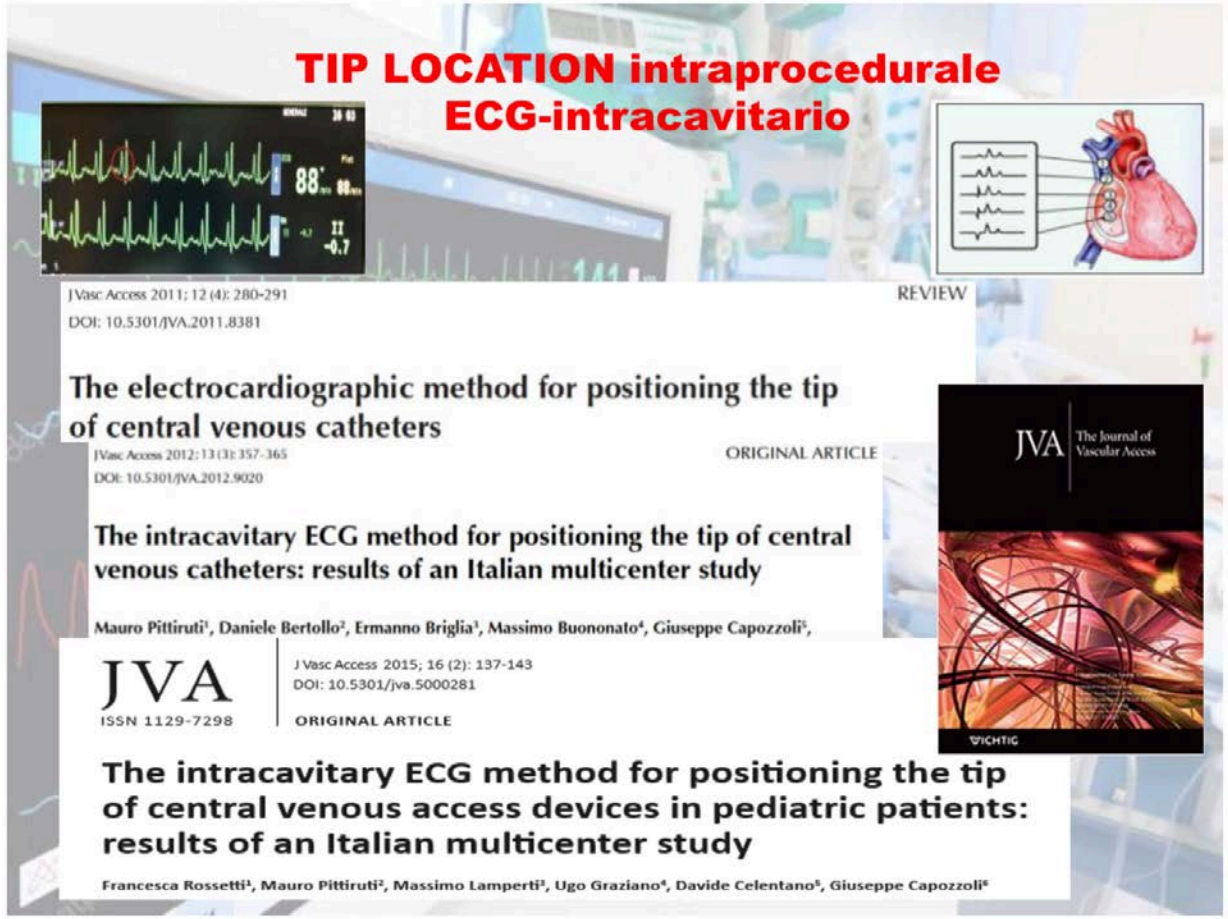
"Safe placement of CVCs: where should the tip of the catheter lie?"

Fletcher & Bodenham- BJA 2000



GruMAV
Grupo Multidisciplinar en Acceso Vascular

VÉRIFICATION DE L´EXTREMITÉ DU PICC AVEC ECG-IC

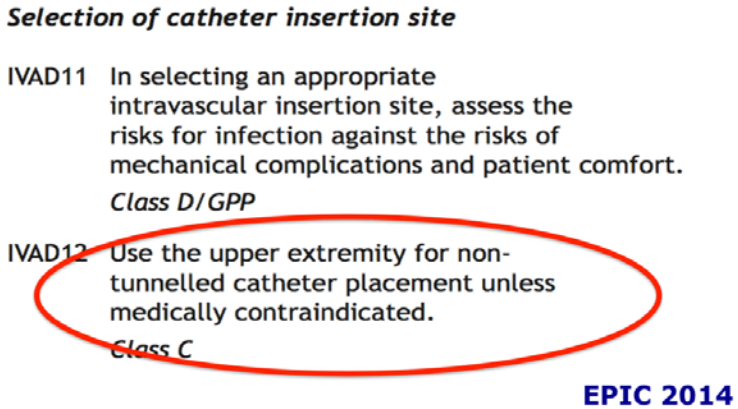


GruMAV
Grupo Multidisciplinar en Acceso Vascular

PRINCIPALES COMPLICATIONS DES ACCÈS VASCULAIRES EN RÉANIMATION

- Risque d´infection : CICC
- Risque thrombotique : PICC
- Bibliographie d´interprétation difficile
- Il n´y a pas d´études randomisées
- Difficile de tirer des conclusions

RISQUE INFECTIEUX



Selection of catheter insertion site

IVAD11 In selecting an appropriate intravascular insertion site, assess the risks for infection against the risks of mechanical complications and patient comfort.

Class D/GPP

IVAD12 Use the upper extremity for non-tunnelled catheter placement unless medically contraindicated.

