

Cos'è il NEVAT

Fiammetta Piersigilli



NEVAT - Neonatal European Vascular Access Team

Primi passi...

Contattare dei professionisti interessati
alla gestione delle vie centrali



Creare un Gruppo che avesse degli scopi
comuni

Facilitare interazioni

Favorire la ricerca

Primi passi...



Primi contatti via mail



Riunioni on-line

Neonatologi

Infermieri

Anestesisti

Chirurghi



Scopi comuni

Facilitare le interazioni tra professionisti interessati all'accesso vascolare in ambito nazionale / internazionale

Creare un lingua comune (creazione di protocolli)

Diffondere la conoscenza di nuove tecniche / materiali (Interazione con l'industria)

Facilitare l'esecuzione di trial clinici multicentrici

Austria
Belgium
Bulgaria
Croatia
France
Holland
Italy
Portugal
Spain
UK





Dr. Anabela Salazar

Neonatologist

Hospital S. Francisco Xavier, Lisboa

Dr. Pierre Maton

Neonatologist

CHC groupe santé – Clinique MontLégia



Dr. Christian Breschan

Anesthesist

Department of Anesthesia, Klinikum Klagenfurt -

Suzy Van Eenoo
Belgium



Dr. Marie-Julie Debuf

Neonatologist

Grand Hôpital de Charleroi



Matheus (Roland) Van Rens

Neonatal nurse practitioner

Dr. Shteryu Boyadzhiev

Consultant Paediatrician and Neonatologist

Umbal Lozenetz – Sofia, Bulgaria



Mrs. Brenda van Delft

Advanced Practice Nurse

UZ Brussel

Dr. Giovanni Barone

Consultant Neonatologist

Neonatal Intensive Care Unit, Infermi Hospital –



Dr. Mónica Marçal

Neonatologist- Pediatrician

Hospital São Francisco Xavier



Dr. Madalena Lopo Tuna

Neonatologist – Pediatrician

Hospital de São Francisco Xavier, C

mtuna@chlo.min-saude.pt

Con la partecipazione
straordinaria di
Mauro Pittiruti



Progetti attuali e futuri

Giovanni Barone
Ospedale Infermi Rimini



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Progetti attuali

- Creazione di un network europeo relativo agli accessi venosi neonatali che coinvolga diversi specialisti.
- Riconoscimento da parte dell'European Society of Pediatric Research (ESPR).
- Creazione di un sito web dedicato.
- Sviluppo di una serie di raccomandazioni relativamente agli accessi venosi neonatali.



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Raccomandazioni relativamente agli accessi venosi neonatali

1. Protocollo sulla scelta dell'accesso venoso più appropriato in TIN

Mauro Pittiruti - Giovanni Barone - Brenda Van Delft- Queenie Vranckaert – Barbara De Bisschop - Ignacio Oulego

2. Bundle di inserzione sul CVO.

Vito D'Andrea - Fiammetta Piersigilli - Marie Julie DeBuff – Bernhard Schwabegger

3. Bundle di inserzione sull'ECC.

Giovanni Barone - Shtenyu Sboyadzhiev - Pierre Maton

4. Bundle di inserzione sui catateri centrali ecoguidati CICC e FICC inclusa la tunnellizzazione.

Christian Breschan -Mauro Pittiruti - Robin Van Der Lee - Thierry Pirrotte - Ignacio Oulego - Tobias Werther

5. Bundle di inserzione sull'accesso venoso periferico (incl. midlines).

Roland Van Rens – Robin Van der Lee - Agnes Van der Hoogen - Carmen Rodriguez - Pierre Maton

Raccomandazioni relativamente agli accessi venosi neonatali

6. Bundle di inserzione sul catetere arterioso ombelicale e sull'accesso arterioso periferico.

Nadya Youssef Fiammetta Piersigilli - Thierry Pirotte - Rafik Ben Ammar - Bernhard Schwabberger- Barbara De Bisschop

7. Protocollo per la gestione dell'exit site di tutti gli accessi vascolari neonatali.

Fiammetta Piersigilli - Carmen Rodriguez

8. Protocollo per la gestione della linea infusionale e la prevenzione delle infezioni.

Agnes Van den Hoogen - Roland Van Rens - Pierre Maton - Brenda Van Delft

9. Protocollo per l'inserzione e la gestione dell'accesso intraosseo.

Bernhard Schwabberger – Fiammetta Piersigilli

10. Protocollo per la sedazione durante l'inserzione dell'accesso vascolare.

Mónica Marçal - **Tobias Werther** - Vito D'Andrea - Madalena Tuna - Anabela Salazar - Fiammetta Piersigilli— Robin Van der Lee

Progetti futuri

- Promuovere l'innovazione e facilitare la diffusione delle migliori pratiche basate sull'evidenza relative agli accessi vascolari neonatali
- Attivazione di corsi di formazione sull'accesso venoso del neonato
- Pubblicazione delle raccomandazioni scritte e formulate dai membri del NEVAT sulla base delle evidenze disponibili
- Riconoscimento da parte di altre società scientifiche europee (es ESPNIC)
- Generare e promuovere progetti di ricerca a livello internazionale

Progetti futuri

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Progetti futuri

- Promuovere l'innovazione e facilitare la diffusione delle migliori pratiche basate sull'evidenza relative agli accessi vascolari neonatali

Il nuovo ruolo della venipuntura ecoguidata

– *Dott. Christian Breschan*

L'importanza dei team di accessi vascolari

– *Dott. Roland Van Rens*

Il nuovo standard: ecografia per la tip location

– *Dott. Vito D'Andrea*

La colla e le altre novità nella gestione del sito di emergenza

– *Dott.ssa Carmen Rodriguez*

Progetti futuri

- Promuovere l'innovazione e facilitare la diffusione delle migliori pratiche basate sull'evidenza relative agli accessi vascolari neonatali
- **Attivazione di corsi di formazione sull'accesso venoso del neonato**
- Pubblicazione delle raccomandazioni scritte e formulate dai membri del NEVAT sulla base delle evidenze disponibili
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Come strutturare un corso sugli accessi vascolari

Esistono due documenti essenziali

WoCoVA Consensus (BMJ2013);ESA guidelines (EJA2020)

I corsi dovrebbero avere:

- 1) Training PRE-CLINICO (lezioni frontali + parte pratica su simulatori/volontari)
- 2) Training CLINICO (curva di apprendimento con tutoraggio, curva di apprendimento senza tutoraggio, Audit conclusivo)

Chi dovrebbe tutorare i corsi?

- Medici e infermieri adeguatamente addestrati
- Medici e infermieri che abbiano contribuito alla ricerca scientifica sul campo negli ultimi anni
- Il GAVePed fondato nel 2018 ha organizzato oltre 20 corsi neonatali su tutto il territorio nazionale





09:00-17:00 **NEVAT course on neonatal vascular access**
Coordinators: Eirik Nestaas, Norway, Fiammetta Piersigilli, Belgium

09:00-10:30 **Session 1**

09:00-09:20 **Time for revolution in neonatal vascular access**
Fiammetta Piersigilli, Belgium and Eirik Nestaas, Norway

09:20-09:40 **The many uses of ultrasound in neonatal vascular access**
Robin Van der Lee, the Netherlands

09:40-10:00 **Visualization of superficial veins in neonates (RaSuVA protocol and NIR technology)**
Vito d'Andrea, Italy

10:00-10:20 **Insertion of umbilical venous catheters**
Giovanni Barone

10:20-10:40 **Insertion of epicutaneo-cava catheters**
Vito D'Andrea, Italy



11:00-13:00 **Session 2**

11:00-11:20 **Ultrasound guided central catheters (CICCs and FICCs) in neonates**

Mauro Pittiruti

11:20-11:40 **Securement of the catheter and protection of the exit site: cyanoacrylate glue and transparent membranes**

Roland Van Rens

11:40-12:00 **Technique of intraosseous access in neonates**

Bernhard Schwabberger, Austria

12:00-12:20 **Proper management of the infusion lines**

Giovanni Barone

12:20-12:40 **Prevention of central line associated blood stream infections**

Fiammetta Piersigilli, Belgium

12:40-13:00 **Open discussion / Q&A**



14:00-15:20

Hands-on practice (part 1)

- **Visualization of superficial and deep veins (on volunteers)**

Giovanni Barone, Mauro Pittiruti

- **Techniques for the securement and dressing of the devices (on simulator)**

Fiammetta Piersigilli, Belgium and Roland Van Rens

- **Techniques for ultrasound guided puncture (on simulator)**

Vito D'Andrea, Italy and Robin Van der Lee, the Netherlands

- **Intraosseus devices (on simulator)**

Bernhard Schwabegger, Austria

Progetti futuri

- Promuovere l'innovazione e facilitare la diffusione delle migliori pratiche basate sull'evidenza relative agli accessi vascolari neonatali
- Attivazione di corsi di formazione sull'accesso venoso del neonato
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- Riconoscimento da parte di altre società scientifiche europee (es ESPNIC)
- **Generare e promuovere progetti di ricerca a livello internazionale**

Progetti futuri

Generare e promuovere progetti di ricerca a livello internazionale

Negli ultimi anni hanno visto luce diversi progetti (consensus) relativi al mondo degli accessi vascolari:

- *WoCoVA consensus on the clinical use of in-line filtration during intravenous infusions: Current evidence and recommendations for future research*
- *GAVeCeLT-WoCoVA Consensus on subcutaneously anchored securement devices for the securement of venous catheters: Current evidence and recommendations for future research*
- *Management of antithrombotic treatment and bleeding disorders in patients requiring venous access devices: A systematic review and a GAVeCeLT consensus statement*
- *European recommendations on the proper indication and use of peripheral venous access devices (the ERPIUP consensus): A WoCoVA project*

Consensus europea sulla gestione della linea infusoriale in TIN



5th GAVePed
Conference



L'IMPORTANZA DEI TEAM DI ACCESSI VASCULARI

THE IMPORTANCE OF VASCULAR ACCESS TEAMS



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SETTING VASCULAR ACCESS TEAM



Hamad Medical Corporation in Doha, Qatar.

BACKGROUND

- 112 beds level III-IV NICU
- Daily census of 100 patients
- 4000 admissions a year
- 350 nursing staff
- 70 medical staff



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VASCULAR ACCESS pre 2017

- **No existing IV Team:**
 - All 350 nurses peripheral IV catheters (PIVC)
 - All 70 medical staff Epicutane-Caval Catheters (ECC)
- **Annually:**
 - 10,000 peripheral IV catheters
 - 1000 central venous catheters (600 ECC - 400 umbilical)
- **Attempts and Success rate:**
 - 2.1 attempts to insert 1 PIVC, insertion success rate 81%
 - 1.8 attempt to insert 1 ECC, insertion success rate 82%



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VASCULAR ACCESS pre 2017

- **Conclusion**

- High use of vascular access devices
- High rate of insertion attempts
- Relatively low overall insertion success rates
- High complication rate
- Large number of DIVA (Difficult IntraVenous Access) for which surgeons or anesthesiologist were consulted



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VASCULAR ACCESS 2017 onward

- **NEONATAL VASCULAR ACCESS TEAM - NEOVAT**
(team development took 2 years)

1. Epicutane-Caval Catheters (ECC) insertions by 15 medical staff
2. Peripheral IV catheter (PIVC) insertions by 28 nursing staff

- Educational and Training programs
- Materials and Consumables (IMPORTANT)



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EVALUATION ECC TEAM



Original research article

Effect of implementing an Epicutaneo-Caval Catheter team in Neonatal Intensive Care Unit

Mohammad A A Bayoumi¹ , Matheus F P Van Rens¹ ,
Prem Chandra², Airene L V Francia¹, Sunitha D'Souza¹,
Majee George¹, Saad Shahbal², Einas E Elmalik¹
and Irian J E Cabanillas¹

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Vascular Access

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1-11

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EVALUATION ECC TEAM

- Data show significant improvements in overall success rate from 81.7% in 2016 to 97.6% currently.
- The first prick success rate significantly improved from 57.7% in 2016 to 66.9% in 2018. Recently started using POCUS
- Elective ECC removal after successful completion of therapy significantly improved following the NEOVAT implementation.
- DIVA patients for which surgeons or anesthesiologist were consulted went down to ZERO.



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NEONATAL PIVC INSERTIONS

- Between 01 January 2018 and 31 December 2020
- 10,416 infants with peripheral intravenous therapy
- Total sample size of PIVCs was 43,551 inserted PIVCs



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OBJECTIVE

To evaluate the effects of introducing the NEOVAT. These measures included in the **primary objective**:

1. First insertion attempt success rates
2. Overall insertion success rates
3. Dwell time duration of catheter
4. Peripheral line associated blood stream infections (PLABSI) rates
5. Peripheral intravenous infiltration/extravasation (PIVIE) scores

A **secondary objective** was to preliminary determine the economic and cost effectiveness impacts of introducing this team.



