

La prevenzione delle lesioni cutanee da catetere venoso (CASI): *nel neonato*

12 maggio 2026

Nicola Pozzi

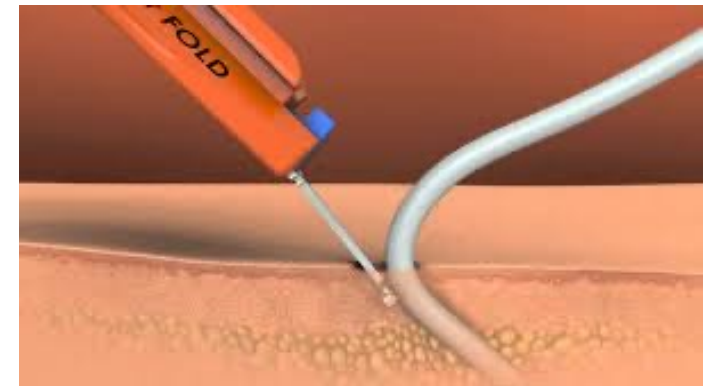
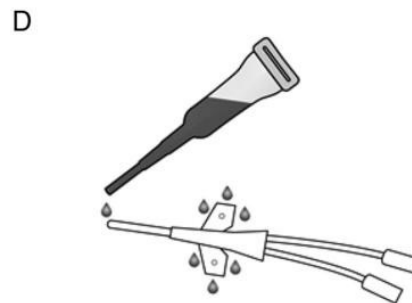
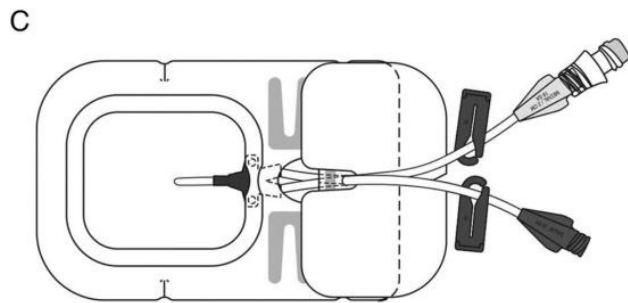
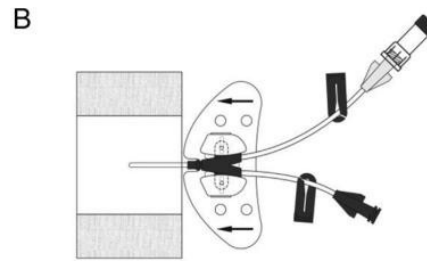
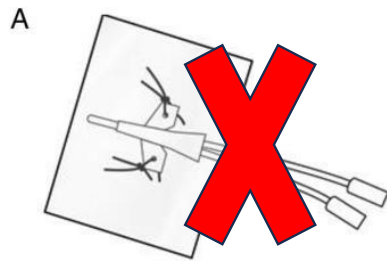
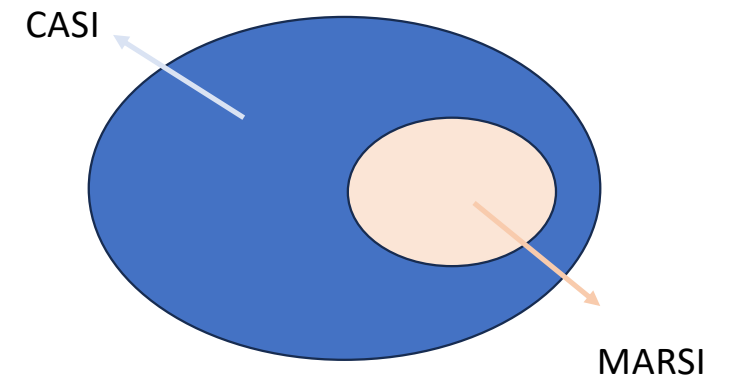
Responsabile UOSD Patologia Intensiva Respiratoria-BPD
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AORN San Pio, Benevento



2 nuove entità:

