EAPS
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Catheter Securement and Protection of the Exit Site

Fixation, Glue and Transparent Dressings

Roland van Rens, MaANP

NEVAT

Neonatal European Vascular Access Team

Introduction

Catheter securement and protection of the exit site of vascular access devices (VAD) is an essential part and one of “building-blocks” for safe and reliable neonatal vascular access.

Securement of catheters and protection of the exit site are key to prevent a number of complications.

How does catheter securement and site protection reduce and/or prevent complications.

COMPLICATIONS

1. INFECTION (CRBSI)
2. OCCLUSION
3. DISLODGEMENT
4. PLEBITIS
5. INFILTRATION and EXTRAVASATION
6. LEAKAGE
7. BLEEDING and OOZING

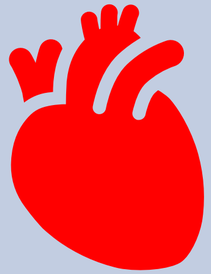
COMPLICATIONS TOP 3

PERIPHERAL VENOUS ACCESS

55%*

1. Infiltration / Extravasation
2. Leaking
3. Phlebitis

CENTRAL VENOUS ACCESS

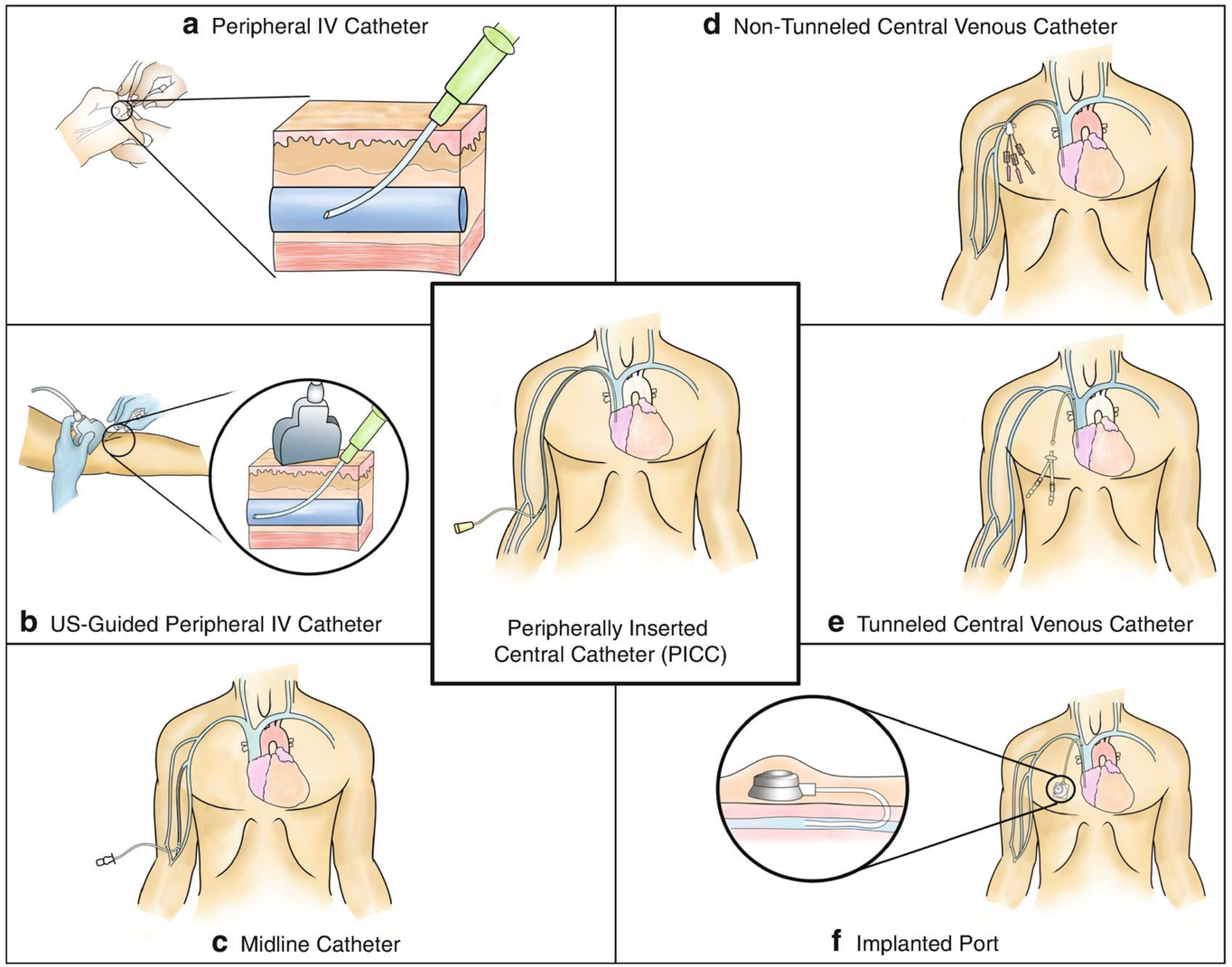


10%*

1. Occlusion
2. CLABSI (suspicion)
3. Phlebitis

* Pettit 2002 / 2003
* van Rens 2022

PROTECTION



INSERTION SITE

ENTREE SITE

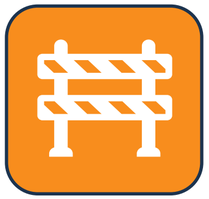
EXIT SITE

EXPECTATIONS OF PROTECTION

SECUREMENT

INFECTION PREVENTION

SEALING THE ENTREE SITE



STOP (RE)BLEEDING

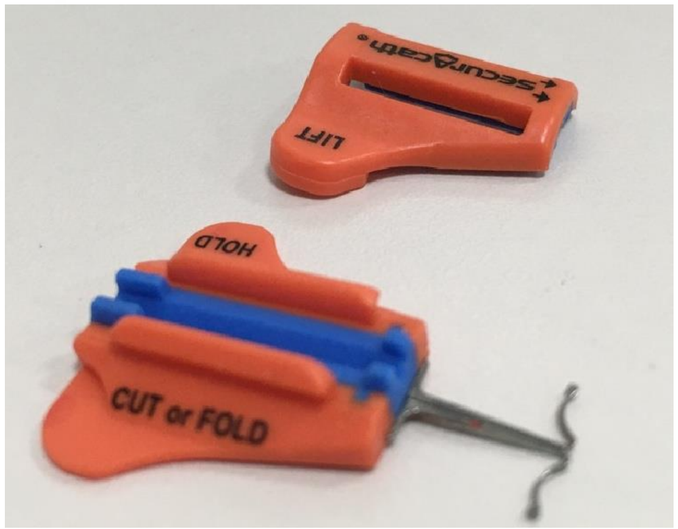
NO DRESSING CHANGES

COST SAVING

SUTURELESS FIXATION DEVICES

Grip lock

Clik-FIX®

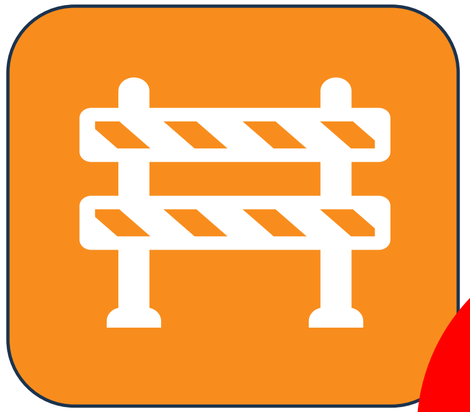