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RESULTS -1- 1ST INSERTION ATTEMPT

First insertion attempt and overall success rate

- The first attempt success rate, the overall PIVC insertion success rate significantly increased. The average attempts to successfully insert a PIVC significantly improved.

Factor	2018	2019	2020	2021	P value
Overall insertion success	81%	82%	96%	98.1%	<0.001
1 st attempt success	-	60%	68%	81.2%	<0.001
Average attempts	1.7	1.5	1.4	1.2	<0.001



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RESULTS -2- CATHETER USAGE

PIVC usage

- Over the three years, annual NICU admission showed an upward trend, but annualized PIVC use significantly declined. Consequently, there was an associated reduction in the number of PIVCs used per admission.

Years	Admissions (N=events)	Inserted catheters	Insertions per patient
2018	2897	16,301	5.6
2019	3918	14,426	3.7
2020	3601	12,824	3.6



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RESULTS -3- PLABSI rates

PLABSI rates

- The total number of PLABSI in the NICU were reduced from 58 out of 13,220 successful PIVC insertions in 2018 (0.44%), to 25 out of 11,837 in 2019 (0.21%) and to 19 out of 12,337 in 2020 (0.15%) ($P < 0.001$).

Years	PLABSI (N=events)	CL Days	PLABSI Rate Per 1000/days
2018	58	34,535	1.68
2019	25	31,906	0.78
2020	19	34,753	0.55

RESULTS -4- DWELL TIME

PIVC dwell time

- Annualized figures show a statistically measurable increase ($P < 0.001$).

Factor	2018	2019	2020
*Time of the device in situ	32 hours	34 hours	36 hours

*Dwell time is calculated from date and time of insertion to date and time of removal.

RESULTS -5- COMPLICATION RATES

PIVC complication rates

- The primary reasons for premature unplanned PIVC removal are complications like leakage, occlusion and PIVIE, all resulting in failure of therapy.

Factor	2018	2019	2020	RR	P value
Failure of therapy ↓	58.5%	55.0%	49.6%	0.85 (0.83 – 0.87)	<0.001
PIVIE Severity Score ↓	21	15	13		<0.001

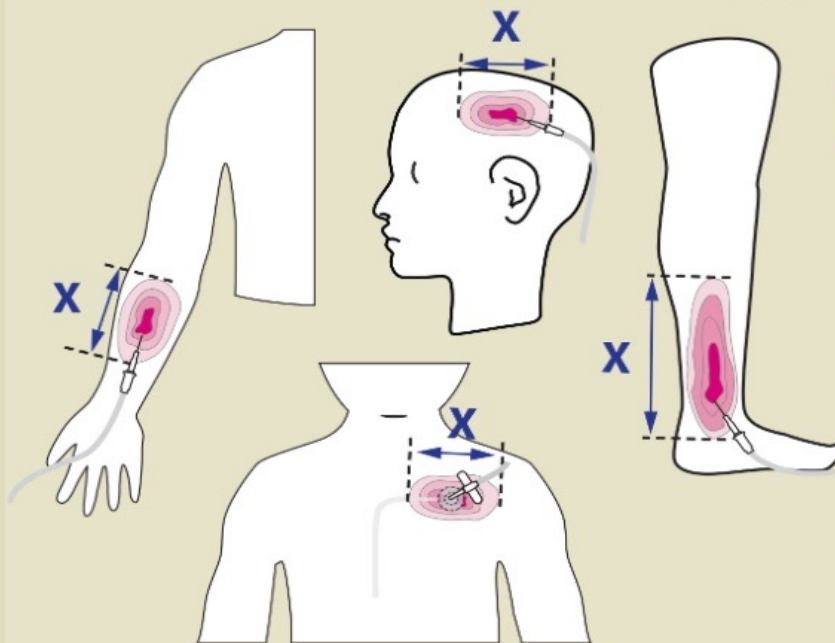
STEP 1:

Assess Extravasation

Volume

STEP 1a: Measure Swelling

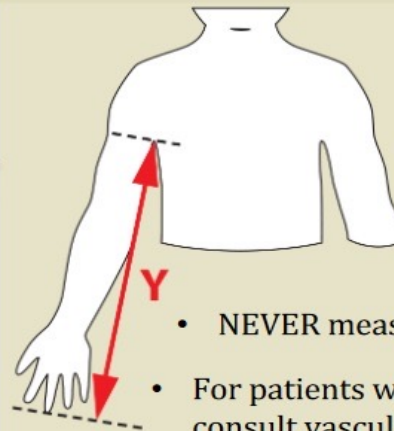
X



- Notes:**
- Define edges of swelling by palpation/visual observation.
 - Measure longest dimension.

STEP 1b: Measure ARM Length

Y



Y = Axilla to tip of longest finger

- For Y measure arm length regardless of site of extravasation.
- NEVER measure leg or other body part.
- For patients with casts or limb deficiency, consult vascular access team.
- Arm length Y is just a convenient way to consistently estimate the patient's size. For Y never measure the leg or other body part.

STEP 1c: Calculate

$$\left(\frac{X}{Y} \right) \cdot 100 = \boxed{} \%$$

With permission from Cincinnati's Medical Center (2018)

http://stopivharm.org/images/2018-09/PIV/C_180913_Cincinnati_Pediatric_IVExtravasation_Assessment_System__CCHMC_Epic.pdf

RESULT SECONDARY OBJECTIVE

Cost effectiveness measures

- Greater first attempt success, increased catheter dwell time and the associated reduction in PIVC use led to cost savings estimated at US\$3,581.31.

Years	Admissions (N=events)	Total cost US\$1.03*
2018	2897	16,790.03
2019	3918	14,858.78
2020	3601	13,208.72

* cost per single peripheral intravenous catheter US\$1.03

- Total cost for treatment of one PLABSI has been estimated to range from US\$10,000 up to \$40,000. With a total reduction of 39 PLABSI the **cost saving** can be estimated within the range of **US\$390,000 to US\$1,560,000** per annum.



CONCLUSION

- Our results support that a dedicated vascular access team positively impacts clinically important vascular access quality measures.
- We believe this information can be used to support new ways of organising IV access workflows in other units.

Il nuovo standard: ecografia per la tip location

VitoD'Andrea



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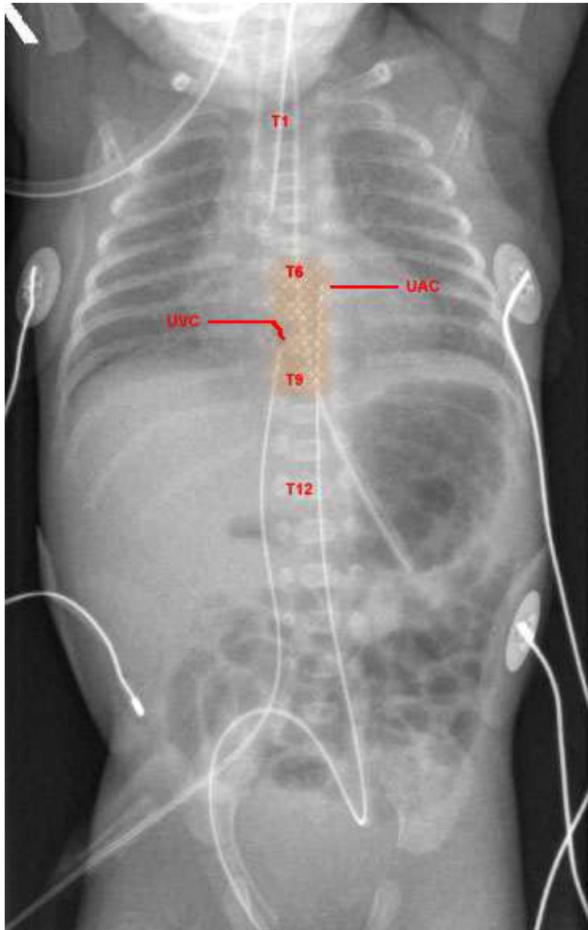
Tip location...cosa dicono le LG

23. CENTRAL VASCULAR ACCESS DEVICE TIP LOCATION

3. Consider the use of ultrasound for CVAD tip location. The clinical applicability of this is currently limited by the small sample sizes used to demonstrate its efficacy as a reliable and safe method to replace chest radiographs in all ages, and its usefulness is limited by the knowledge, skill, and experience of the operator.^{36,43,44,46,63-65} (III)
 - a. The addition of agitated saline to enhance trans-thoracic echocardiography has been shown to be effective in detecting catheter tip position in the lower third of the SVC, as well as detecting catheter malposition through delayed opacification and reduced echogenicity.⁶⁶⁻⁶⁸ (IV)
4. Consider the use of ultrasound to confirm catheter tip position in neonates due to the relative ease of visualizing the catheter tip in this age group, as well as in the emergency department or other critical care environments where immediate confirmation of tip location is time critical.^{46,69} (IV)

5. Avoid fluoroscopy except where CVAD placement is difficult or has failed at the bedside, as it requires exposure to ionizing radiation.^{4,53,62,70} (IV)
6. Postprocedure radiograph imaging is not necessary if alternative tip location technology confirms proper tip placement.^{46,50,71} (II)

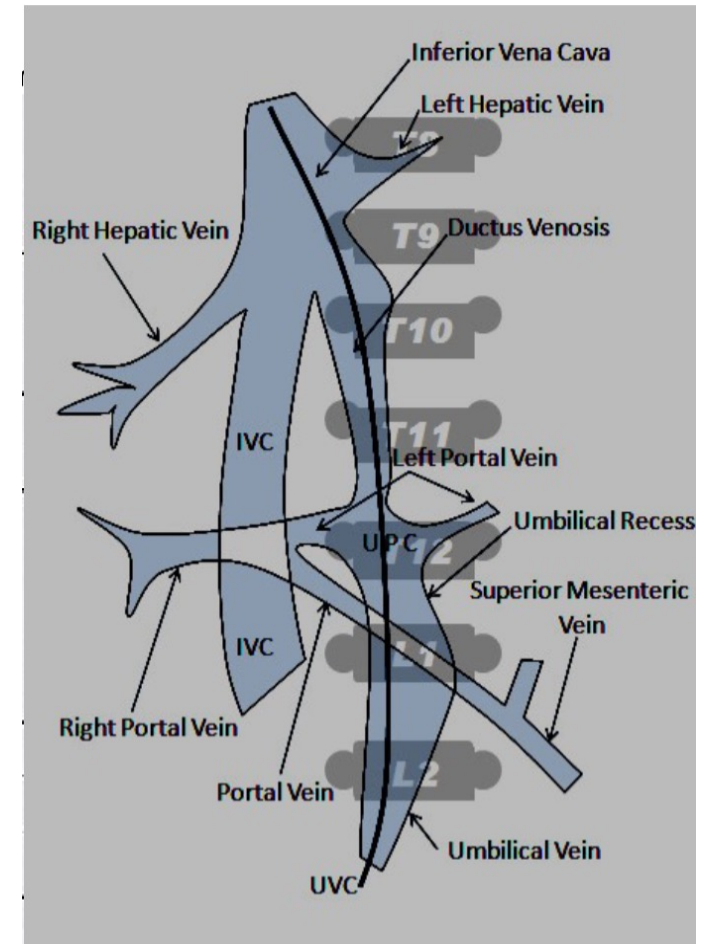
Confirmation of tip location by postprocedure chest radiograph remains acceptable practice and is required in the absence of technology used during the procedure. This method is less accurate because the CAJ cannot be seen on the radiograph, requiring identification of tip location by measurement from the carina, trachea-bronchial angle, or thoracic vertebral bodies. Patient repositioning or movement results in distal or proximal migration of the catheter tip by as much as 2 cm dependent on the movement.^{4,12,69,72-75} (II)



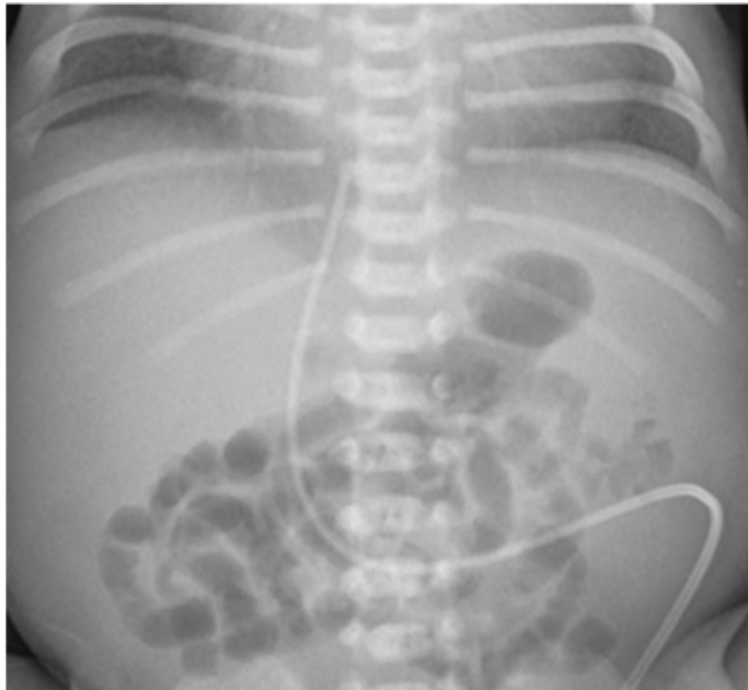
UVC
Optimal above diaphragm T8-10
Acceptable Low position in IVC
Withdraw if in heart or diverted angle into liver, re XRay

UAC
Optimal T6 – T9
Acceptable low position L3 - 4
Withdraw if at T12 -L2 as site of mesenteric and renal arteries

Insertion length:
UAC = 3 x weight + 9cm + stump or diagonally umbilicus to shoulder length + 1cm + stump
UVC = 1.5 x weight + 5cm+ stump
Emergency UVC access 5cm plus cord length



Why not the Chest X Ray?