Class C

EPIC 2014

- Moindre risque d´infection pour PICC :
  - L´isolement de la région d'infection (trachéostomie, colostomie, aine. . .)
  - Soin stable et propre
  - Caractéristiques de la peau du bras
  - Moins de contamination de la peau du bras

La question est le point de sortie du cathéter

GruMAV
Grupo Multidisciplinar en Acceso Vascular

TUNELLISATION ET USAGE "*OFF LABEL*" DU PICC

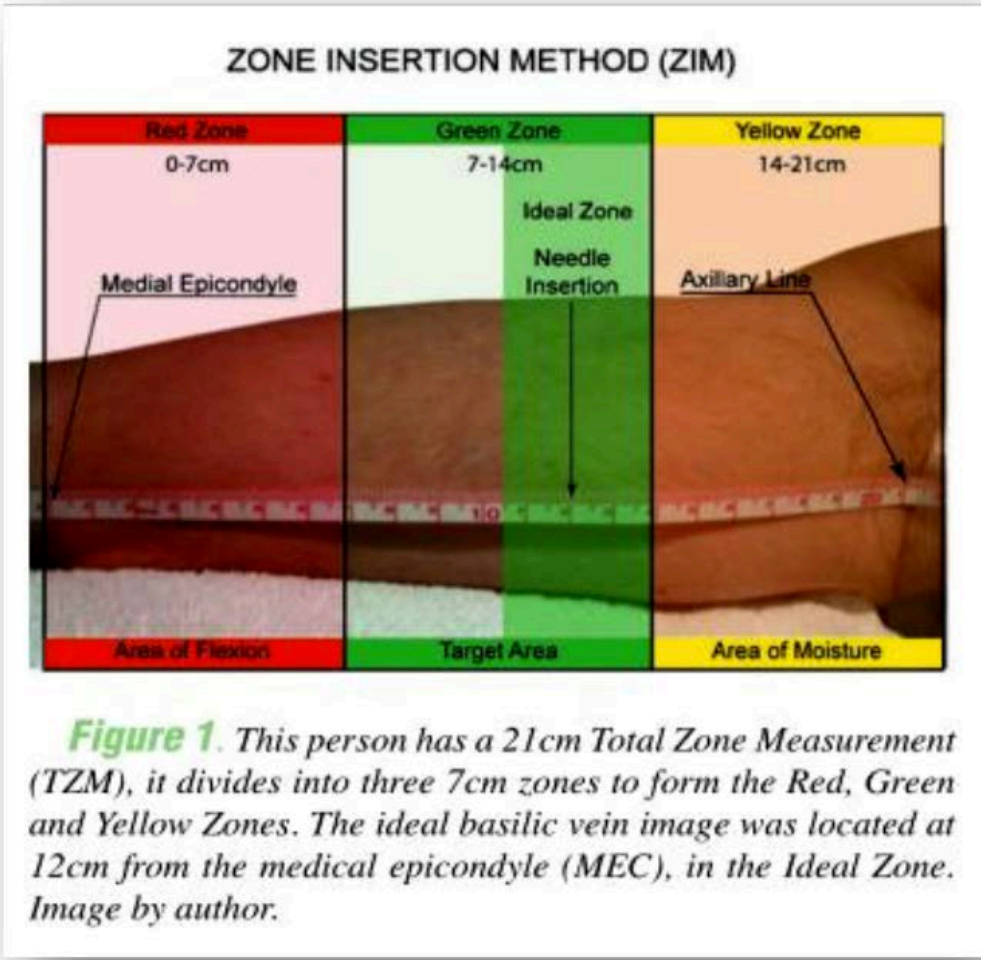
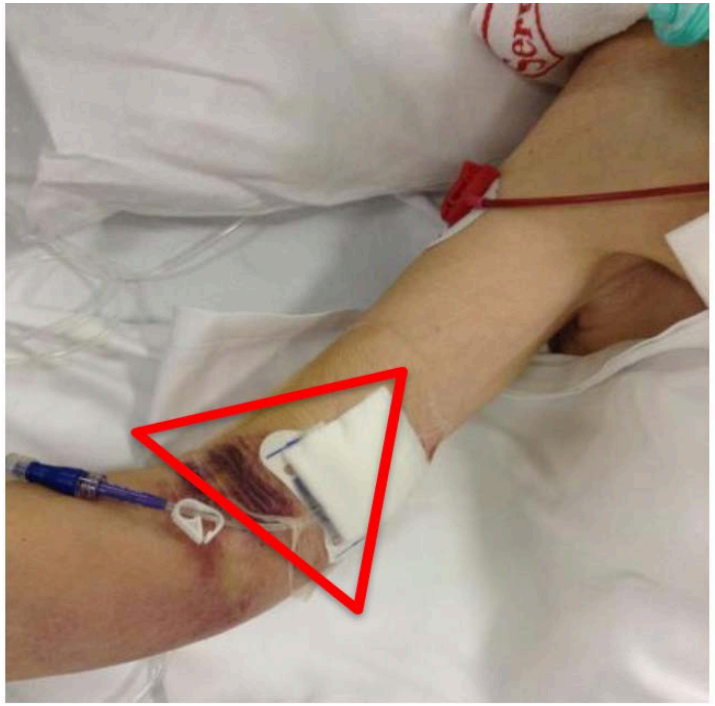
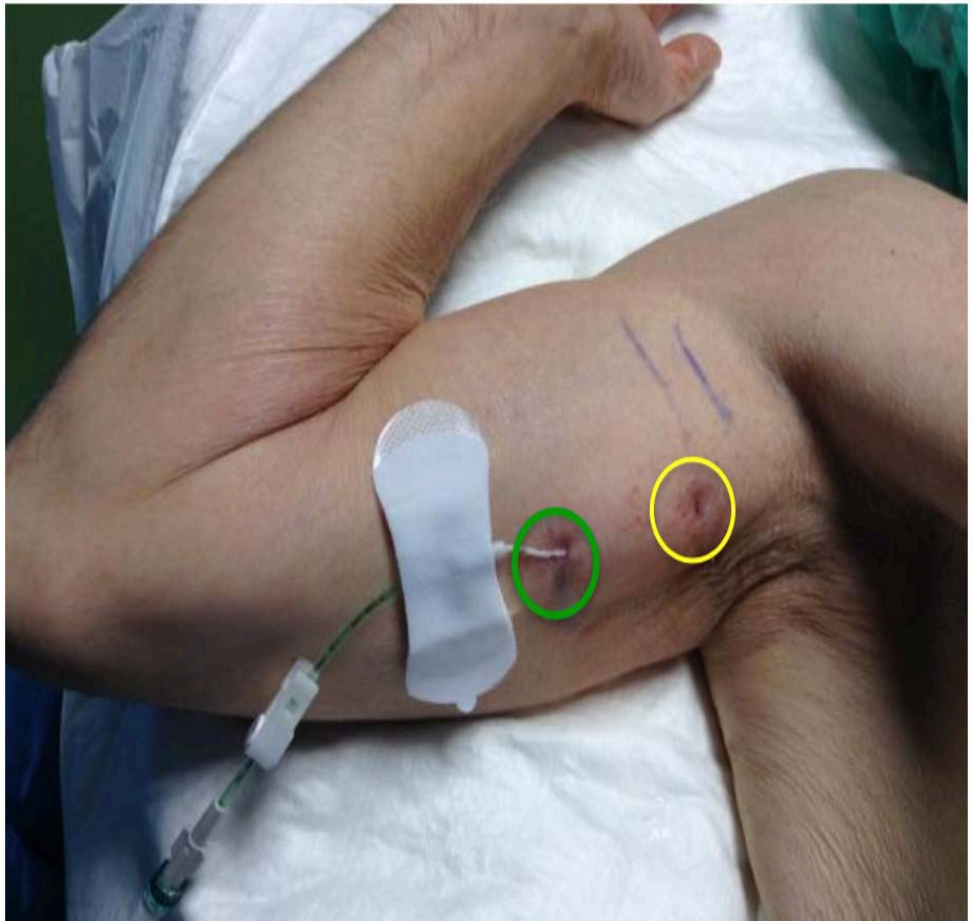