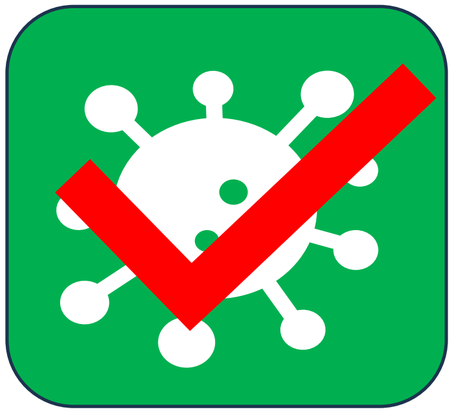
SecurAcath®

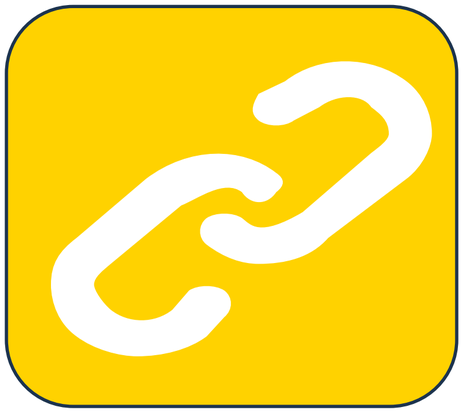
TRANSPARENT DRESSING

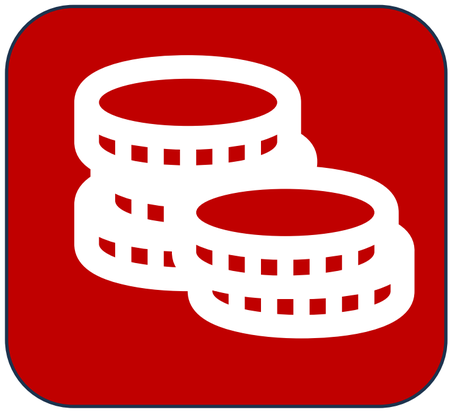

SecurAcath
3F
MOLD
JFR

EXPECTATIONS OF PROTECTION



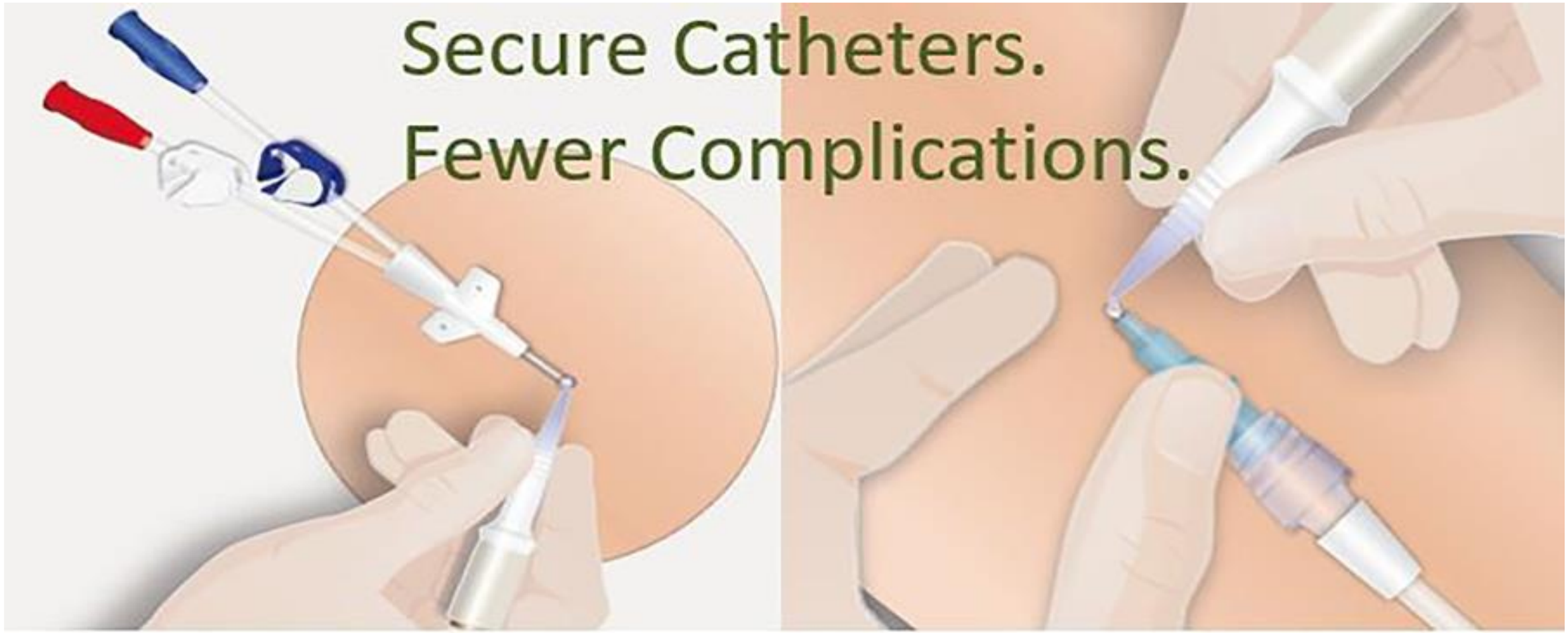






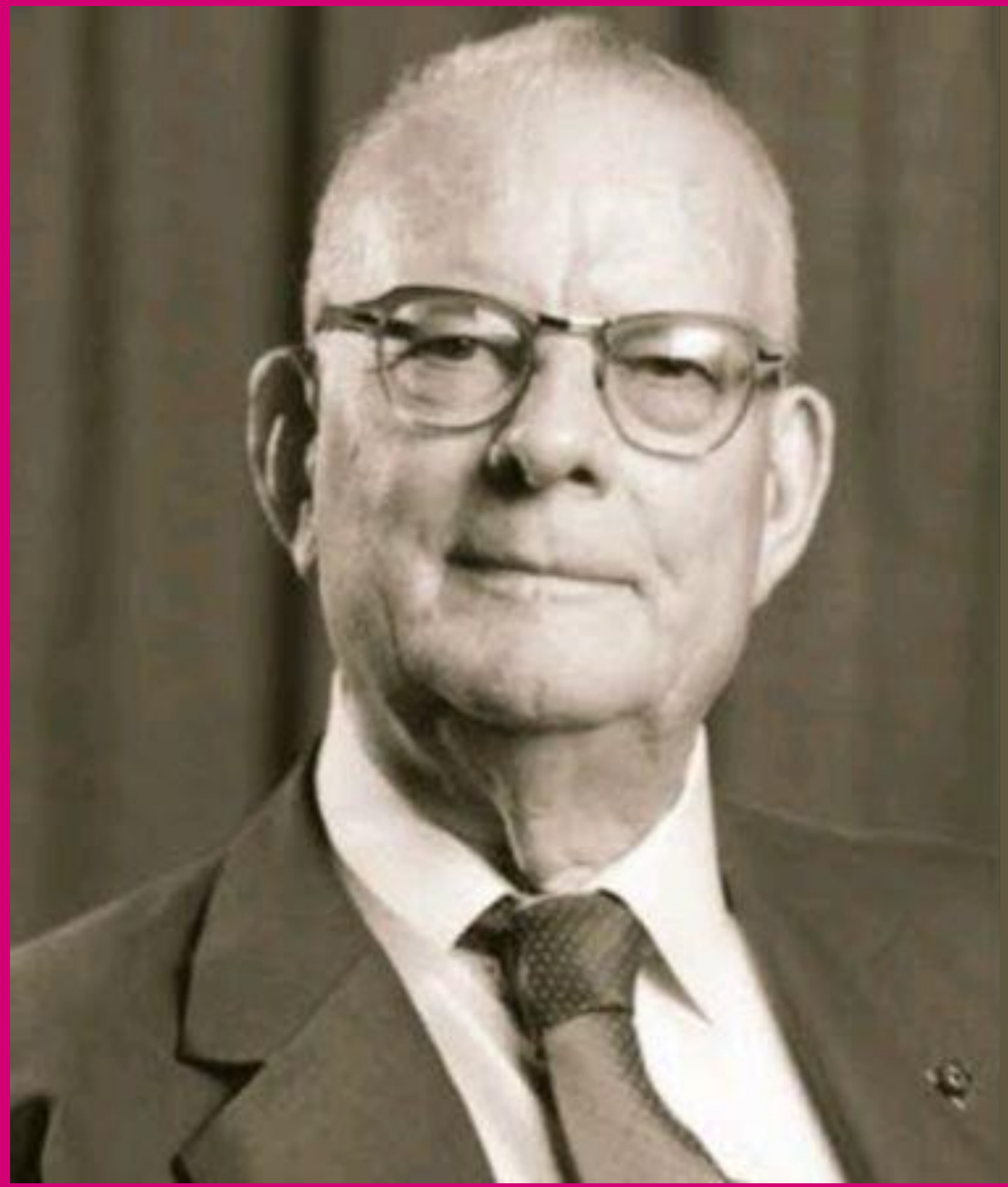
TISSUE ADHESIVE GLUE - SecurePortIV®

Cyanoacrylate adhesive



SECUREMENT WITH SPIV

- SECUREMENT
- INFECTION PREVENTION
- SEALING THE ENTREE SITE
- STOP (RE)BLEEDING
- NO DRESSING CHANGES
- COST SAVING



"Without data, you're just another person with an opinion."

W. Edwards Deming

Cyanoacrylate Securement in Neonatal PICC Use (van Rens et al., 2021)

A 4-Year Observational Study