Why not the Chest X Ray?

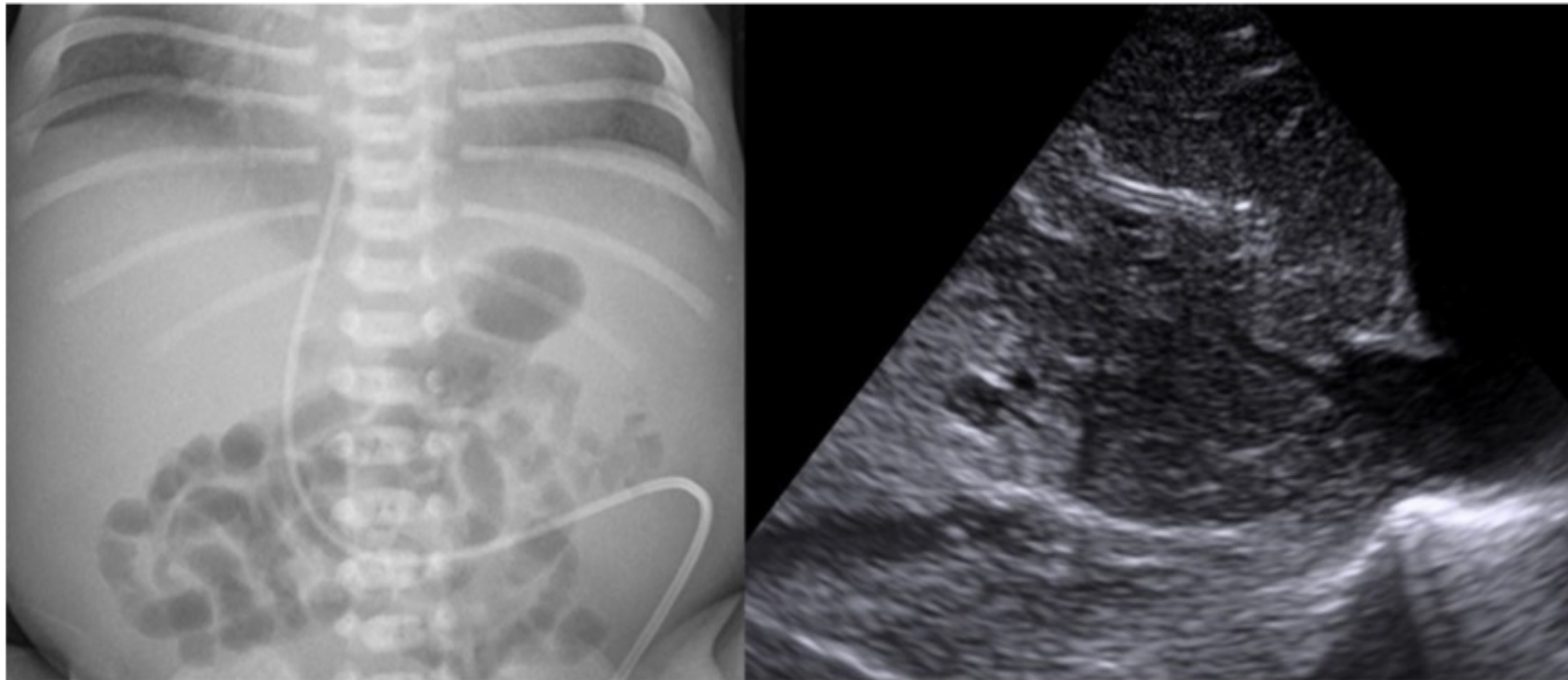


Figure 4 An umbilical venous catheter (UVC) outside the cardiac silhouette, below the level of the diaphragm and pointing towards the base of the right atrium on X-ray (and therefore felt to be in a safe position) which is shown on ultrasound to be penetrating the liver parenchyma.

Why US?

Determination of Umbilical Venous Catheter Tip Position With Radiograph

Adam B. Hoellering, MBBCh (Hons), FRACP; Pieter J. Koorts, MBChB, FRACP;
David W. Cartwright, MBBS, FRACP; Mark W. Davies, MBBS, PhD, FRACP

US Gold Standard

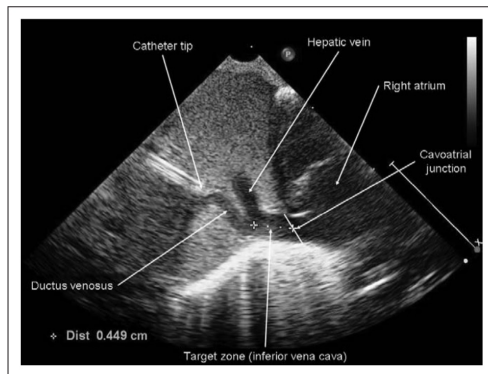


Figure 2. Ultrasound of the target zone (i.e., the length of the inferior vena cava between the insertion of the ductus venosus and the cavoatrial junction) measured as 4.49 mm.

Cardiac Silhouette

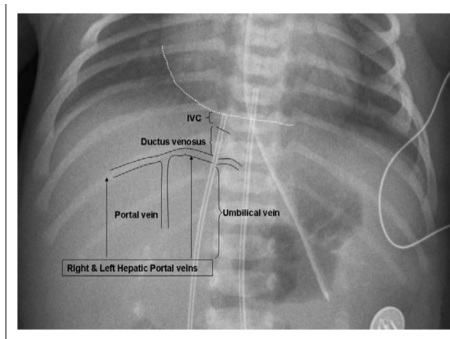


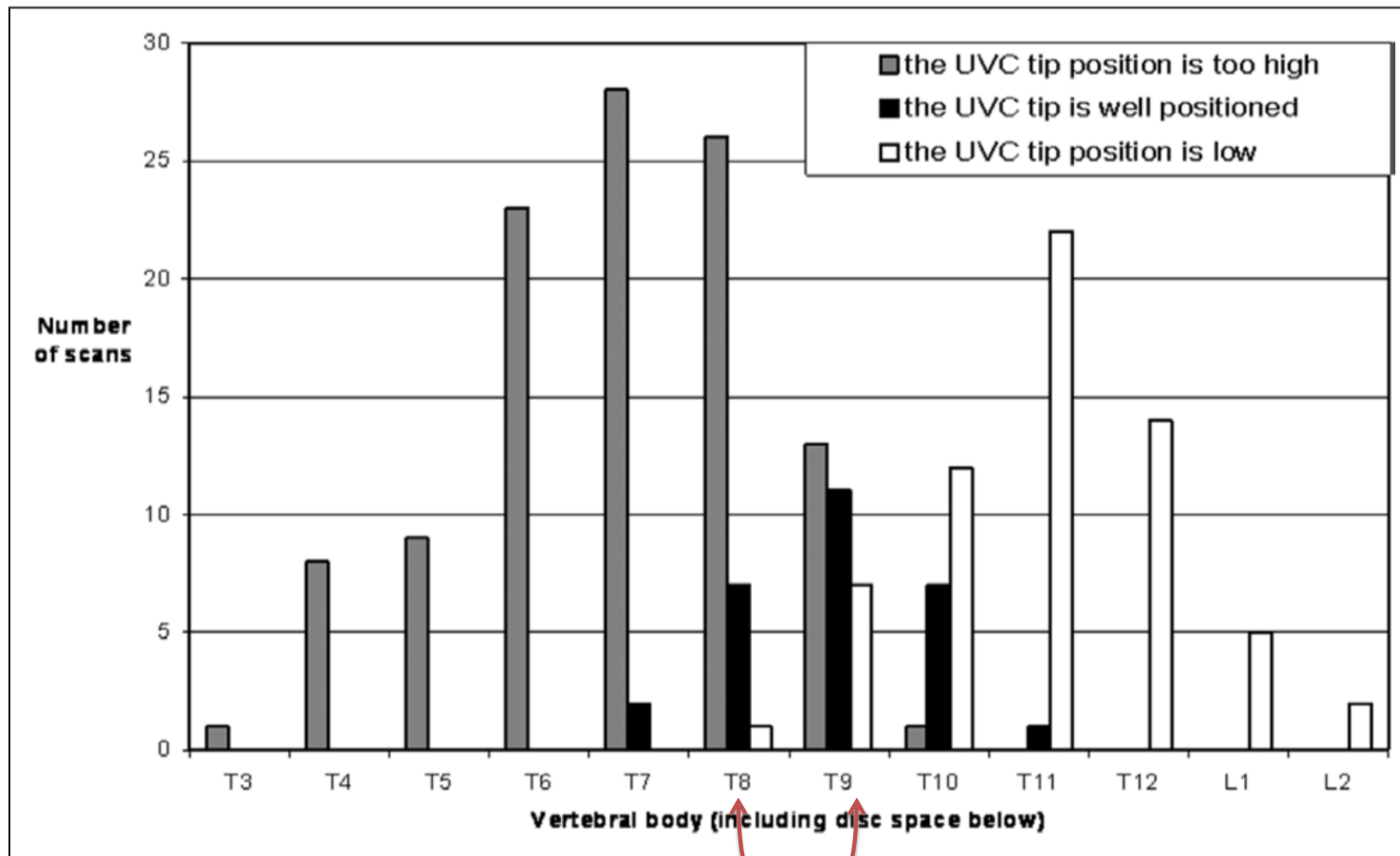
Figure 1. Assessment of umbilical venous catheter tip position by the cardiac silhouette method where the position of the cavoatrial junction is estimated by extrapolating the curve of the right atrial border medially (dotted white line) to its intersection with the inferior vena cava (IVC).

Vertebral body

Vertebral Body Method

The UVC tip position was defined as “well positioned” if the tip was at the level of T8–T9, “high” if above the body of T8, and “low” if below the body of T9.