***Figure 1**. This person has a 21cm Total Zone Measurement (TZM), it divides into three 7cm zones to form the Red, Green and Yellow Zones. The ideal basilic vein image was located at 12cm from the medical epicondyle (MEC), in the Ideal Zone. Image by author.*



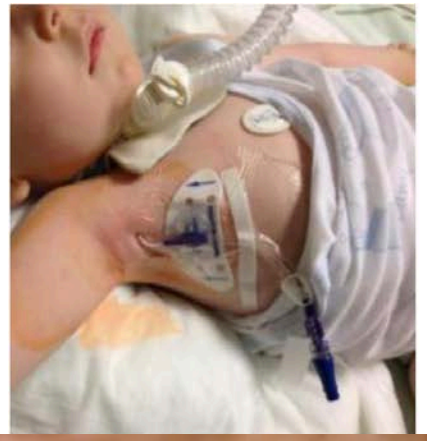
GruMAV
Grupo Multidisciplinar en Acceso Vascular

TUNELLISATION ET USAGE "*OFF LABEL*" DU PICC



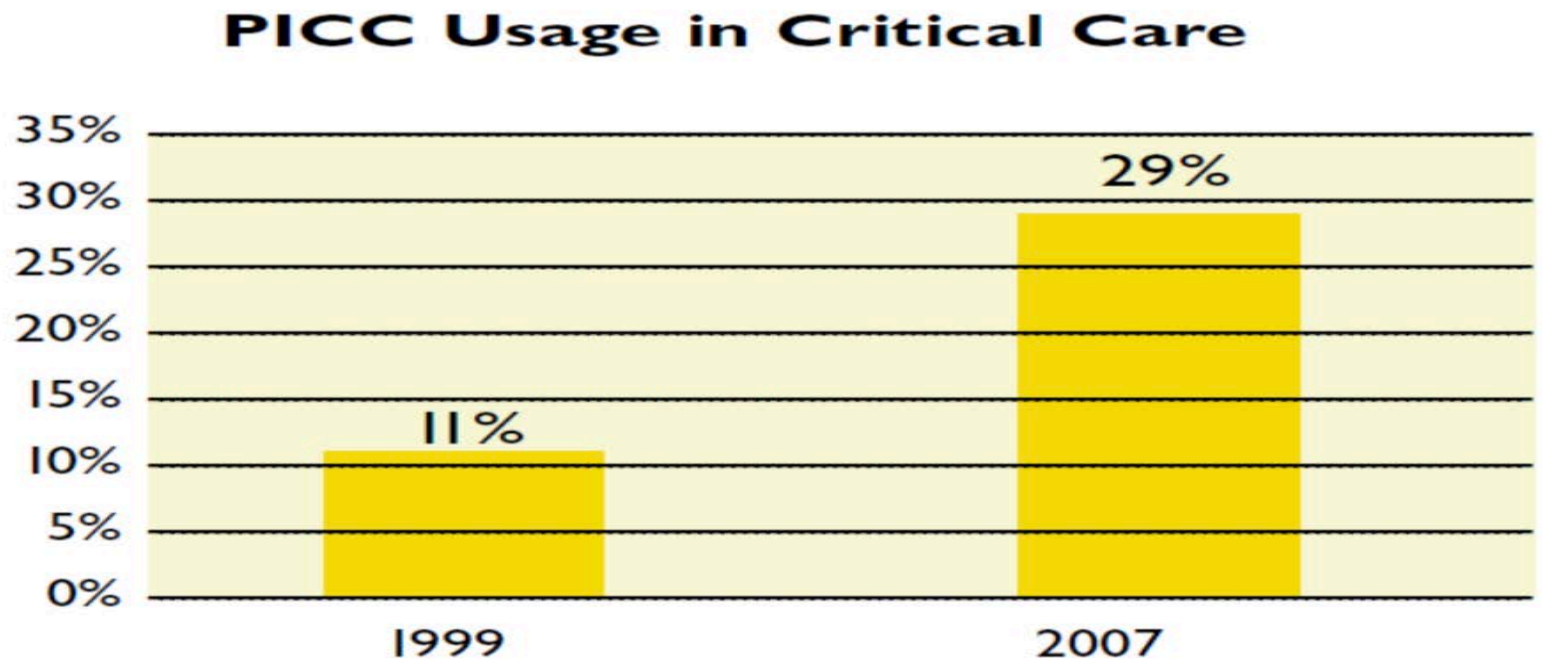
GruMAV
Grupo Multidisciplinar en Acceso Vascular

