

Come prevenire i malfunzionamenti dei cateteri neonatali

Fiammetta Piersigilli

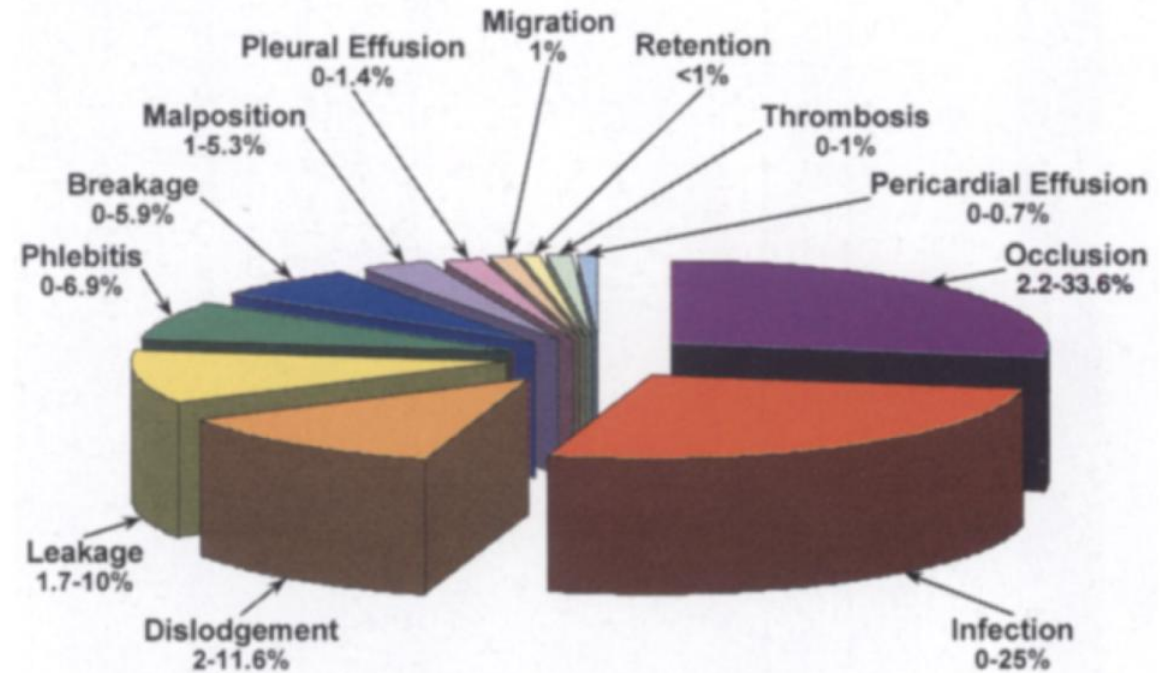


Neonatal European Vascular Access Team



ASSESSMENT OF INFANTS WITH PERIPHERALLY INSERTED CENTRAL CATHETERS: PART 1. DETECTING THE MOST FREQUENTLY OCCURRING COMPLICATIONS

JANET PETTIT, RNC, MSN, NNP



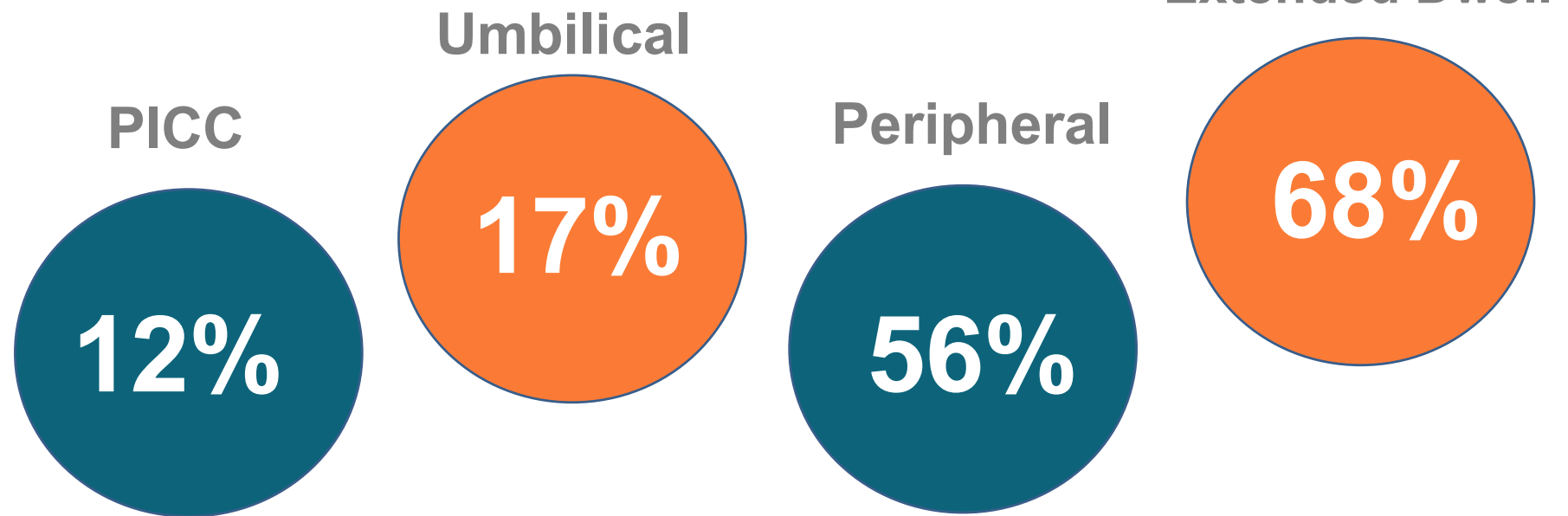
1. OCCLUSION (33.6%)
2. INFECTION (25%)
3. LEAKAGE (10%)
4. PHLEBITIS (9%)