“Can we do it better?” ...tip location..US



Determination of Umbilical Venous Catheter Tip Position With Radiograph. Pediatric Critical Care Medicine 2014

Protocollo Echo Tip per il CVO

Il protocollo Echotip prevede il posizionamento ecoguidato del CVO mediante l'ausilio dell'ecografia sia come strumento di **tip navigation** che come strumento di **tip location**:

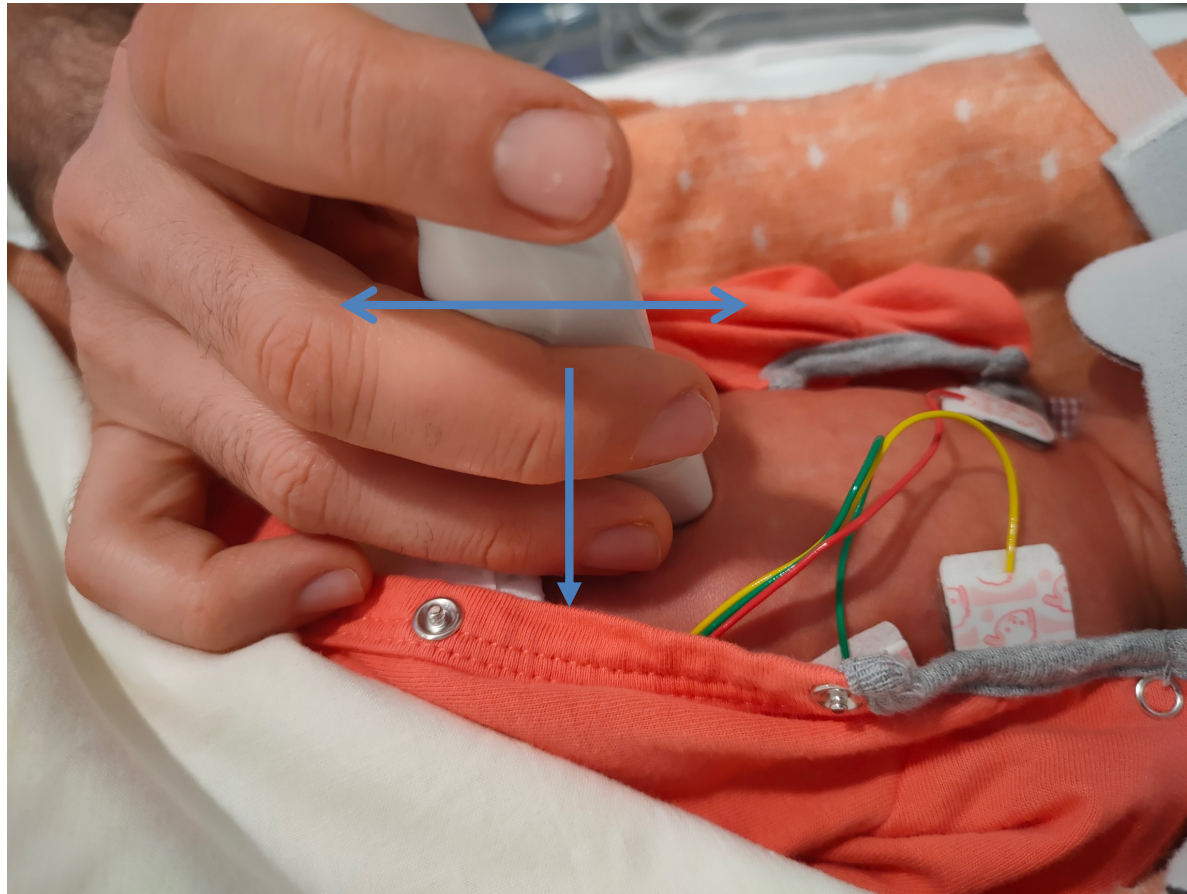
Tip navigation:

Sonda: microsettoriale, impostare una frequenza tra 7-8 MHz

Finestra acustica: sottocostale longitudinale sagittale: visualizzare il dotto venoso e la sua prosecuzione nella vena cava inferiore.

Procedura: Durante l'inserimento del CVO seguire l'avanzamento del CVO all'interno del dotto venoso e nella vena cava inferiore fino al raggiungimento della posizione ideale.

Neo-ECHOTIP for UVC Probe TIP-Navigation



Protocollo Echo Tip per il CVO

Il protocollo Echotip prevede il posizionamento ecoguidato del CVO mediante l'ausilio dell'ecografia sia come strumento di **tip navigation** che come strumento di **tip location**:

Tip navigation:

Sonda: microsettoriale, impostare una frequenza tra 7-8 MHz

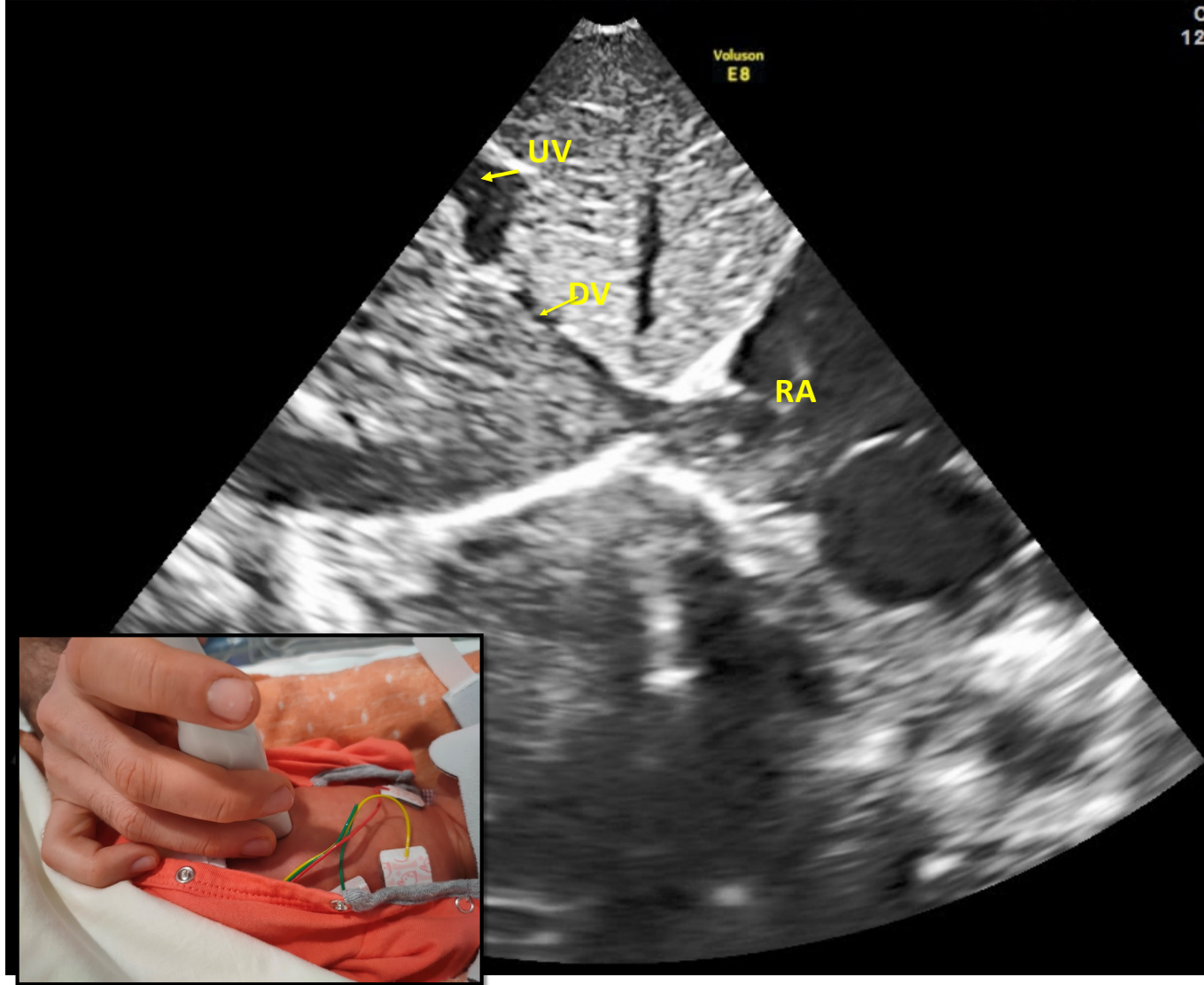
Finestra acustica: sottocostale longitudinale sagittale: visualizzare il dotto venoso e la sua prosecuzione nella vena cava inferiore.

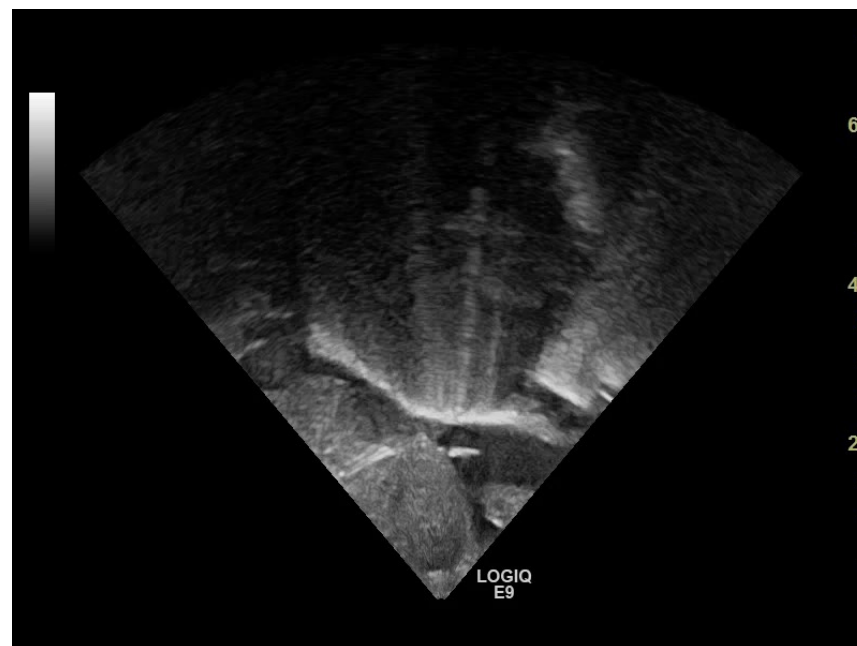
Procedura: Durante l'inserimento del CVO seguire l'avanzamento del CVO all'interno del dotto venoso e nella vena cava inferiore fino al raggiungimento della posizione ideale.

Neo-ECHOTIP for UVC

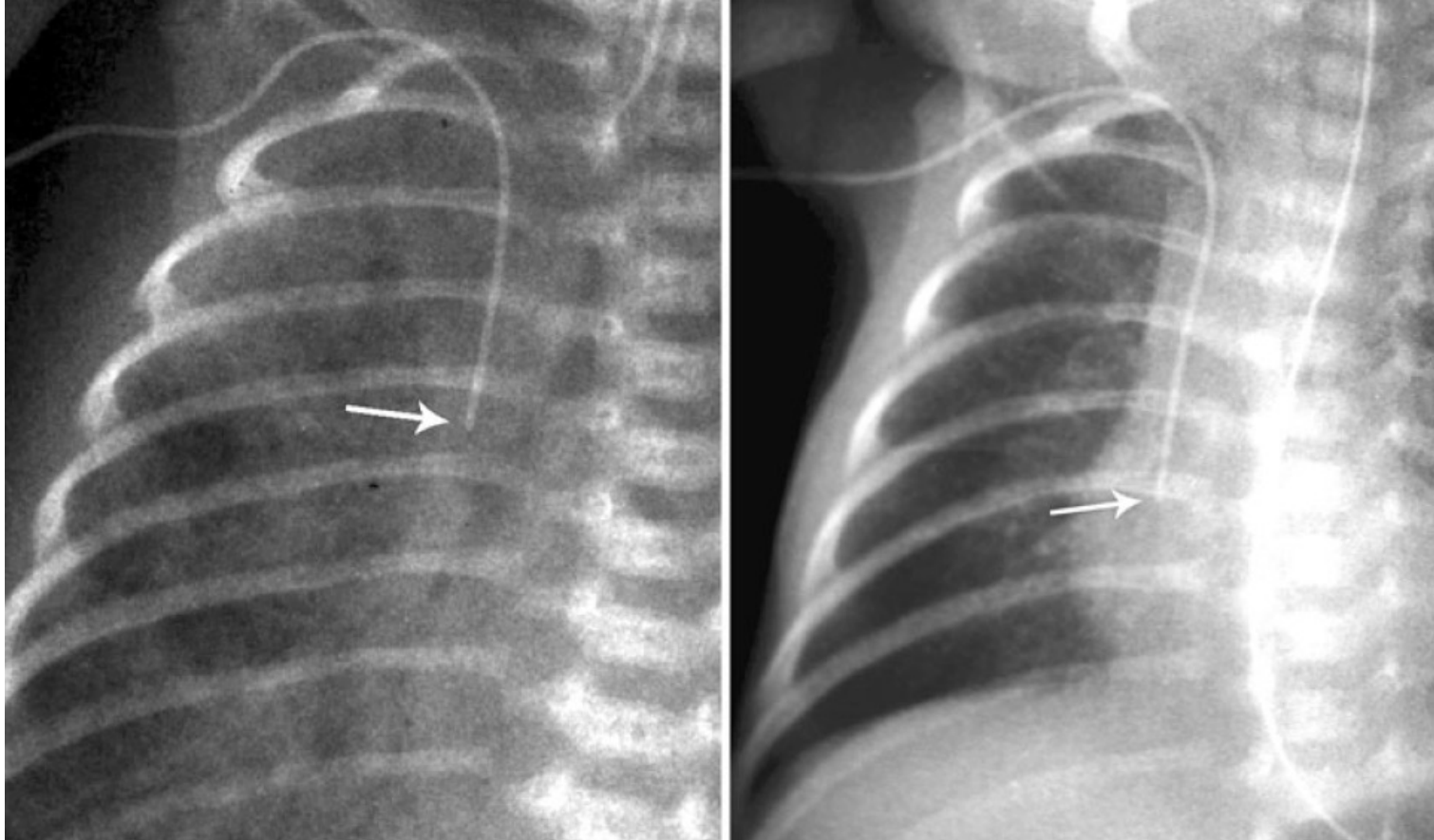
Probe TIP-Location







Tip location..Rx????