TUNELLISATION ET USAGE "*OFF LABEL*" DU PICC



GruMAV
Grupo Multidisciplinar en Acceso Vascular

UTILISATION IMPORTANTE DE PICC EN RÉANIMATION AU COURS DES DERNIÉRES ANNÉES



Santolucito et al. JAVA | Vol 12 No 4 | 2007

GruMAV
Grupo Multidisciplinar en Acceso Vascular

The use of peripherally inserted central catheters in intensive care: should you pick the PICC?

Peripherally inserted central venous catheters (PICCs) are a valuable route for short to intermediate-term central venous access. They have the advantage of being relatively simple to insert at the bedside under local anaesthesia, they are comfortable for the patient, and they have a relatively low complication rate.[3] While PICCs have been used extensively on general wards and in outpatients for several years, their use in the ICU setting has only recently been explored and there remains a paucity of data regarding insertion techniques and complication rates.[3]

JICS Volume 10, Number 2, April 2009

Pittiruti *et al. Critical Care* 2012, **16**:R21
http://ccforum.com/content/16/1/R21

CRITICAL CARE

RESEARCH Open Access

Clinical experience with power-injectable PICCs in intensive care patients

Mauro Pittiruti[1*], Alberto Brutti[2], Davide Celentano[2], Massimiliano Pomponi[2], Daniele G Biasucci[2], Maria Giuseppina Annetta[2] and Giancarlo Scoppettuolo[3]

Figure 1 Triple-lumen power-injectable peripherally inserted central catheter inserted in an adult patient in the ICU.

Conclusion: Power-injectable PICCs have many advantages in the ICU: they can be used as multipurpose central lines for any type of infusion including high-flow infusion, for hemodynamic monitoring, and for high-pressure injection of contrast media during radiological procedures. Their insertion is successful in 100% of cases and is not associated with significant risks, even in patients with coagulation disorders. Their maintenance is associated with an extremely low rate of infective and non-infective complications.

SF2H
Risque infectieux et soin

Recommendations from a formalized expert consensus

Good practice and risk management for the use of PICC

(Peripherally inserted central catheter)

December 2013

Participants

Invited societies

• AFITCH-OR	French association of nurses for cellular and hematology therapy, oncology and radiotherapy
• FNEHAD	National federation of home hospital establishments
• FNI	National federation of nurses
• SFAP	French society for the accompaniment of palliative care
• SFAR	French anesthesia – critical care society
• SFM	French cystic fibrosis society
• SFNEP	French clinical and metabolism nutrition society
• SFP	French pediatrics society
• SFR	French radiology society
• SPILF	French language society for infectious pathology
• SRLF	French language society for critical care
• UNICANCER	National federation of cancer control centers

Recommendations

Indications for the use of PICC

GruMAV
Grupo Multidisciplinar en Acceso Vascular

SELECTION CRITERIA IN SURGERY, ANESTHESIA, CRITICAL CARE, AND ICU

6. A PICC can be proposed:

- instead of a CVC in a subclavian, non-tunneled internal jugular, or non -tunneled femoral position (SA),
- in a patient with a tracheotomy, with a fistula or cervical stoma, instead of a non tunneled internal jugular CVC (SA).

7. To avoid the mechanical risks associated with a percutaneous sub-clavicular or internal jugular access, a PICC is indicated in the case of a patient with any hemostatic disorders (SA).

8. To avoid the mechanical risks associated with a percutaneous sub-clavicular access, a PICC is indicated in patients with a major respiratory insufficiency (SA).

There is no consensus concerning the indication for a PICC in patients with a major respiratory insufficiency, to avoid the mechanical risks related to an internal jugular access.

9. The insertion of a PICC is not indicated in the case of a shock requiring rapid filling (SA).

10. In the care of severe burn victims, a PICC may be indicated, whenever the patient is in a stable hemodynamic situation (SA).

11. A PICC allows CVP (central venous pressure) to be measured (SA).

12. A PICC should not be inserted for parenteral nutrition, if enteral nutrition is possible (SA).

13. A PICC can be used instead of a CVC in patients under temporary continuous parenteral nutrition for a period of 7 days or more (e.g. a patient with temporary digestive exclusion) (SA). The insertion of a PICC should be prefered to that of a totally implanted venous catheter, for less than 1 month of parenteral nutrition (SA).

14. In parenteral nutrition, and in the absence of any simultaneous intravenous treatment, it is preferable to fuse a single lumen PICC or the administration of a nutrient mixture (SA).