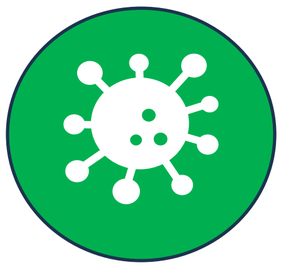
Positive impact toward infusion therapy in patients admitted in the NICU

INCLUDED 1,842 PICC
- **880 insertions prior to TA**
- **962 insertions after TA**

TA for VAD securement in NICU is effective & safe

Overall therapy failure reduction of 58% in favor of the glue group

Significant (65%) CLABSI reduction in TA group



CLABSI rate decreased from 2.76 to 0.99/1000 catheter days

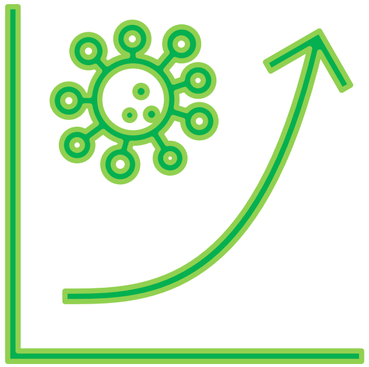
Octyl-butyl-cyanoacrylate glue for securement of peripheral intravenous catheters: A retrospective, observational study in the neonatal population

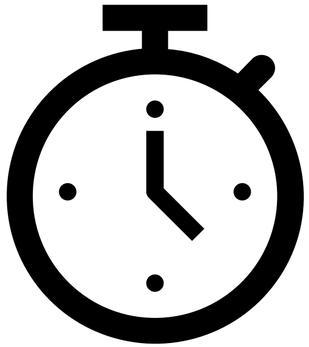
(van Rens et al., 2023)

INCLUDED 8,330 n-SPC inserted over 1 year:

- 4457 insertions prior to TA
- 3873 insertions after TA

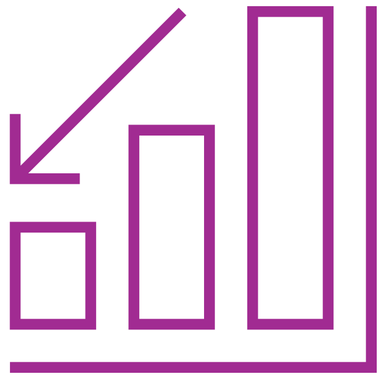
Therapy success increased by 25%





In dwell time increased by 20%

Phlebitis rate decreased by 75%



THE JOURNAL OF PEDIATRICS • www.jpeds.com

Check for updates

Securement of Umbilical Venous Catheter Using Cyanoacrylate Glue: A Randomized Controlled Trial (D'Andrea et al., 2023)

RCT 130 UVC:

- **65 UVC in TA group**
- **65 UVC in controle group**

Suture and cyanoacrylate glue significantly reduced dislodgement of the UVC

Late dislodgments (>48 hours) are not decreased by the use of glue

Tip migration is not decreased, periodic tip verification should be performed routinely.