Protocollo Echo Tip per gli ECC

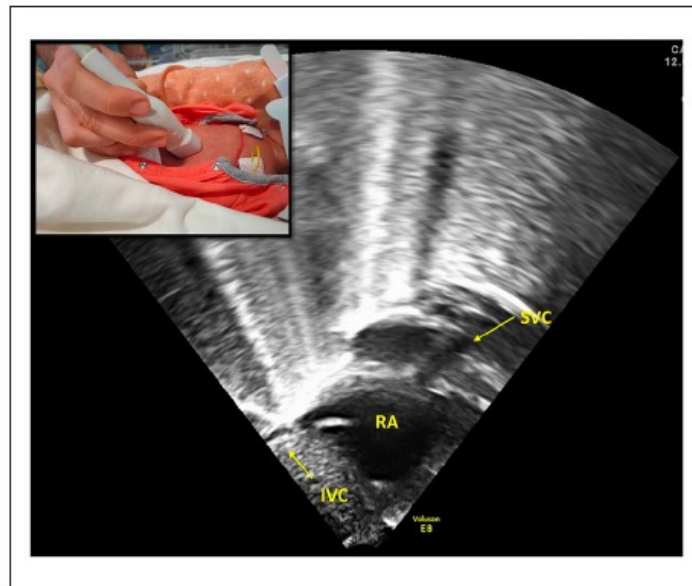
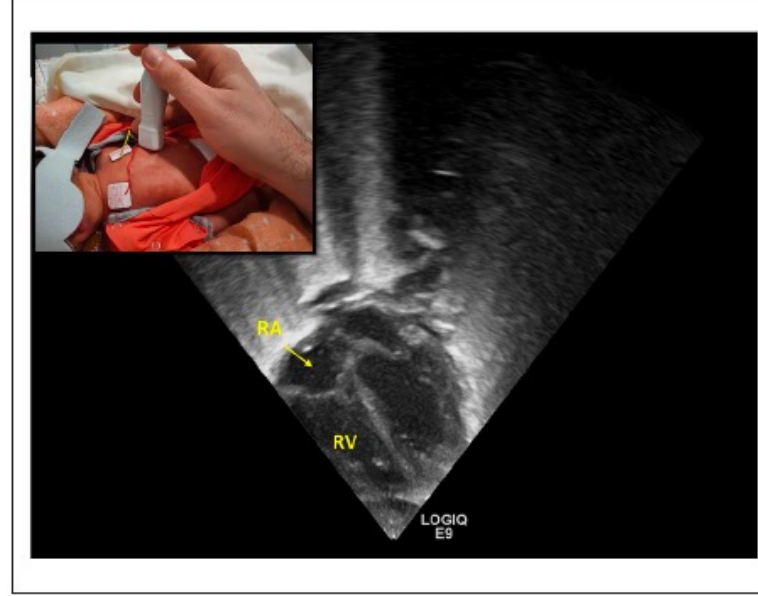
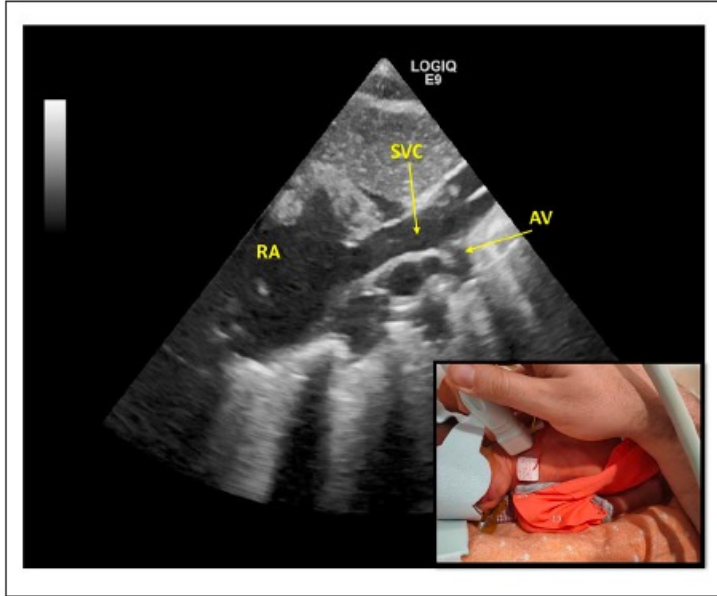
Il protocollo Echotip prevede il posizionamento ecoguidato dell'ECC mediante l'ausilio dell'ecografia sia come strumento di **tip navigation** che come strumento di **tip location**:

Tip location:

Sonda: microsettoriale, impostare una frequenza tra 7-8 MHz

Finestra acustica: usare almeno 3 proiezioni: parasternale asse lungo della VCS; 4 camere apicale; sottocostale bicavale.

Procedura: Una volta posizionata la punta del catetere all'interno della zona target (giunzione tra VCS e atrio di destra) eseguire un flush rapido di soluzione fisiologica da 0.5-1 ml al fine di confermare la posizione della punta



Review

JVA | The Journal of
Vascular Access

Rapid Central Vein Assessment (RaCeVA): A systematic, standardized approach for ultrasound assessment before central venous catheterization

Timothy R Spencer¹ and Mauro Pittiruti²

The Journal of Vascular Access

1-11

© The Author(s) 2018

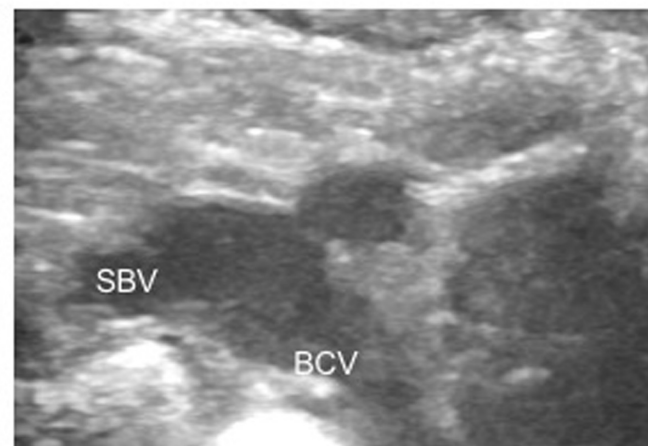
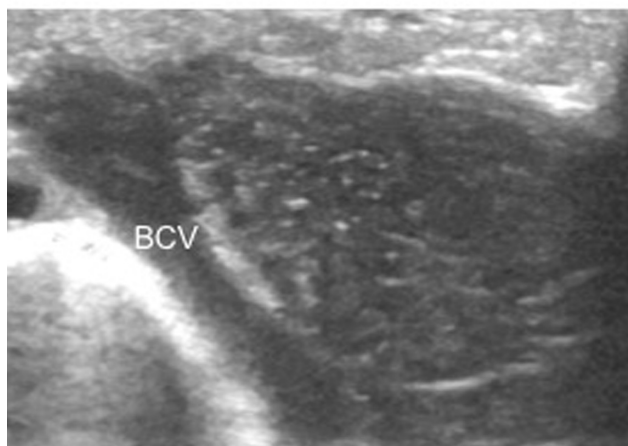
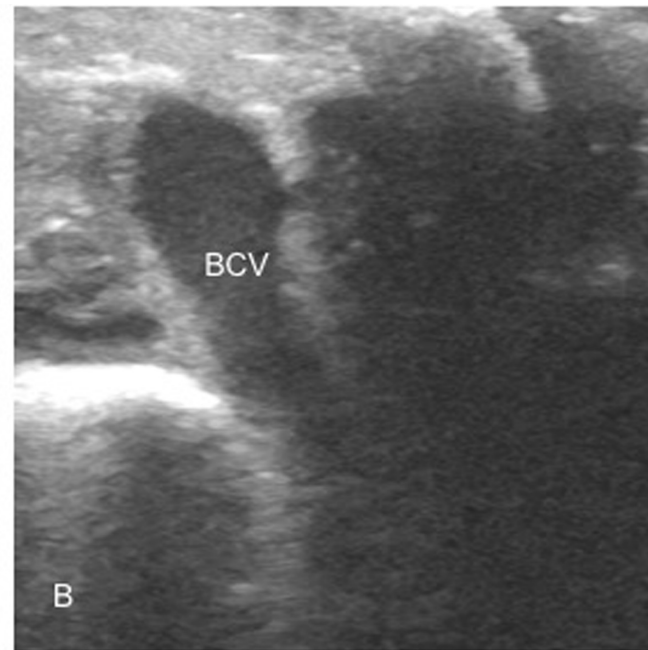
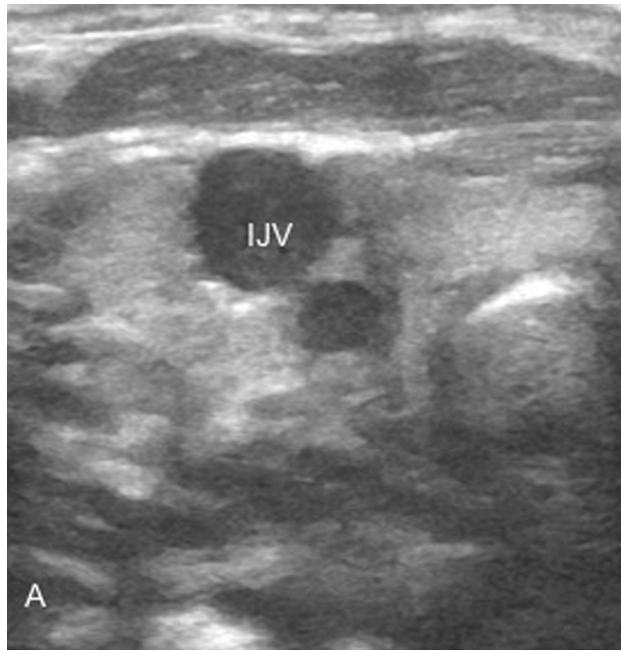
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DOI: 10.1177/1129729818804718

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Rapid Femoral Vein Assessment (RaFeVA): A systematic protocol for ultrasound evaluation of the veins of the lower limb, so to optimize the insertion of femorally inserted central catheters

**Fabrizio Brescia¹ , Mauro Pittiruti² , Matthew Ostroff³ 
and Daniele G Biasucci⁴**

The Journal of Vascular Access
1–10

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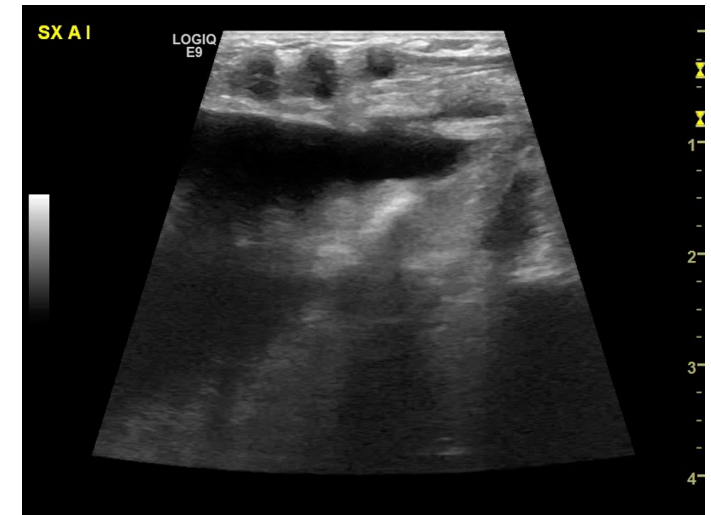
DOI: 10.1177/1129729820965063

journals.sagepub.com/home/jva



Utilizzo Globale dell'ecografia

- Scelta della vena migliore
- Tip location più accurata
- Utilizzo seriato
- Abbandono della radiologia
- Utilizzo post procedurale



La colla e le altre novità della gestione del sito di emergenza

Carmen Rodriguez

U.O.C. Terapia Intensiva Neonatale-Neonatalogia
Ospedale dei Bambini, ASST Spedali Civili Brescia, Italia