There is no consensus on the absolute need to use a dual lumen PICC, simultaneously with parenteral nutrition, in the case of intravenous treatment. There is no consensus:

- *on the recommendation not to use a PICC for prolonged cyclic parenteral nutrition, in homecare for a period of more than three months,*
- *on the use of a PICC being preferable to the that of an already inserted TIVC, for parenteral nutrition for a period of less than one month.*
- *on the recommendation not to use a PICC for parenteral nutrition, if the patient (or his/her relatives) wishes to handle the delivery line connection and disconnection techniques himself/herself.*

GruMAV
Grupo Multidisciplinar en Acceso Vascular

WJCCM World Journal of Critical Care Medicine

Submit a Manuscript: http://www.wjgnet.com/esps/
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
DOI: 10.5492/wjccm.v3.i4.80

World J Crit Care Med 2014 November 4; 3(4): 80-94
ISSN 2220-3141 (online)

REVIEW

Focus on peripherally inserted central catheters in critically ill patients

Paolo Cotogni, Mauro Pittiruti

November 4, 2014 | Volume 3 | Issue 4 |

Journal of Critical Care 31 (2016) 238–242

Contents lists available at ScienceDirect

Journal of Critical Care

journal homepage: www.jccjournal.org

Complication rates among peripherally inserted central venous catheters and centrally inserted central catheters in the medical intensive care unit☆

Matthew E. Nolan, MD [a], Hemang Yadav, MBBS [a], Kelly A. Cawcutt, MD [b], Rodrigo Cartin-Ceba, MD [a,*]

[a] Division of Pulmonary and Critical Care, Mayo Clinic, 200 First St SW, Rochester, MN, 55905
[b] Division of Infectious Diseases, Mayo Clinic, 200 First St SW, Rochester, MN, 55905

Table 4
Complication rates for PICCs and CICCs followed from MICU insertion until MICU discharge

		PICC (n = 200)	CICC (n = 200)	*P* value
Indwelling MICU catheter days	Total days	750	535	
	Median days (IQR)	2.3 (1.0-4.5)	2.0 (1.1-3.8)	.266
CRDVT	n (%)	4 (2%)	2 (1%)	.685
	Per 1000 MICU catheter-days	5.3	3.7	
	Median time-to-DVT (range), d	6.1 (2.3-18.8)	3.3 (1.7-4.8)	
CLABSI	n (%)	0	0	–
	Per 1000 MICU catheter-days	0	0	

THE AMERICAN JOURNAL of

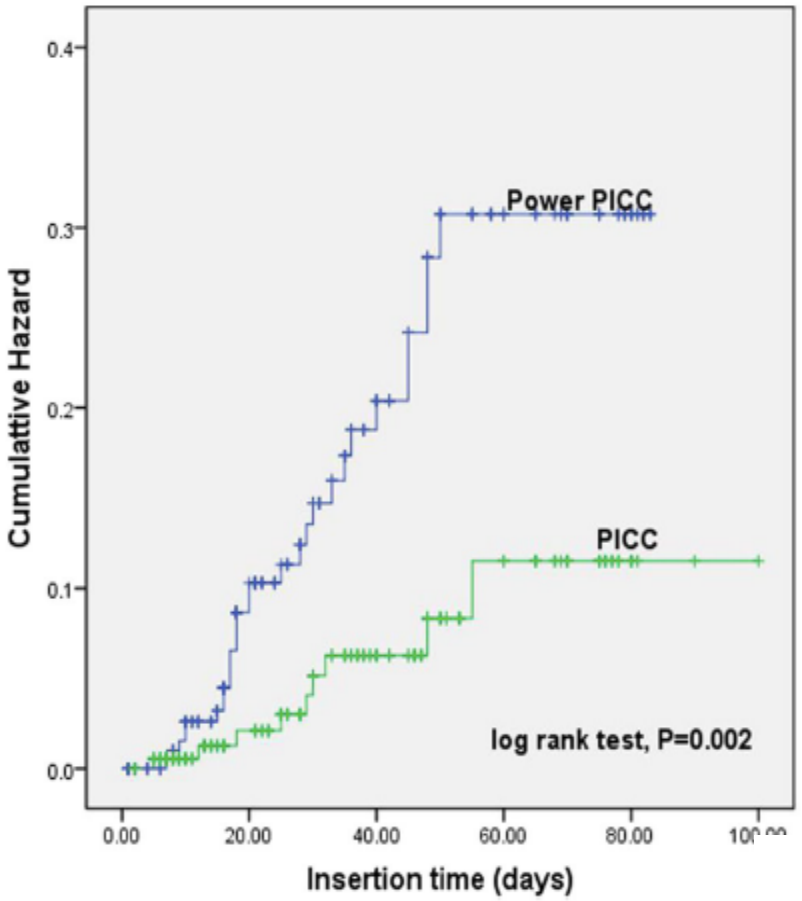
Table 4 Multivariable (Adjusted) Logistic and Cox Proportional Hazards Regression Models