Immobilization and Death of Bacteria by Flora Seal® Microbial

Daniel Prince[1], Kristah Kohan[1], Zankhna Solanki[1], Jozef Mastej[1], Derek Prince[1], Remy Varughese[1] and Mahesh Patel[2]

Effective Immobilization of *Candida auris* by SecurePortIV®

A Potential Novel Regimen to Help Conquer a Global Health Threat Posed by the Multidrug-Resistant Pathogen, Candida auris.

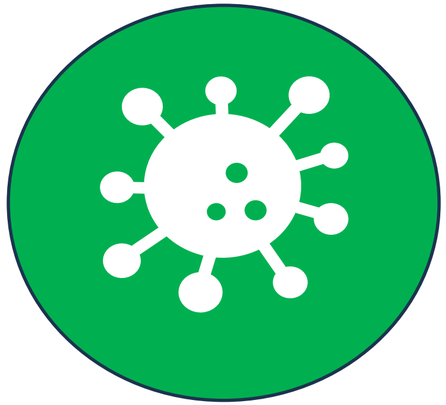
Prepared by: Sheng Zhang, PhD, VP of R&D, Adhezion Biomedical, LLC, a subsidiary of H.B. Fuller.

Surgical Infections > Vol. 20, No. 6
Research Article | NO ACCESS | Published Online: 14 August 2019

In Vitro Assessment of Microbial Barrier Properties of Cyanoacrylate Tissue Adhesives and Pressure-Sensitive Adhesives

Authors: Stephen C. Waller, David W. Anderson, Bart J. Kane, and Lisa A. Clough | AUTHORS INFO & AFFILIATIONS

Publication: Surgical Infections • https://doi.org/10.1089/sur.2018.280



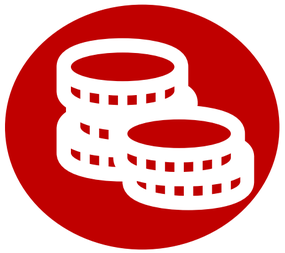
> 8 log microbe reduction & Immobilizes microbes

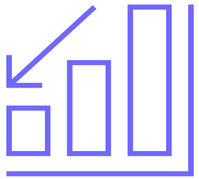
Immobilization is against gram positve, gram negative bacteria as well clinically relevant bacteria and yeast including strains resistant to antibiotics.

JAMA Pediatrics | Original Investigation

Novel Peripheral Intravenous Catheter Securement for Children and Catheter Failure Reduction
A Randomized Clinical Trial

Brooke Charters, BN; Kelly Foster, MN; Benjamin Lawton, MBBS; Leonard Lee, MN; Joshua Byrnes, PhD; Gabor Mihala, PhD; Corey Cassidy, MBBS (Hons); Jessica Schults, PhD; Tricia M. Kleidon, MNSci (Nurs. Prac.); Ruth McCaffery, BN; Kristy Van, MN; Vanessa Funk, BN; Amanda Ullman, PhD





€17 cost reduction (€210 to €193)

- Overall failure rate reduced by 65%.
- Significantly lower cost with TA (like SecurePortIV)
- Mirror those of other RCTs.
- Suggest that SPIV reduces unintentional dislodgement and may reduce the ability for infection or phlebitis development.

Table 3. Cost Outcomes Per Participant

Category	Standard care	ISD	ISD and TA
Original insertion, dressing changes, and failure[a]			
Overall cost			
Median (IQR), A$	341 (297-592)	303 (294-465)	312 (302-380)
Mean (SD), A$	429 (157)	385 (134)	371 (126)

Abbreviations: A$, Australian dollar [A$1 is equal to $0.65 US dollars]; ISD, integrated securement device; NA, not applicable; TA, tissue adhesive.