NEVAT - Neonatal European Vascular Access Team

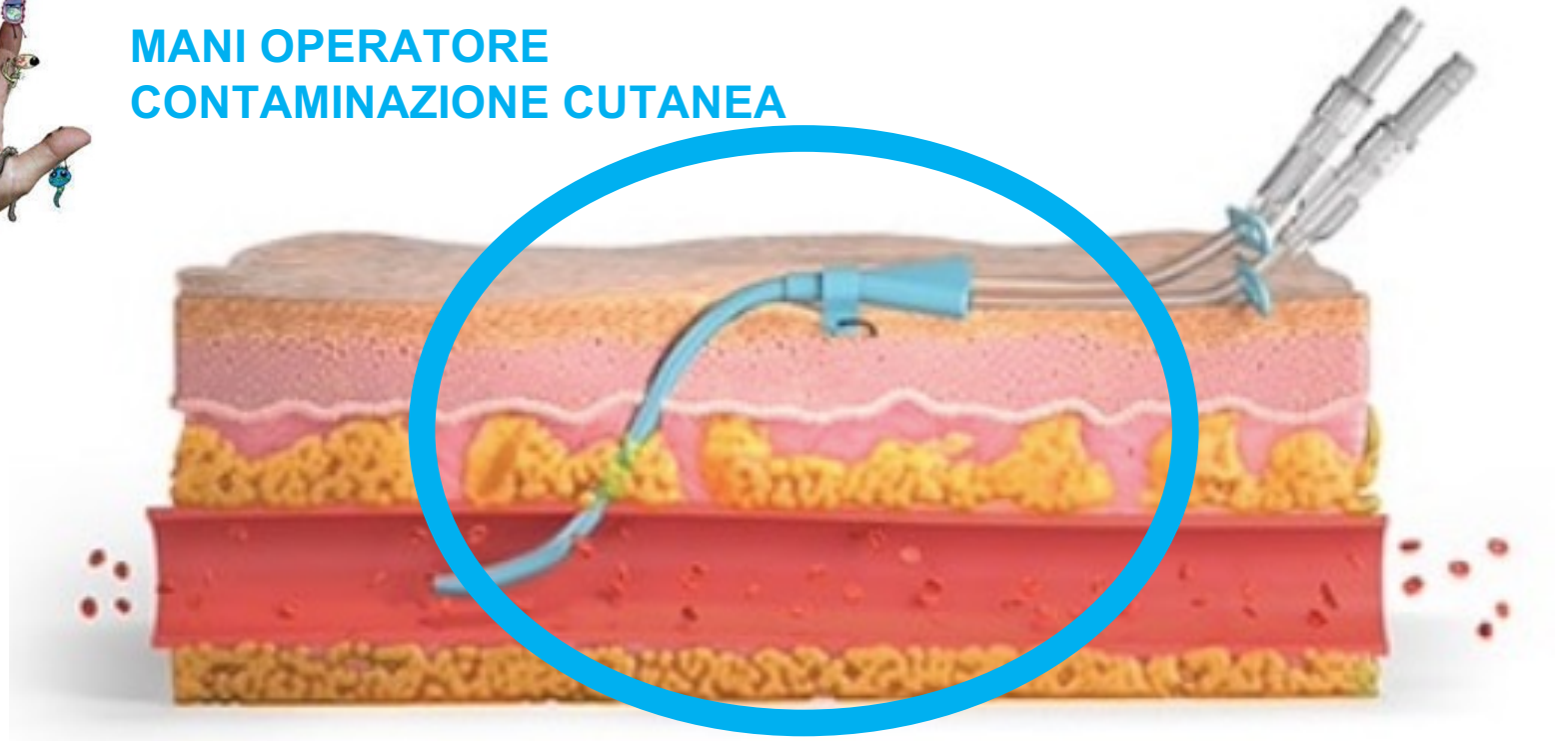


CONTAMINAZIONE EXTRALUMINALE



MANI OPERATORE
CONTAMINAZIONE CUTANEA

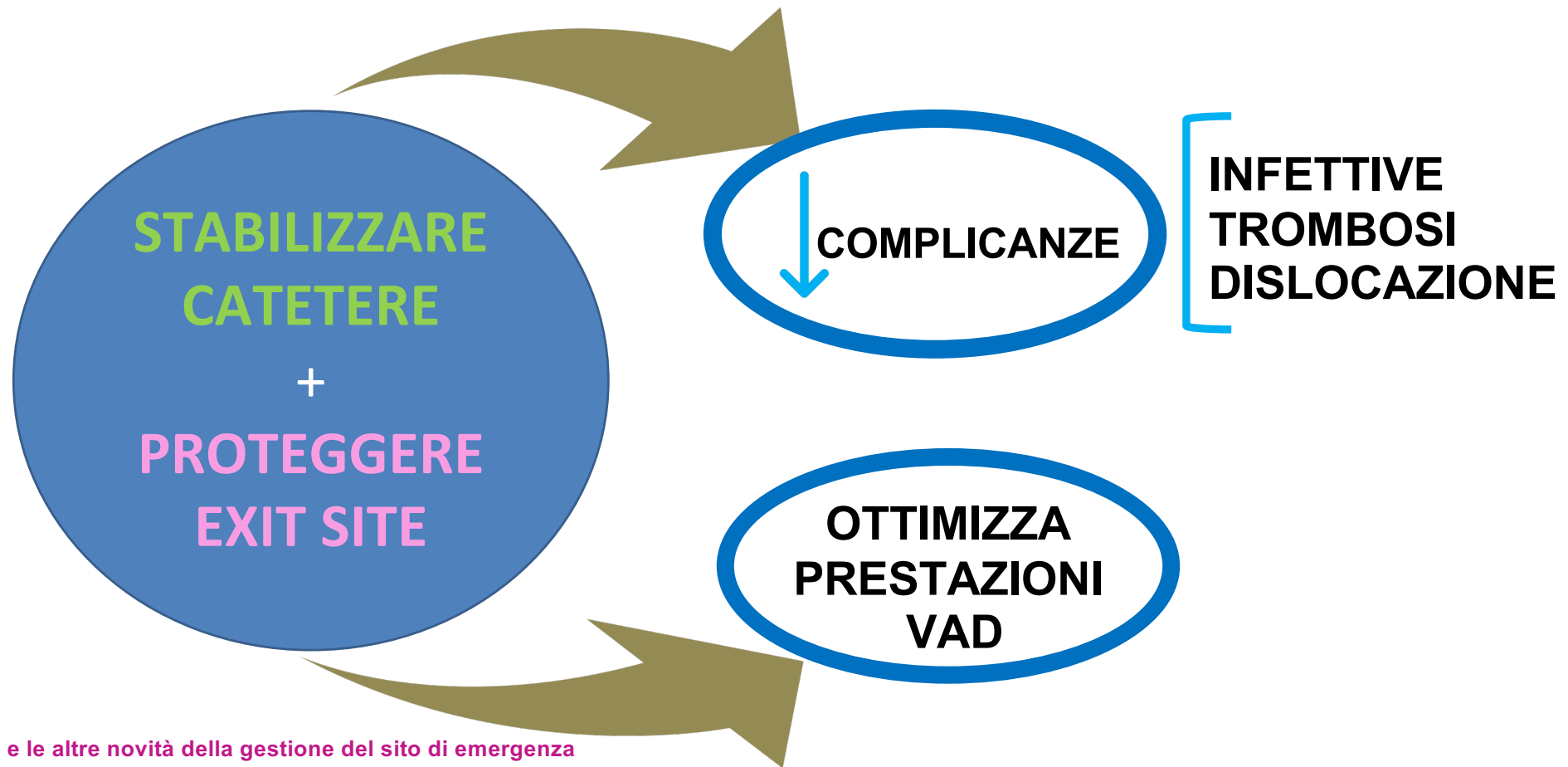
60%



CONTAMINAZIONE EMATOGENA

PREVENZIONE delle INFEZIONI dell'EXIT SITE

IMPIANTO > SCELTA EXIT SITE > FISSAGGIO VAD > PROTEZIONE EXIT SITE



Strategie di gestione dell'exit site

Protezione da contaminazione extraluminale

- Antisepsi cutanea con CHG2% in IPA 70%
- Fissaggio senza suture (sutureless devices)
- Tunnellizzazione (CICC/FICC)
- Colla in cianoacrilato
- Membrana semipermeabile trasparente ad alta traspirabilità

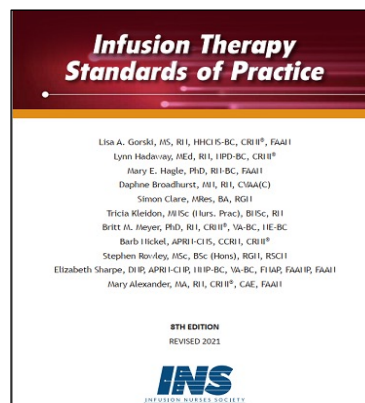
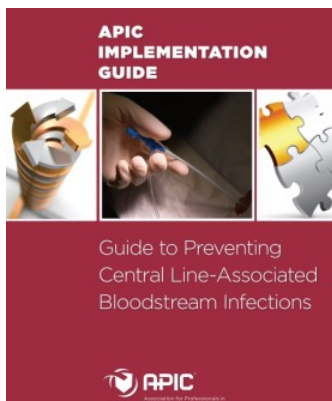
Protezione da dislocazione del catetere

- Fissaggio senza suture (sistemi sutureless)
- Colla in cianoacrilato
- Membrana semipermeabile trasparente

Protezione da sanguinamento

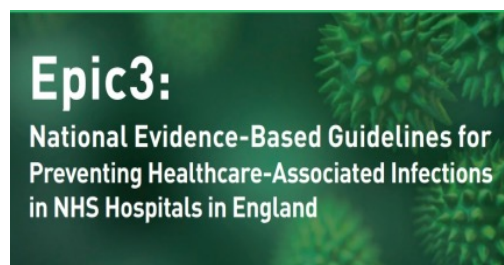
- Colla in cianoacrilato.

Antisepsi cutanea – quale antisettico?



CHG2% in IPA70%

Antisettico 1° scelta



Antiseptic use in the neonatal intensive care unit - a dilemma in clinical practice: An evidence based review

Sundar Sathivamurthy, Javanta Banerjee, Sunit V. Gadamha

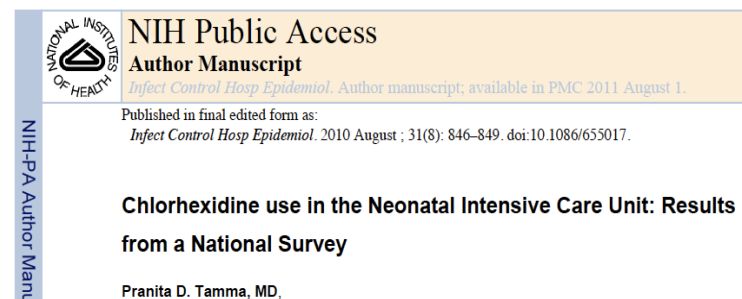
Journal of Perinatology (2012) 32, 4–9
© 2012 Nature America, Inc. All rights reserved. 0743-8346/12
www.nature.com/jp

STATE-OF-THE-ART

Safety of chlorhexidine gluconate used for skin antisepsis in the preterm infant

AK Chapman¹, SW Aucott¹ and AM Milstone^{2,3,4}

¹Division of Neonatology, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD, USA; ²Division of Pediatric Infectious Diseases, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD, USA; ³Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA and ⁴Johns Hopkins Hospital, Department of Hospital Epidemiology and Infection Control, Baltimore, MD, USA



.....anche nel neonato

La colla e le altre novità della gestione del sito di emergenza

Antisepsi cutanea: clorexidina al 2% in IPA 70%

- **Battericida**
- **Ampio spettro** (Gram positivi, Gram negativi, anaerobi facoltativi, funghi, virus – incluso HIV – ma non sporicida)
- Rapido inizio di attività (**30 secondi**)
- Effetto antimicrobico prolungato (**48-72 ore**)
- **Effetto sinergico con alcool** (CHG 2% in IPA 70%)
- **Attivo in presenza di sangue o siero**



"Use a single-use application of 2% chlorhexidine gluconate in 70% isopropyl alcohol (or povidone iodine in alcohol for patients with sensitivity to chlorhexidine) to clean the central catheter insertion site during dressing changes, and allow to air dry." (Class A)

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

Anaesth Intensive Care 2008; 36: 502-512

Chlorhexidine – pharmacology and clinical applications

K. -S. LIM*, P. C. A. KAM†

Department of Anaesthetics, University of Sydney, Royal Prince Alfred Hospital, Sydney, New South Wales, Australia

APPLICATORE	AREA DI COPERTURA (CM ²)
1 ML	8 X 10
1,5 ML	10 X 13
3 ML	15 X 15

La colla e le altre novità della gestione del sito di emergenza

Stabilizzazione

Vantaggi:

- Minimizzare i movimenti del catetere rispetto all'exit site
- Prevenire la dislocazione del device
- Prevenire la perdita dell'accesso vascolare

«L'adeguata stabilizzazione del CVC non deve interferire con la valutazione e il controllo del sito di emergenza e non abbia nessun impatto sul flusso ematico né sull'infusione della terapia» INS 2021

Componente fondamentale dei bundle procedurali per la riduzione del rischio delle complicanze.



La colla e le altre novità della gestione del sito di emergenza

Sutureless Devices

1. **Adesivo alla cute**

Cannula periferica lunga
ECC
CICC/FICC



2. **Medicazioni integrate**

(membrana con metodo di fissaggio)

Cannula periferica corta
Cannula periferica lunga
ECC
CICC/FICC



3. **Ancoraggio Sottocutaneo (SAS)**

CICC/FICC



4. **Colla in cianoacrilato**

Cannula periferica corta
Cannula periferica lunga
ECC
CICC/FICC



Cambio settimanale

Rischio di:

- ✓ dislocazione
- ✓ MARSI
- ✓ ridotta adesività
- ✓ *pistoning*.