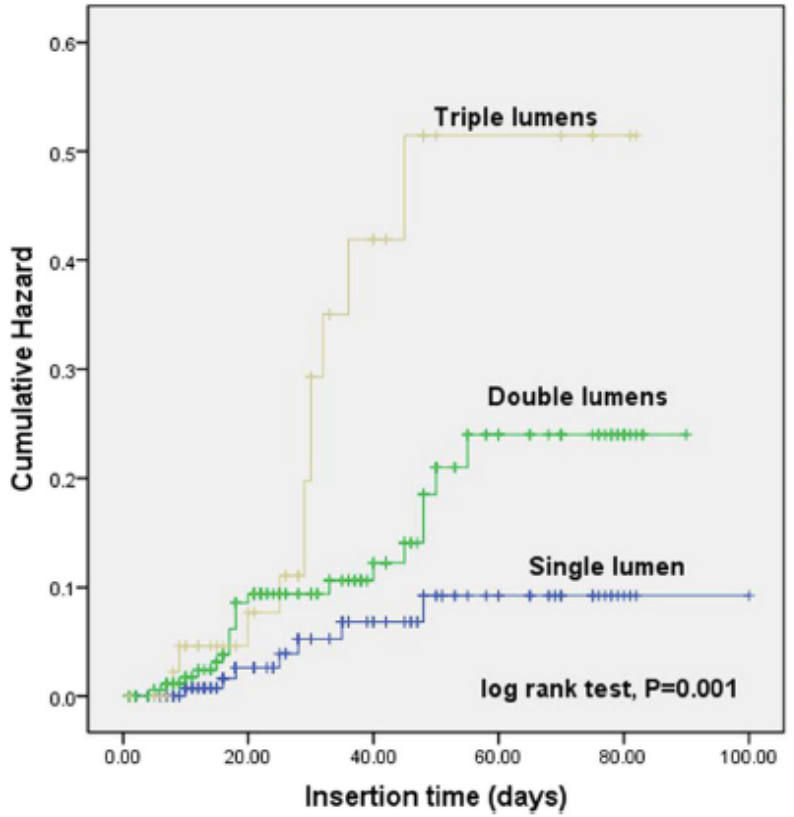
Variable	OR	(95% CI)	*P*-Value	HR	(95% CI)	*P*-Value
Hospital length of stay	1.04*	(1.01-1.06)	.003	1.02*	(1.00-1.04)	.003
Intensive care unit status	1.02*	(1.01-1.03)	<.0001	1.02*	(1.01-1.02)	<.0001
Active cancer	0.81	(0.42-1.58)	.54	0.85	(0.45-1.59)	.64
Number of PICC adjustments	1.05	(0.69-1.61)	.82	1.11	(0.74-1.67)	.60
Number of prior PICCs	0.65	(0.39-1.09)	.10	0.62	(0.39-0.97)	.05
Indication for PICC Use						
Long-term antibiotics	1	Ref	Ref	1		Ref
Venous access	1.11	(0.41-2.97)	.84	1.24	(0.45-3.39)	.66
Chemotherapy	1.23	(0.36-4.21)	.74	1.24	(0.38-4.01)	.72
Total parenteral nutrition	0.67	(0.21-2.13)	.50	0.87	(0.29-2.67)	.79
Number of PICC Lumens						
1	1	Ref	Ref	1		Ref
2	3.99*	(1.46-10.94)	.007	4.08*	(1.51-11.02)	.006
3	6.34*	(1.85-21.71)	.003	8.52*	(2.55-28.49)	.0003

CI = confidence interval; HR = hazard ratio; OR = odds ratio; PICC = peripherally inserted central catheter; Ref = reference.
*Denotes statistically significant association.

time to infectious complications.

- When feasible, deliberate use of single-lumen PICCs may help reduce the risk of PICC-bloodstream infection.





RTS

aracteristics
C-related
in intensive

Parameters	Logistic analysis		Cox analysis	
	OR (95%CI)	*P*	OR (95%CI)	*P*
Power PICC	4.239 (1.857–9.678)	0.001	4.197 (1.932–9.119)	0.000
Charlson scores	1.137 (1.004–1.287)	0.044	1.120 (1.001–1.253)	0.048
Diabetes mellitus	2.663 (1.293–5.482)	0.008	2.370 (1.224–4.588)	0.011
Lumens				
1	Reference		Reference	
2	3.352 (1.343–8.368)	0.010	2.939 (1.233–7.010)	0.015
3	8.018 (2.771–23.202)	0.000	6.352 (2.433–16.580)	0.000

Table 4. Multivariate logistic and Cox analysis for risk factors of PICC-related infections in ICU patients.

RISQUE THROMBOTIQUE

- Chopra 2013

At least 14 of the 64 studies report experience with old-fashioned PICCs inserted without micro-introducer and without US, at the antecubital fussa.

- Bottino 1979, Merrel 1994, Alhimyary 1996, Paz-Fumagalli 1997, Smith 1998, Allen 2000, Grove 2000, Snelling 2001, Strahilevitz 2001, Walshe 2002, Chemaly 2002, Ong 2006, Seeley 2007, Nash 2009
- CRT : 0.5 % - 14.9 %

RISQUE THROMBOTIQUE

Expected risk of symptomatic catheter related thrombosis in ICU

- CICC 1-3%
- PICC 2-5%
- FICC 5-10%

Minet 2015, Pittiruti 2015

RISK OF THROMBOSIS
CICC IS PREFERABLE

- Especially in onco-hematologic patients;
- **When the PICC is positioned without adhering to the international recommendations for the prevention of venous thrombosis…**

  - appropriate ratio between the diameter of the catheter and vein diameter – use of eco-guidance – appropriate placement of the catheter tip position- adequate stabilization emergency site – *see ISP Protocol*

GruMAV
Grupo Multidisciplinar en Acceso Vascular

Vascular Access

In Spain, there are no credential-related requirements to insert vascular catheters. No credentials, legal regulations, or specific training on placement is required for either physicians or nurses. It represents a legal issue that needs to be solved promptly.

Vascular access teams are created in some hospitals, and generally speaking, nurses are empowered to insert short peripheral vascular access devices, peripherally inserted central line catheters, and midline catheters. In addition, central or peripheral line maintenance is a nursing role, whereas all other central line insertions are the responsibility of physicians. Due to this, in most Spanish hospitals there is little communication between nurses and physicians about insertions.