CASI – Catheter associated skin injury

MARSI – Medical adhesive related skin injury



36. VASCULAR ACCESS DEVICE SECUREMENT



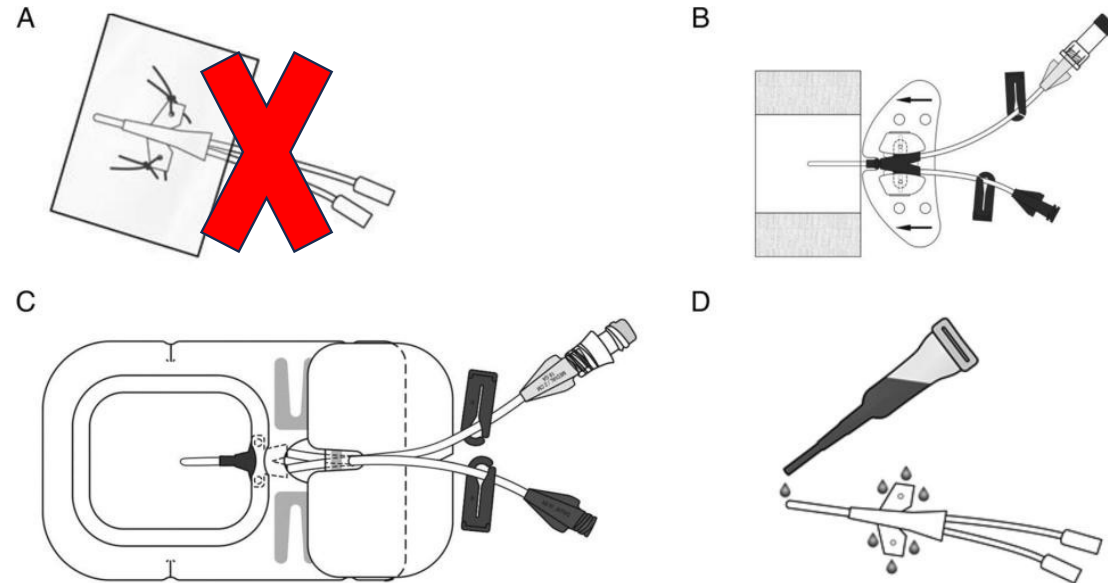
9TH EDITION

REVISED 2024

CASI – Catheter associated skin injury

MARSI – Medical adhesive related skin injury

- N. Be aware of the risk of catheter-associated skin injury.
1. Assess skin when the securement device is changed; anticipate potential risk for skin injury due to age, joint movement, and presence of edema.^{39,46,60,61} (III)



CASI, cos'è?



Canadian Vascular Access Association
Association Canadienne d'Accès Vasculaire

Disruption of the skin, characterized by drainage, skin irritation (irritant or allergic contact dermatitis [e.g., erythema, vesicle, bulla, pruritis]), skin damage (erosion or skin tear, blister, stripping) at a VAD site, under the dressing, which lasts longer than 30 minutes after dressing/securement removal (excluding skin conditions such as eczema, autoimmune disorders, extravasation);



(Original photo courtesy of Deb Thayer, RN)

CASI may result in patient discomfort, delays in treatment, unscheduled VAD removal and replacement, and increased healthcare costs.

Canadian Vascular Access Association.
Canadian vascular access and infusion therapy guidelines.
Pembroke, ON: Pappin Communications; 2019.

MARSI, cos'è?

MARSI has been defined as “an occurrence in which erythema and/or other manifestation of cutaneous abnormality (including, but not limited to, vesicle, bulla, erosion, or tear) persists 30 minutes or more after removal of the adhesive”

(McNichol et al, 2013).



FIGURE 1. Medical adhesive-related skin injury and chemical injury in a preterm neonate.

Types of MARSI



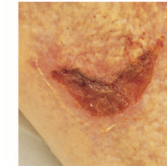
■ Mechanical Skin Injury ■ Dermatitis ■ Other