La colla e le altre novità della gestione del sito di emergenza

38. VASCULAR ACCESS DEVICE SECUREMENT

KEY DEFINITIONS

Adhesive securement device (ASD): an adhesive-backed device that adheres to the skin with a mechanism to hold the VAD in place; a separate dressing is placed over the ASD. Both the dressing and ASD must be removed and replaced at specific intervals during the VAD dwell time.

Integrated securement device (ISD): a device that combines a dressing with securement functions; includes transparent, semipermeable window and a bordered fabric collar with built-in securement technology.

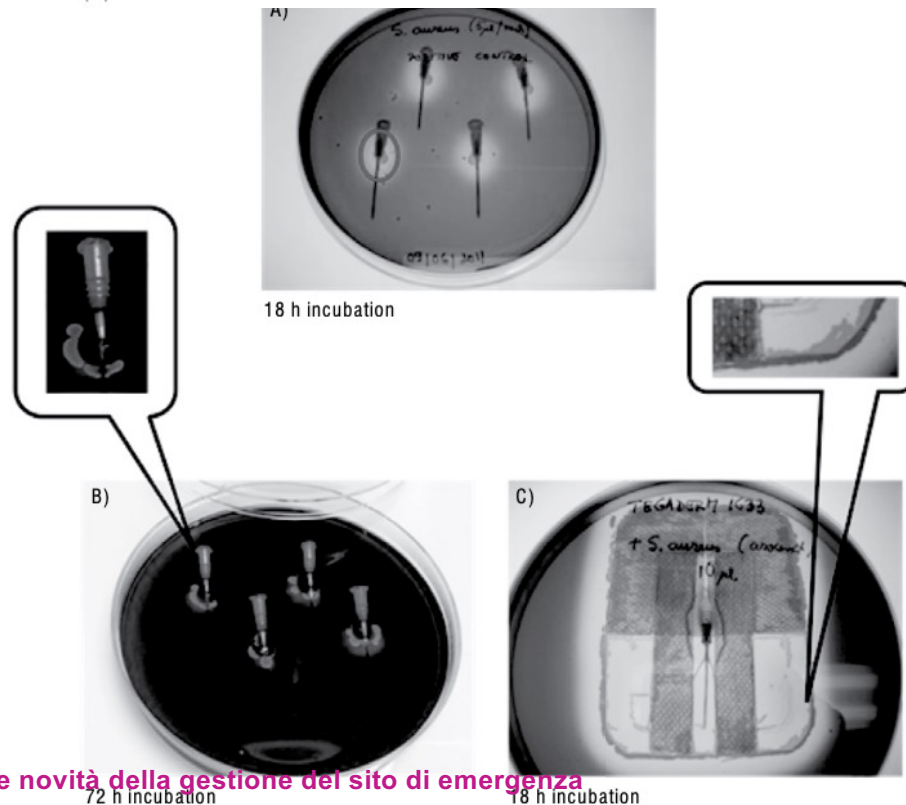
Subcutaneous anchor securement system (SASS): a securement device that anchors the VAD in place via flexible feet/posts that are placed just beneath the skin; these act to stabilize the catheter right at the point of insertion. A separate dressing is placed over the SASS. The SASS does not need to be changed at regular intervals when the dressing is changed; it can remain in place if there are no associated complications.

Tissue adhesive (TA): a medical-grade cyanoacrylate glue that can seal the insertion site and temporarily bond the catheter to the skin at the point of insertion and under the catheter hub. TA should be reapplied at each dressing change.

Cyanoacrylate tissue adhesives – effective securement technique for intravascular catheters: in vitro testing of safety and feasibility

2012

G. SIMONOVA*, C. M. RICKARD†, K. R. DUNSTER‡, D. J. SMYTH§, D. MCMILLAN**, J. F. FRASER††



The results of this study reinforce the hypothesis that cyanoacrylate tissue adhesives are an effective barrier to Gram-positive bacterial penetration in the in vitro model³⁷⁻⁴¹. Compared to dressings, it successfully prevented against organism growth down the IVC tract and therefore may be likely to decrease the probability of bloodstream infections when used in patients.

Colla in cianoacrilato è attiva contro Gram positivi, Gram negativi, Funghi e Virus.

Antibacterial effect and proposed mechanism of action of a topical surgical adhesive

2018



Daniel Prince PhD *, Zankhna Solanki MS, Remy Varughese BS, Jozef Mastej BS, Derek Prince MS

American Journal of Infection Control 46 (2018) 26-9

2-octyl cyanoacrylate

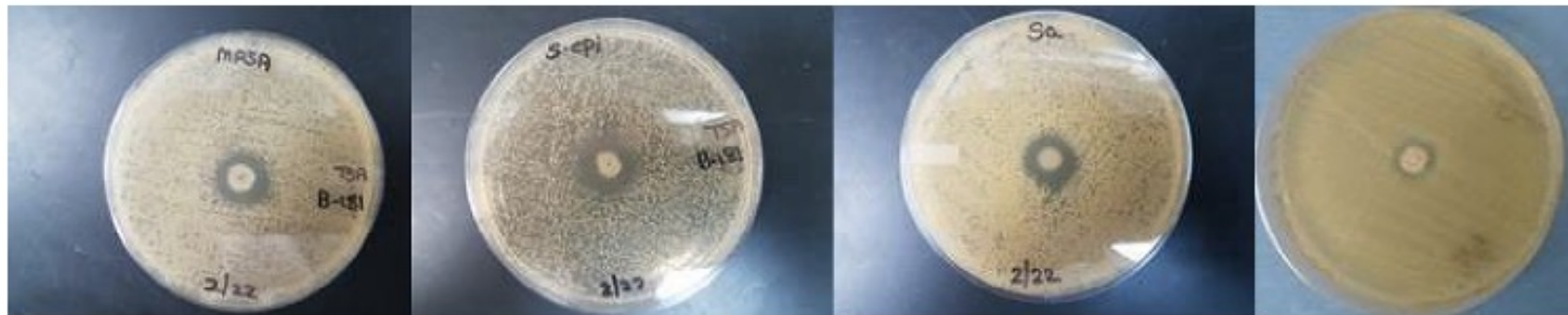


Fig 1. Zone of inhibition. Bacteria included MRSA, *Staphylococcus epidermidis*, *Staphylococcus aureus*, and *Corynebacterium pseudodiphtheriticum*, respectively. Polymer formation was complete after approximately 10 minutes.

Patogeni nosocomiali

La colla e le altre novità della gestione del sito di emergenza

Use of cyanoacrylate glue for the sutureless securement of epicutaneo-caval catheters in neonates 2021

JVA | The Journal of Vascular Access

Vito D'Andrea¹ , Lucilla Pezza¹, Giovanni Barone², Giorgia Prontera¹, Mauro Pittiruti³  and Giovanni Vento¹

Conclusion

Cyanoacrylate glue added to usual securement devices is effective in reducing ECC accidental dislodgement.

Moreover, it is easy and safe to apply and remove and gives the additional advantage of limiting bleeding and oozing at the puncture site. Nevertheless, further evaluations on the effective role of the exit-site sealing with CG as antimicrobial mechanical barrier may lead to other interesting conclusions.

Cyanoacrylate Securement in Neonatal PICC Use 2021

A 4-Year Observational Study

DOI: 10.1097/ANC.0000000000000963

Matheus van Rens, RN, MaANP, NNP; Nuha Abdelghafar M. A. Nimeri, MD, CABP; Timothy R. Spencer, RN, APRN, BHSc, DipAppSc, IntCare Cert, VA-BC; Kevin Hugill, PhD, RN, BSc, PGCE, MSc; Airene L. V. Francia, RN, BSc; Tawa Olayemi Olukade, MBBS, MSc, MPH; Mohamad Adnan Mahmah, MD, CABP

Results: The results showed that the use of an approved medical grade adhesive for catheter securement resulted in significantly less therapy failures, compared with the control group. This remains significant after adjusting for day of insertion, gestational age, birth weight, and catheter type.

Implications for Practice and Research: In parallel with currently published international literature, this study's findings support catheter securement with an octyl-based tissue adhesive in use with central venous catheters. When device stabilization is most pertinent, securement with tissue adhesive is a safe and effective method for long-term vascular access among the neonatal population.

LA COLLA IN CIANOACRILATO
E' SICURA PER IL NEONATO

LA COLLA IN CIANOACRILATO EVITA LA DISLOCAZIONE/PERDITA DEL VAD

La colla e le altre novità della gestione del sito di emergenza

Francesca Di Puccio¹, Daniela Giacomarro¹, Lorenza Mattei¹, Mauro Pittiruti², Giancarlo Scoppettuolo²

Experimental study on the chemico-physical interaction between a two-component cyanoacrylate glue and the material of PICCs

The Journal of Vascular Access
2018, Vol. 19(1) 58–62

2018

Conclusions

The aim of the present study was to investigate the possibility of damage to the PICC material due to chemico-physical changes secondary to long-term exposure to a two-component skin glue (N-butyl + octyl cyanoacrylate). Such possible damages were supposed to modify the surface properties at the interface and to reduce the strength of the PICC. Therefore, a test campaign was defined to assess the surface conditions and the mechanical properties of catheter after the interaction with the glue. Visual observations of the surface were carried out using OM and SEM. Quantitative measurements were performed by means of a roughness tester and 3D surface reconstructions were obtained from them. No damage was observed in the samples made of polyurethane, not even 12 weeks after glue apposition. Only the silicon catheter was weaker than the glue and it broke during glue removal. Thus, the use of glue with this type of catheter should be discouraged. Both uniaxial and pressure tests confirmed that all polyurethane samples had conserved their strength. We conclude that the glue we tested (Glubran Tiss2®) could be a good candidate as a sealant at the catheter exit site.

Valutazione della superficie di 12 marchi di cateteri in poliuretano, al microscopio ottico prima, durante e alla rimozione della colla:

non sono stati rilevati segni di danneggiamento

La colla non danneggia il poliuretano.

Colla in cianoacrilato e accessi vascolari nel neonato

All'impianto di

- ✓ Cannula periferica corta, semplice e integrata
- ✓ Cannula periferica lunga-minimidine
- ✓ Catetere arterioso periferico
- ✓ Catetere epicutaneo-cavale
- ✓ Catetere venoso ombelicale
- ✓ Catetere arterioso ombelicale
- ✓ CICC e FICC

COLLA IN CIANOACRILATO

- Sigilla
- Stabilizza
- Emostatica
- Batteriostatica



APPLICATORE NEONATALE

- ✓ **Medicazione definitiva**
- ✓ **Migliora la visualizzazione del sito di emergenza**
- ✓ **Non ha controindicazioni**
- ✓ **Applicabile a tutte l'età gestazionali**

Tecnologia fondamentale per ridurre rischio infettivo, rischio trombotico e complicanze meccaniche

Strategie di gestione dell'exit site

Protezione da contaminazione extraluminale

- Antisepsi cutanea con CHG2% in IPA 70%
- Fissaggio senza suture (sutureless devices)
- Tunnellizzazione (CICC/FICC)
- **Colla in cianoacrilato**
- Membrana semipermeabile trasparente ad alta traspirabilità

Protezione da dislocazione del catetere

- Fissaggio senza suture (sistemi sutureless)
- **Colla in cianoacrilato**
- Membrana semipermeabile trasparente