INTERNATIONAL PERSPECTIVE

Health Care in Spain: Current Status and Future Directions

by Paloma Ruiz Hernández, RN,
Gloria Ortiz Miluy, RN

'Phlebitis Zero': Working to reduce the complications associated with short peripheral intravenous catheter

M.C. Martínez-Ortega[1], M.B. Suárez-Mier[2], A. Lana-Pérez[3], C. Del Río Pisabarro[4], A. Bueno-Pérez[3], T.C. Martínez-Flores[5]
[1]Valle del Nalón Hospital, ASTURIAS, Spain

iNCAiV

Health Working Group

Incativ programme (intravenous therapy quality indicators): A way of improving by learning

S. Casanova-Vivas, E. Hevilla-Cucarella, J.L. Micó-Esparza, I. García-Abad, B. Valdelvira-Gimeno, A.B. Lorente-Pomar
Generalitat Valenciana, VALENCIA, Spain

UNITÉS D´ACCÉS VASCULAIRE EN ESPAGNE : PLUS DE 70

GruMAV
Grupo Multidisciplinar en Acceso Vascular

PICC EN RÉANIMATION EN ESPAGNE

- Technique d´insertion pas encore normalisée :
  - Connaissance insuffisante de: recommandations internationales, technique ultrason graphique, méthode de EKG - IC, protocole SIP-2,….→ Nous avons besoin de plus instruction et d'éducation
- Utilisation de cathéters 7Fr (plus thrombose)
- Ponction aveugle dans le pli du bras (risque thrombotique, infection) → brève durée
- Utilisation quand le CICC a infection ou durée > 15 j
- Utilisation de Midline/mini-midline mais limité
- Utilisation de PIVC classique

humanizandoloscuidadosintensivos.com

Buscar con Google | ¿Hay PICC en tu HUCI? – Proyecto HU-CI | SEEIUC en Twitter: "¿Hay PICC en tu HUCI? Juan Manuel López-Reina Roldán e...

HUCI Humanizando los Cuidados Intensivos

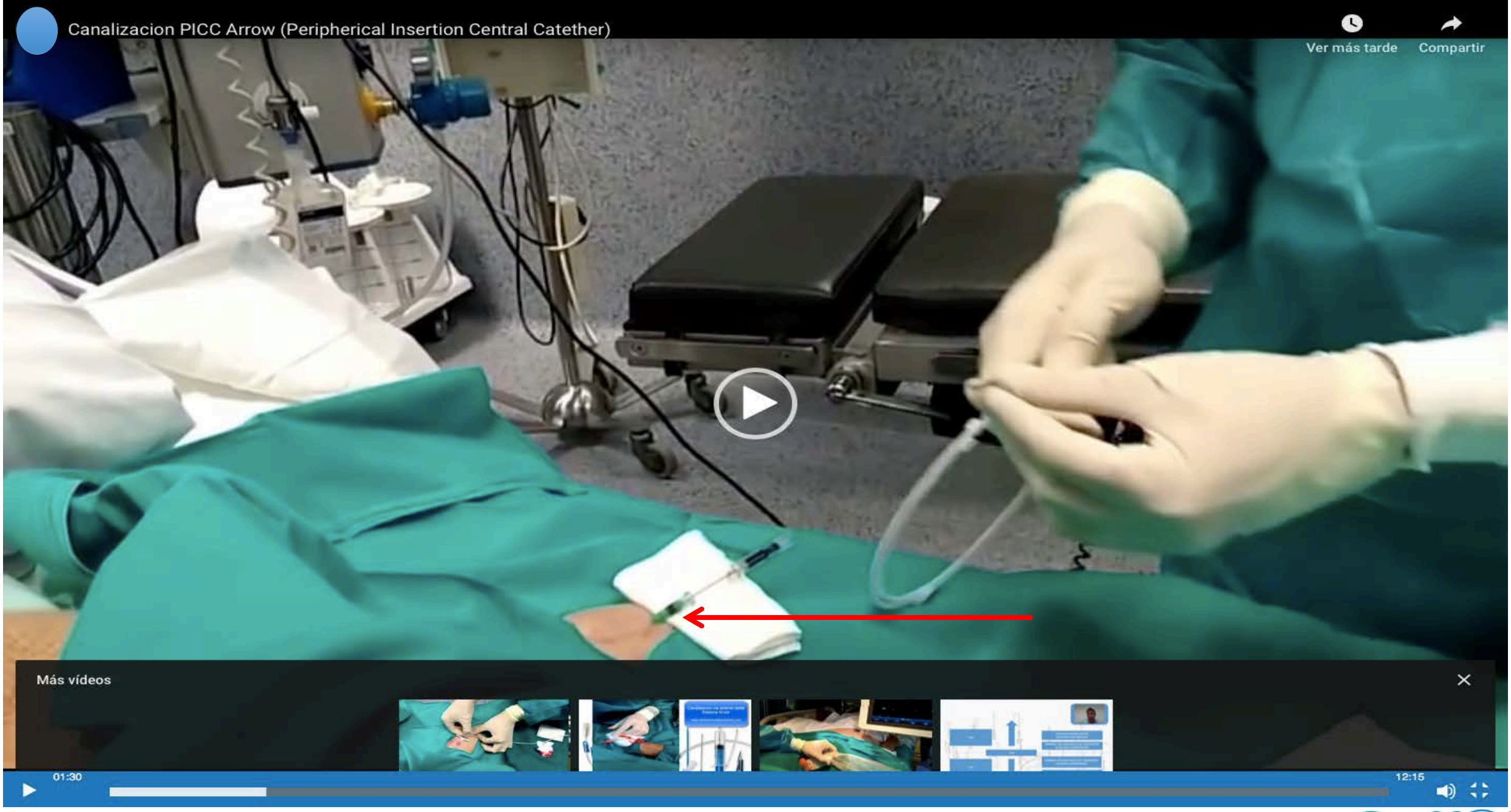
FOSSE ANTÉCUBITALE

¿Hay PICC en tu HUCI?