Il neonato pretermine

The ABBA project (Assess Better Before Access): A retrospective cohort study of neonatal intravascular device outcomes

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23.878 cateteri

TOP3

Adobe Stock | #38411368

CENTRAL IV ACCESS

1. Occlusion
2. Infection
3. Tip malposition

Catetere parzialmente
occluso



Catetere infonde ma non refluisce



Catetere occluso

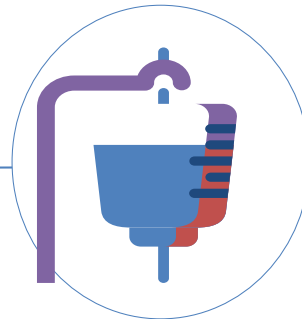
Occlusione del lume interno del catetere

Coaguli



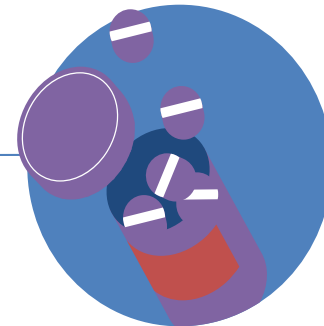
Prelievi
trasfusioni

Aggregati lipidici



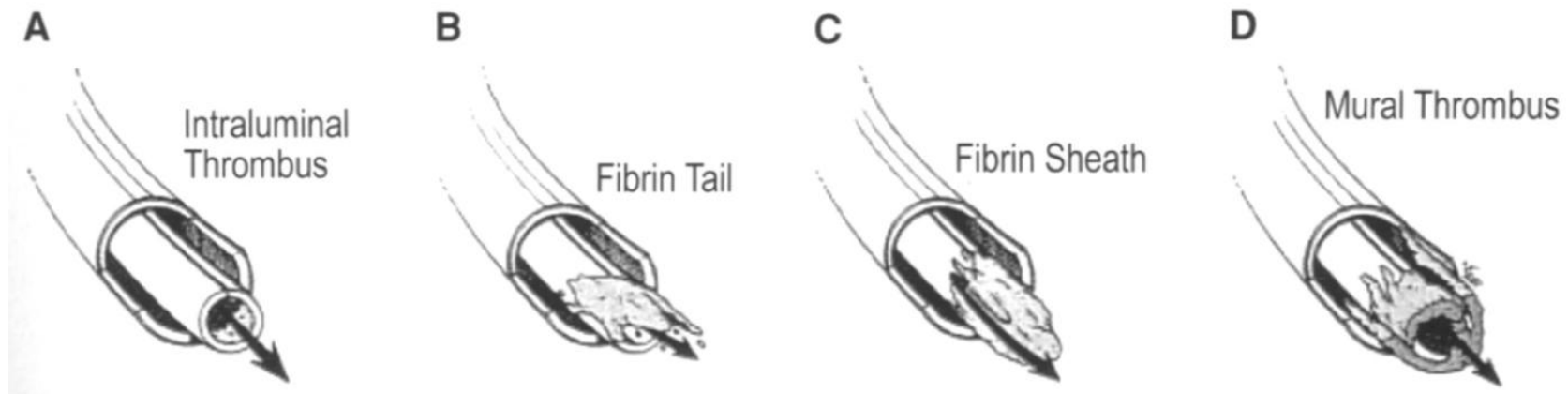
Nutrizione parenterale

Precipitati



Farmaci

Occlusione del lume esterno del catetere



Advances in Neonatal Care, Vol 2, No 6 (December), 2002: pp 304-315

Prevenzione dell'occlusione del catetere

Assicurare una buona stabilizzazione del catetere
(kinking/dislocamento/trombosi)

Controllare le compatibilità dei farmaci per evitare aggregati

Non interrompere la perfusione nei ECC

Eseguire un corretto lavaggio del catetere

Lock con taurolidina?