Journal of Infection and Public Health 12 (2019) 372–379

Contents lists available at ScienceDirect

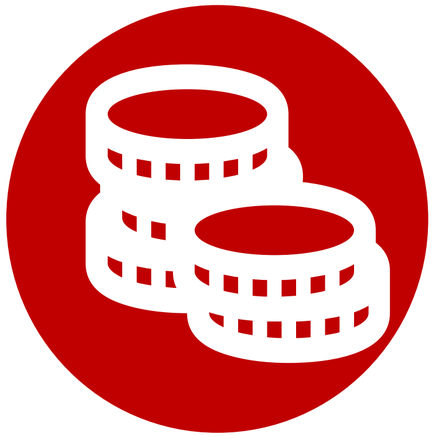
Journal of Infection and Public Health

journal homepage: http://www.elsevier.com/locate/jiph

1 CLABSI period €13,727

Attributable length of stay and cost for pediatric and neonatal central line-associated bloodstream infections in Greece

Sofia Karagiannidou[a,*], Theoklis Zaoutis[a,b], Nikolaos Maniadakis[c], Vassiliki Papaevangelou[d], Georgia Kourlaba[a]



Infection Control & Hospital Epidemiology (2023), **44**, 1920–1926
doi:10.1017/ice.2023.132

Original Article

Characteristics, costs, and outcomes associated with central-line–associated bloodstream infection and hospital-onset bacteremia and fungemia in US hospitals

1 CLABSI period $32,759

Kalvin C. Yu MD, Molly Jung PhD and ChinEn Ai MPH

Becton, Dickinson and Company, Franklin Lakes, New Jersey

Current used standards and published protocols

Cyanoacrylate adhesive, is also increasingly recognized in current standards and guidelines, it is advocated for its efficacy in securing vascular access devices, reducing infections, and minimizing the need for frequent dressing changes.

Infusion Therapy Standards of Practice

GAVeCeLT
Gli Accessi Venosi Centrali a Lungo Termine

National Association of Neonatal Nurses

NICE National Institute for Health and Care Excellence

WoCoVA

Standards of Care for Peripheral Intravenous Catheters: Evidence-Based Expert Consensus

Highlights

- The United States purchases an estimated 350 million PIVCs annually.
- PIVC insertion is the most frequently performed invasive procedure in healthcare.
- There is multidisciplinary and multi-organizational collaboration.
- PIVC insertion and maintenance is underappreciated in U.S. healthcare.
- There is a fundamental lack of awareness regarding associated risks.
- Patients knowingly and unknowingly accept substandard care.

Correspondence regarding this article should be addressed to jthompson@avainfo.org
https://doi.org/10.2309/JAVA-D-24-00011

Clinicians secure the PIVC and apply a sterile dressing upon successful PIVC insertion and with routine dressing changes to avoid accidental dislodgement.[10,13,15,18,47–52]

Clinicians inserting and managing PIVCs should implement a post-insertion care bundle and use techniques and devices that afford enhanced catheter stabilization and securement.

i) Clinicians should consider the use of tissue adhesive and skin barrier film to improve dressing adherence and prevent dressing disruption and device dislodgement.[10,53,54]

ii) Consider patient preferences for adhesives and skin barrier (expert panel consensus).

Healthcare organizations develop policies and procedures regarding the use of tissue adhesives, skin barrier films, and securement devices to minimize dressing disruption, catheter movement, and accidental dislodgement.[10]