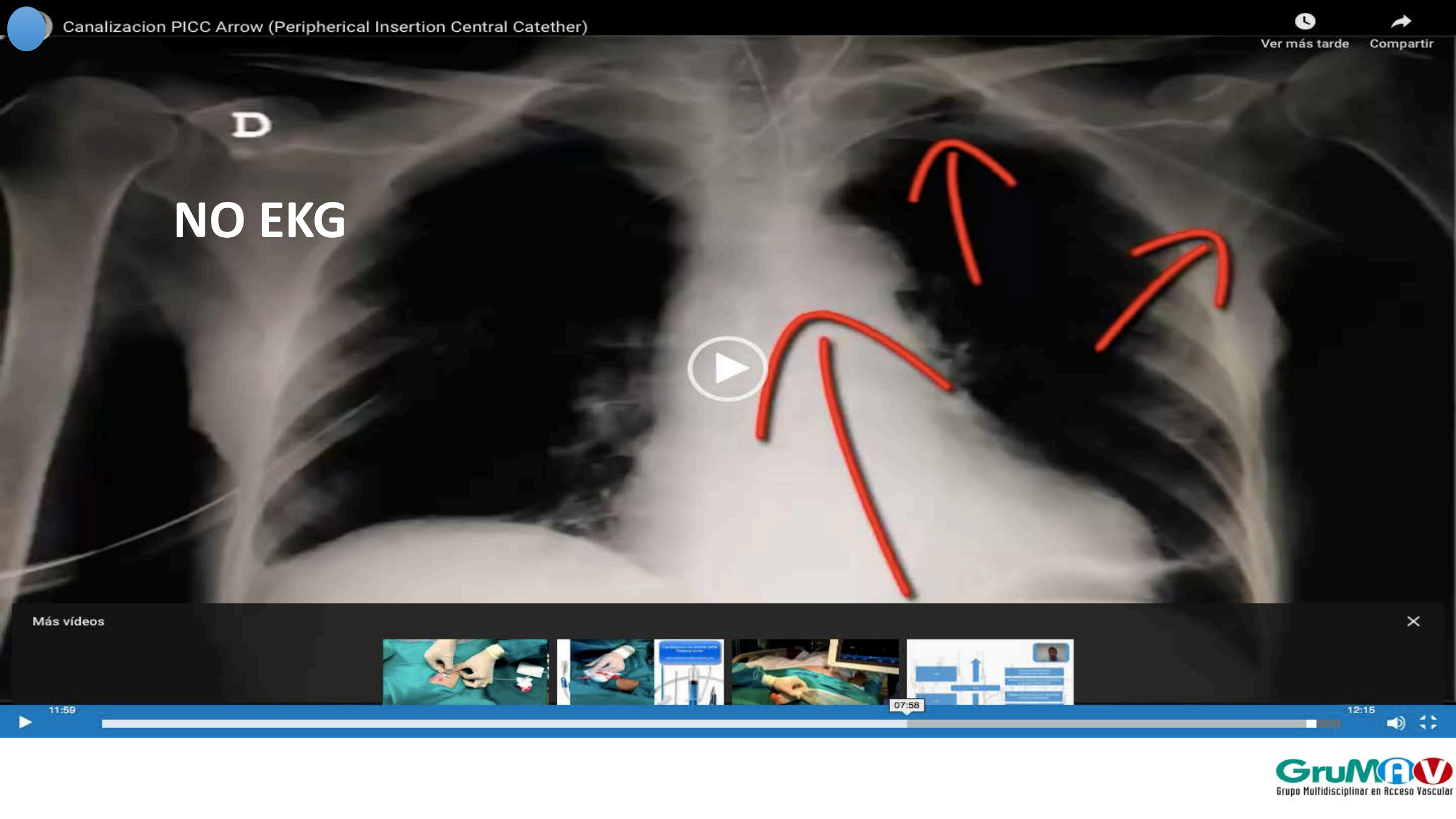
Actualmente el uso de los catéteres venosos centrales de inserción periférica o PICC (peripherally inserted central catheters) en las UCI está muy demandado pero hay poca información sobre quién y cómo se están canalizando éstos.

Juan Manuel [redacted] Instructor PAN (PICC Academy Network), Enfermero de la unidad de cuidados intensivos del Hospital [redacted] y Doctorando por la

GruMAV Grupo Multidisciplinar en Acceso Vascular




10:23
10:38
12:15



GruMAV
Grupo Multidisciplinar en Acceso Vascular

CONCLUSIONS 1

PICC EN RÉANIMATION . . . .AVANTAGES

- ✓Peuvent être utilisés pour l'administration de multiples médicaments
- ✓Surveillance hémodynamique
- ✓Insertion facile et sûre pour un pourcentage élevé de soins actifs
- ✓Faible taux d´infection et clinique thrombose
- ✓Le patient peut être transféré avec le PICC

CONCLUSIONS 2

PICC EN RÉANIMATION… PARTICULIERS AVANTAGES

- ✓Trachéotomie
- ✓ Risque infectieux élevé du point d´insertion
- ✓Coagulophatie
- ✓Indisponibilité du cou, clavicule, etc.
- ✓Hospitalisation prolongée

CONCLUSIONS 3

PICC EN RÉANIMATION . . . LIMITATIONS

- ✓Accès vasculaire en situation d´émergence
- ✓Besoin de plus de 3 voies
- ✓Veines non disponibles
- ✓Paralysie neurologique du bras
- ✓IRC (AV fistule)

CONCLUSIONS : PICC EN ESPAGNE

- Lent mais imbattable mouvement de l´utilisation en remplacement du CICC dans situations de non urgence
- Connaissance, formation et entraînement : standardisation de la technique
- Formation nécessaire → formation cours GruMAV, master, participation à des congrès, etc.
- Utilisation de l´évidence scientifique et recommandations internationales

- Photos : avec les compliments de
  - F. Pinelli
  - M. Pittiruti
  - A. Panchetti

www.grumav.com
grumav@grumav.es

GruMAV
Grupo Multidisciplinar en Acceso Vascular