Prevenzione dell'occlusione del catetere

JVA
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DOI: 10.5301/jva.5000576

REVIEW

Evidence-based criteria for the choice and the clinical use of the most appropriate lock solutions for central venous catheters (excluding dialysis catheters): a GAVeCeLT consensus

Adeguate protocollo di lavaggio con fisiologica

Corretta educazione dello staff

Utilizzo dei needle free connectors



Needle free connectors

Valvola a pressione neutra



Valvola anti reflusso

Impedisce il reflusso di sangue quanto si verifica un aumento della pressione (pianto o tosse)

Needle free connectors

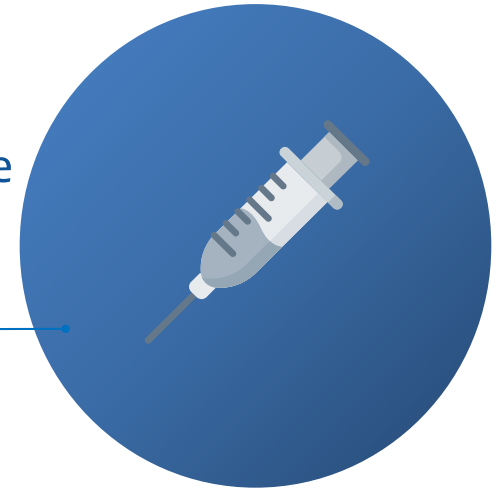
Scrub the hub with chlorhexidine (5-15 sec)



Always allow the chlorhexidine to dry

Flush

Consiste nel lavaggio del catetere
con una soluzione



Lock

Consiste nell'instillazione all'interno
del catetere di una soluzione

(priming volume+20%/ priming volume X2)



Il Flush

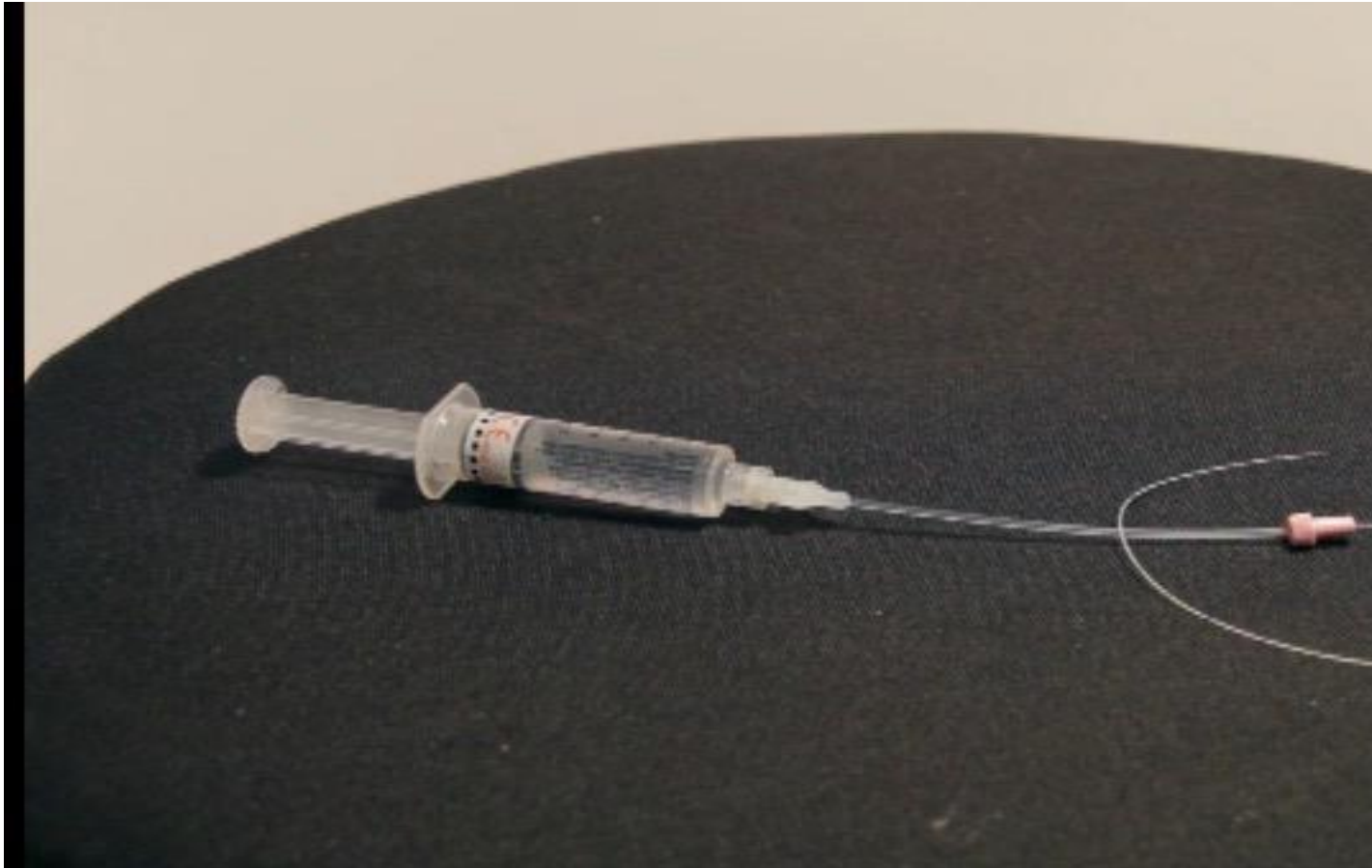
Adeguate protocollo di lavaggio con fisiologica tramite siringa azionata a mano con tecnica push/pause prima e dopo ogni infusione