SECUREMENT + PROTECTION

TOP 3

Therapy failure & Infections

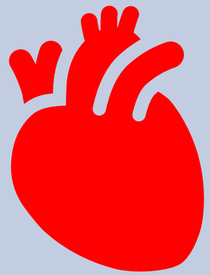
In dwell time

* Pettit 2002 / 2003
* van Rens 2022

PERIPHERAL VENOUS ACCESS

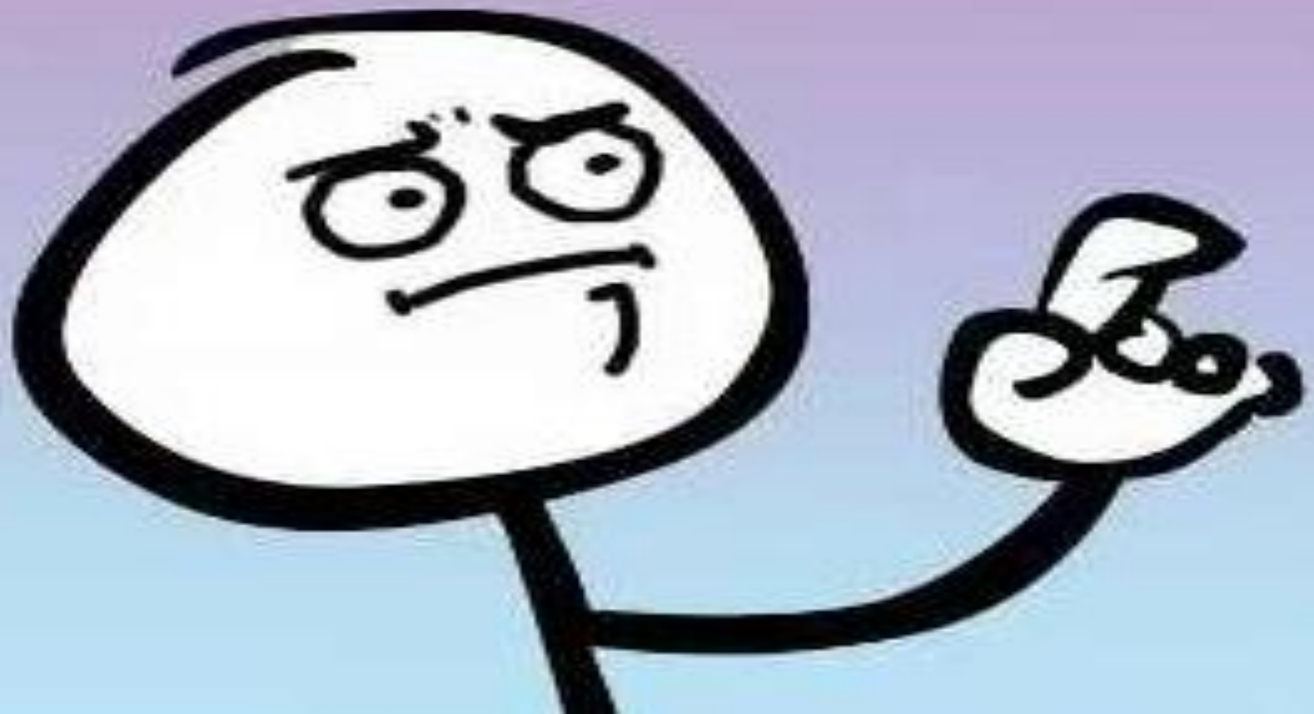
1. Infiltration / Extravasation
2. Leaking
3. Phlebitis

CENTRAL VENOUS ACCESS



1. ~~Occlusion~~
2. CLABSI (suspicion)
3. Phlebitis

How to remove?



How to remove!

frontiers | Frontiers in Pediatrics

TYPE Perspective
PUBLISHED 25 August 2023
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EDITED BY
Fiammetta Piersigilli,
Cliniques Universitaires Saint-Luc, Belgium

REVIEWED BY
Timothy R. Spencer,
Global Vascular Access, LLC, United States

*CORRESPONDENCE
Matheus F. P. T. van Rens

Safe and effective removal of cyanoacrylate vascular access catheter securement adhesive in neonates

Kevin Hugill[1†], Matheus F. P. T. van Rens[2*†], Angela Alderman[3], Lori Kaczmarek[4], Carolyn Lund[5,6] and Amy Paradis[7]

Cyanoacrylate Catheter Securement Adhesive Multiple Benefits

Targets multiple vascular access challenges that result in massive infection reduction and cost savings

> 8 logs microbe reduction and immobilizes microbes

Reduced infections and re-bleeding

Dressing securement

Less frequent dressing changes

Stop bleeding and oozing

Cost effective

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Thank you

QUESTIONS

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