Protezione da sanguinamento

- **Colla in cianoacrilato**

Sistemi ancoraggio sottocutaneo *SecurAcath*®

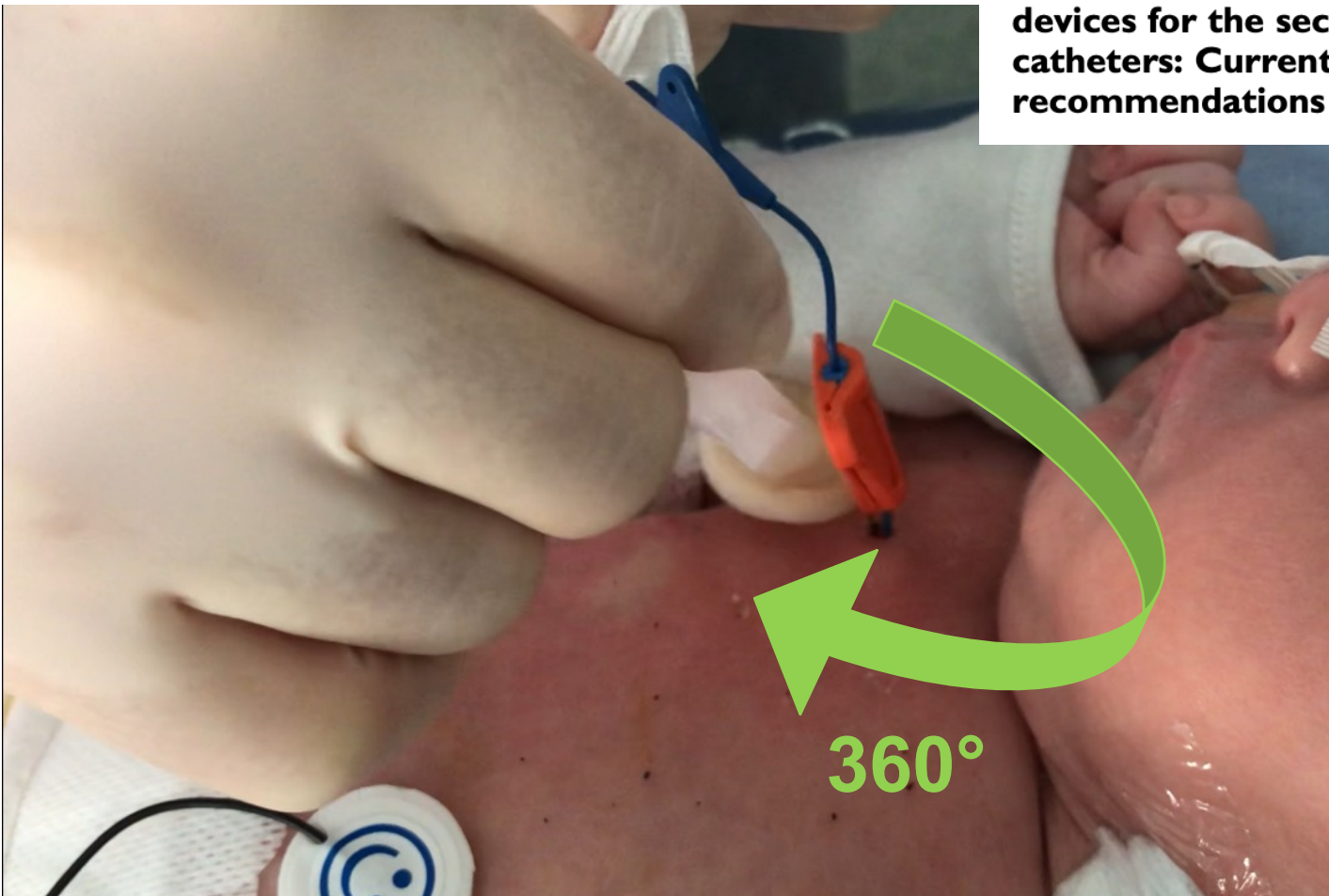
- ✓ **Massima stabilità**
- ✓ **Gestione facilitata dell'exit site**
- ✓ **Fortemente indicato nel neonato**
- ✓ **Non influenzato dalle caratteristiche della cute**
- ✓ **Un solo dispositivo** per tutta la vita del catetere
- ✓ **Compatibile con la RMN**



La colla e le altre novità della gestione del sito di emergenza

SAS

Sistema ad **A**ncoraggio **S**ottocutaneo



La colla e le altre novità della gestione del sito di emergenza

Original research article

GAVeCeLT-WoCoVA Consensus on subcutaneously anchored securement devices for the securement of venous catheters: Current evidence and recommendations for future research

JVA | The Journal of Vascular Access

The Journal of Vascular Access
1–10
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DOI: 10.1177/1129729820924568
journals.sagepub.com/home/jva
SAGE

2020

Antisepsi cutanea a 360°

**SISTEMA DI
FISSAGGIO IDEALE
PER CVC NEONATALE**

Catheter securement impact on PICC-related CLABSI: A university hospital perspective

M.S. Rowe MNSc, BSN, RNP, VA-BC^{a,*}, K. Arnold DNP, MSN, BBA, BA, BSN, RN^b,
T.R. Spencer DipAppSc, BHSc, Int Care Cert, RN, APRN, VA-BC^c



				Cumulative Incidence
Device	CLABSI (n=47)	No CLABSI (n=7732)	Total	1.79%
AESD	15	823	838	
SESD	32	6909	6941	0.46%
Risk Ratio				3.88
Percent Relative Effect				288%

Table 3. CLABSI by stabilization device.

<https://doi.org/10.1016/j.ajic.2020.06.178>

TUNNELIZZAZIONE

- Allontana il punto di ingresso del catetere nella vena **riducendo il rischio di contaminazione extraluminale** e riducendo il rischio di CRBSI
- **Scelta di exit site** più sicuro e stabile



Tunnellizzazione+SAS
=
CVC a lungo termine



La colla e le altre novità della gestione del sito di emergenza

Membrana Semipermeabile Trasparente

Membrana semipermeabile trasparente in **poliuretano**
ad alta traspirabilità (elevato MVTR) -**imprescindibile per**
il neonato prematuro!!!

Vantaggi:

1. permette monitoraggio dell'exit site (visione diretta),
2. isolano completamente exit site (barriera meccanica),
3. stabilizzazione exit site (riduce movimenti *in and out*).

Grado traspirabilità molto elevato
evita che maceri la pelle del neonato.



IVAD17 Usare una medicazione sterile, trasparente, semipermeabile in poliuretano per coprire il sito di emergenza dei cateteri intravascolari.
Classe D/GPP

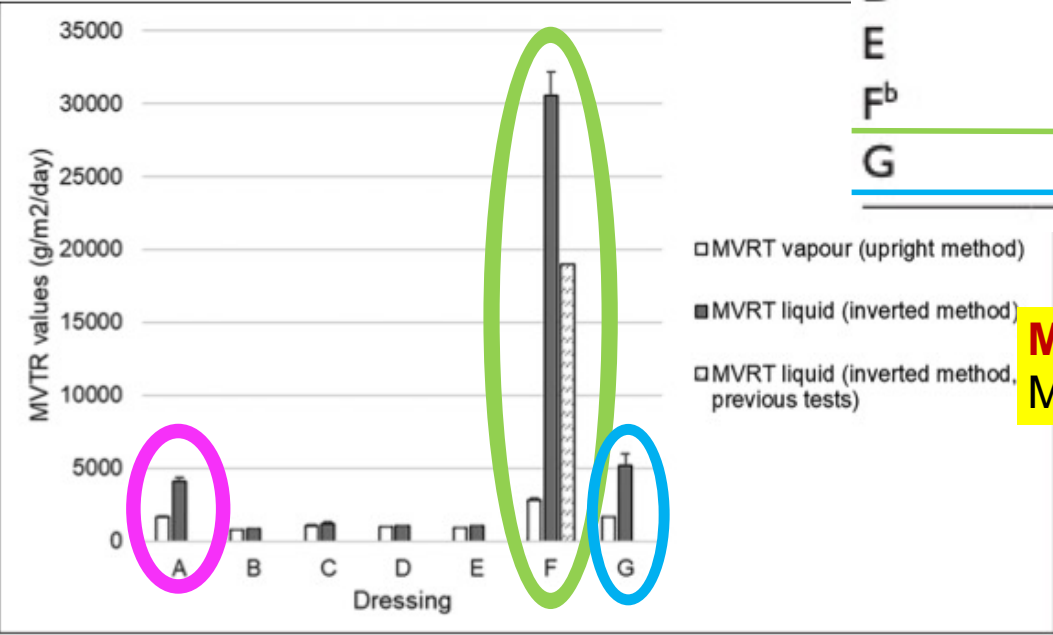
Epic3:

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

Comparing test methods for moisture-vapor transmission rate (MVTR) for vascular access transparent semipermeable dressings

Paul Bainbridge¹, Paul Browning², Stéphanie F Bernatchez³, Casey Blaser³ and Guido Hitschmann¹

Dressing	MVTR liquid (inverted method)	MVTR vapor (upright method)	
A	4089	1682	TEGADERM ADVANCE
B	845	773	
C	1225	1079	
D	1047	976	
E	1031	936	
F ^b	30,530	2838	IV 3000
G	5164	1644	SORBAVIEW



MVTR: velocità di trasmissione del vapore acqueo
Misurata in grammi/m²/die

MVTR ≥ 1500
(Upright method)

CONCLUSIONI

- Importanza capitale del sito emergenza degli accessi venosi.
- E' necessario implementare l'uso delle strategie più moderne e più efficaci per minimizzare le complicanze.

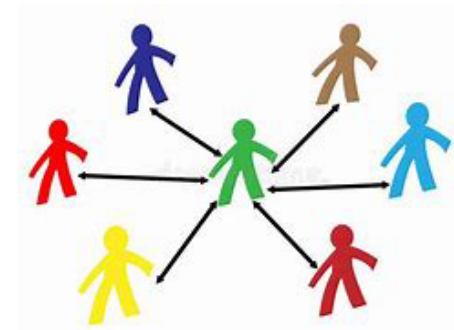
NEVAT website

5th GaVeped
National Congress,
Rimini, Italy



Why?

- To **increase awareness** about the relevance of vascular access in the neonatal population. We aim to do this by **encouraging the exchange of ideas** and **discussions** amongst neonatologists, nurses and experts in vascular access.
We believe that improved knowledge about vascular access will enhance patient care and outcome.
- As a hub of information. It facilitate access to the **latest research** and **international guidelines**, as well as teaching videos and information regarding webinars, interesting congresses and hands-on courses.
- The website also has a section of “**Questions & Answers**”.
Here you can interact with the members of the NEVAT if you need support.
- To promote the creation of a **global network** of **peers** and **experts** in the field of **neonatology** in **every country** and all **specialties**.



What?

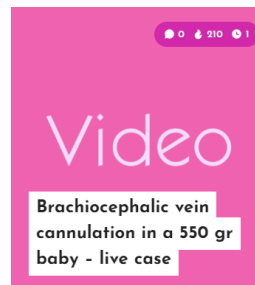
Who?



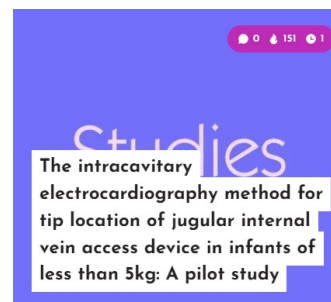
Presentations



Video tutorials



Scientific corner



Webinars



Events



How?

<https://neonat.org>



About us Video Tutorials ▾ Webinars ▾ Presentations Scientific Corner ▾ Events Question?

Different subgroups :

Vascular access
Enteral
Respiratory

Scientific corner :
Studies
ECG/Echo
Glue
Infection prevention
PICC
Sedation
Ultrasound
Umbilical
Other
Guidelines

Question?

Welcome to our neonates blog.

If you have a question concerning vascular access,

If you want to share something on our blog,

If you want to start a discussion about a specific topic,

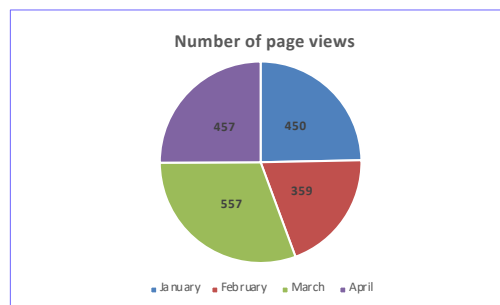
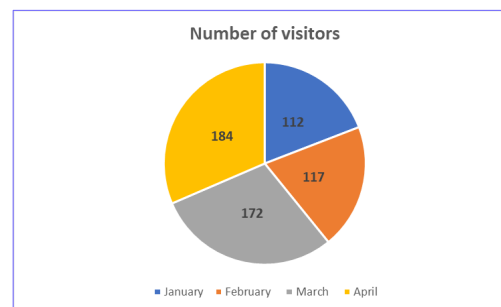
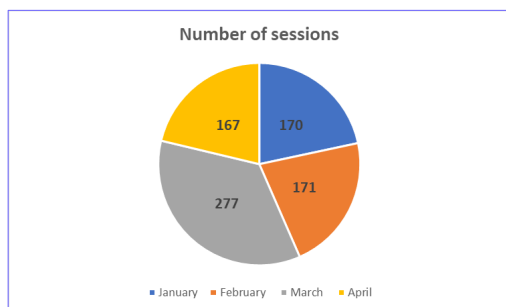
If you want to find more information on a particular subject,

Our professional team is here to help!

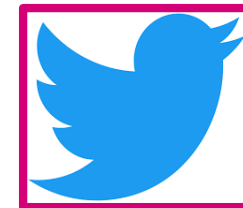
If you have any further questions, don't hesitate to contact us by filling in the form or by sending us an e-mail via contact@neonat.org

<https://neonat.org>

A view on 2023



Thank you



<https://neonat.org>