10 ml in condizioni normali
20 ml dopo trasfusioni o prelievo



X2 priming volume
X4 dopo trasfusioni/prelievo
mdc/NP con lipidi

Push pause technique



Quale siringa?

WITH THE LARGE SYRINGE

$$P=5/3=1.6$$



- 1ml - 186psi or 12.82 bar
- 2ml - 55.9psi or 3.85 bar
- 10ml - 19.7psi or 1.35 bar

WITH THE SMALL SYRINGE

$$P=5/1=5$$



In un epicutaneo cava 1 Fr
mai superare 1.5 bar!

Usare la siringa da 10 ml

In un epicutaneo cava 2 Fr

Usare la siringa da 5/10 ml

La storia di Bruno

- Bruno born after 27 week 1 day
 - Ventilated immediately after birth
 - Surfactant and extubated (LISA)
 - Umbilical lines
-
- Day 6 PICC inserted due to prolonged VA needs
-
- Day 10 of life 06:00 am clinically not stable: desaturation, tachypnea, bradycardia



Roland Van Rens

La storia di Bruno

Handover communication night to day shift:

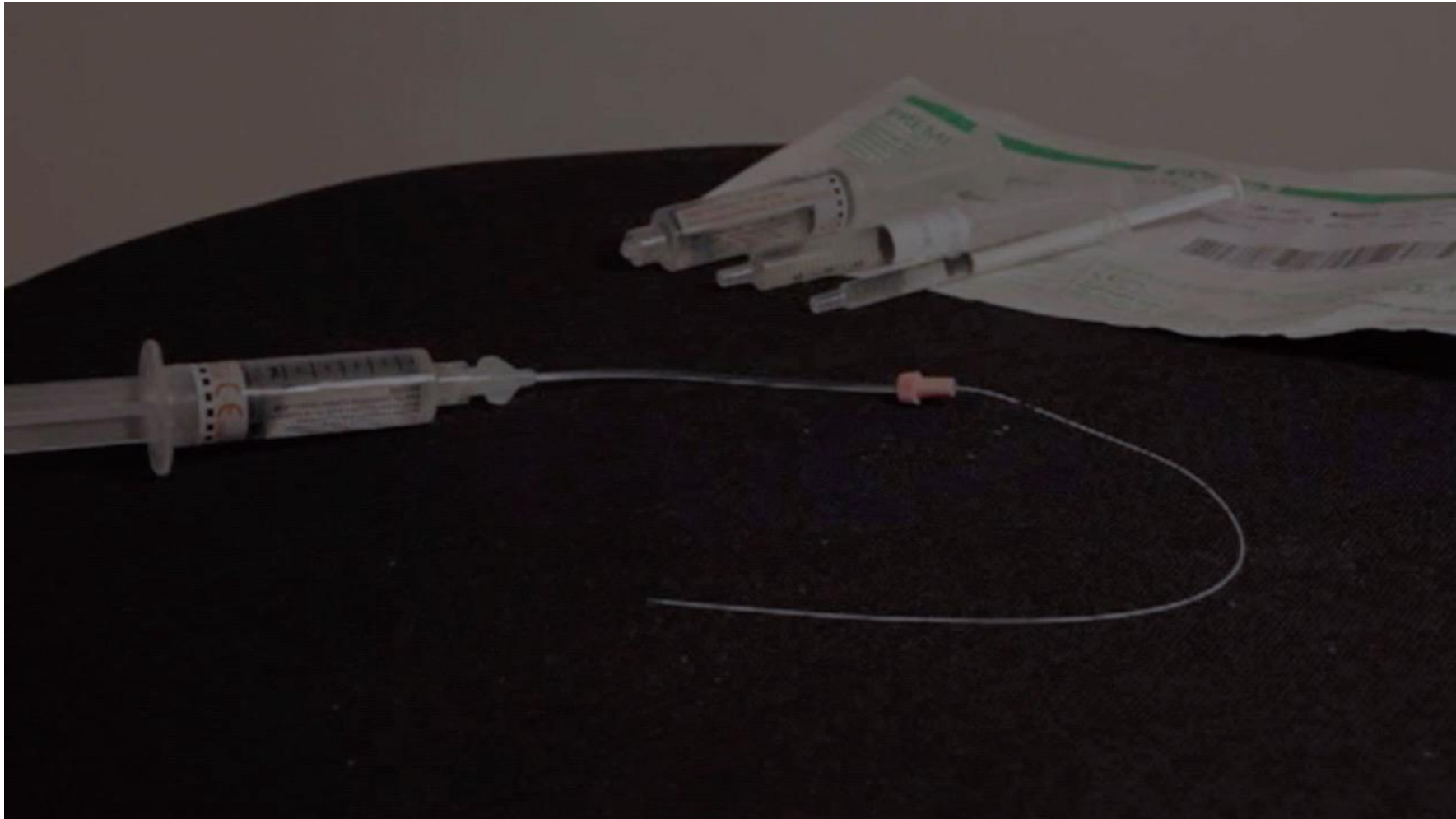
- During night at 02:00 am PICC line occlusion
- Nurse tried flush (10 ml size syringe): result neg.
- Called the oncall doctor.
- Nurse asked doctor **not to flush** with a smaller size syringe than 10ml diameter
- Despite advise, PICC was flushed with 1 ml syringe
- Occlusion was *“resolved”*



RESISTANCE



Quale siringa?



Quale soluzione infondere?

Soluzione fisiologica

+ Eparina ?

Infusion Therapy Standards of Practice

41. FLUSHING AND LOCKING

M. Apply the following recommendations for neonates and pediatric patients:

1. Use a continuous infusion of heparin 0.5 units/kg for all CVADs in neonates. There is insufficient evidence to support use of intermittent heparin vs 0.9% sodium chloride in long-term CVADs in infants and children.^{19,45} (II)
2. Maintain patency and reduce risk of thrombosis by continuous infusion of heparin 0.25 to 1 unit/mL (total dose of heparin: 25-200 units/kg/d) for umbilical arterial catheters in neonates (refer to Standard 28, *Umbilical Catheters*).

Eparina - Effetti sistemici

Aumento del tempo di tromboplastina parziale attivata

Aumento del rischio di sanguinamento



Effetti locali

Stimola la formazione di biofilm in presenza di *Stafilococcus aureus*

Quale soluzione per il flush?

Soluzione fisiologica



Siringhe sterili pre riempite

- A. Use single-dose systems (eg, single-dose vials or pre-filled labeled syringes) for all VAD flushing and locking.
 - 1. Commercially available prefilled syringes may reduce the risk of CR-BSI and save staff time for syringe preparation.¹⁻³ (IV)
 - 2. If multiple-dose vials must be used, dedicate a vial to a single patient (see Standard 49, *Infection*).⁴ (V)
 - 3. Do not use intravenous (IV) solution containers (eg, bags or bottles) as a source for obtaining flush solutions.³⁻⁶ (IV)



**Infusion Therapy
Standards of Practice**

The logo features a green curved line above the text "Infusion Therapy Standards of Practice" in a bold, white, sans-serif font, set against a dark blue background with a subtle grid pattern.

E se il catetere è occluso?

Disostruzione del catetere con Lock di 45 min



tPA

1 mg/ml X2

Urochinasi

10.000 UI X2
15.000 UI

Urochinasi / taurolidina?

Taurolidina
Citrato 4%
25.000 UI

Disostruzione del catetere



Grazie

<https://neonat.org>



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