Medscape



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Medscape

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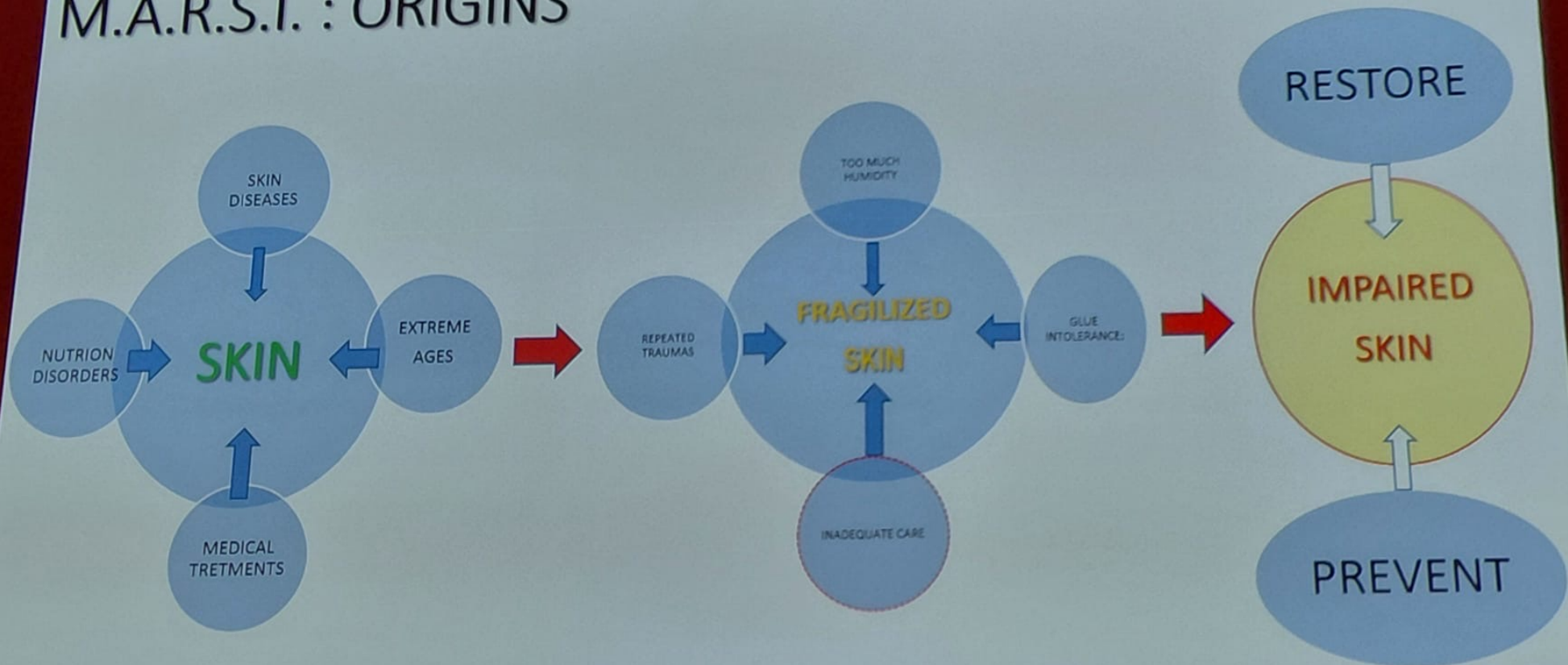


Medscape



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M.A.R.S.I. : ORIGINS



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52. CATHETER-ASSOCIATED SKIN INJURY

Standard

52.1 Preventative strategies are implemented to eliminate or minimize the risk of catheter-associated skin injury (CASI).

52.2 Vascular access device (VAD) site, dressing, and securement status are routinely assessed for signs and symptoms of skin injury.

52.3 Appropriate interventions are implemented to manage and prevent further risk of CASI.



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european standards of
care for newborn health

QUALITÀ DELLE CURE EROGATE

Argomento del Gruppo di Esperti: Procedure per la care

Cura della cute nei bambini ospedalizzati

Silva E, Oude-Reimer M, Frauenfelder O, Camba F, Ceccatelli M, Jørgensen E

Per i professionisti sanitari

- | | | |
|---|--------------------------------------|---------------------------------------|
| 4. Tutti i professionisti sanitari aderiscono alla linea guida di reparto sulla cura della cute. | B (Qualità alta) | Linee guida |
| 5. Tutti i professionisti sanitari coinvolti nell'assistenza effettuano la formazione sulla funzione e sullo sviluppo della cute, sulla sua cura e protezione e sugli strumenti di valutazione del rischio. (12-14) | A (Qualità alta)
B (Qualità alta) | Evidenza documentale della formazione |
| 6. È disponibile uno strumento per la valutazione del rischio per la cute che viene utilizzato quotidianamente. (13,15) | A (Qualità alta) | Linea guida, report dell'audit |

Per il reparto di neonatologia e pediatria

- | | | |
|--|--|-------------|
| 7. È disponibile una linea guida di reparto sulle strategie e sui prodotti di cura della cute che viene aggiornata regolarmente. (4,5) | A (Qualità moderata)
B (Qualità moderata) | Linea guida |
|--|--|-------------|

Per l'ospedale

- | | | |
|--|------------------|----------------------------|
| 8. Viene garantito il training sulla funzione e sullo sviluppo della cute sulla cura e | B (Qualità alta) | Evidenza documentale della |
|--|------------------|----------------------------|

CASI-MARSI: entità del fenomeno

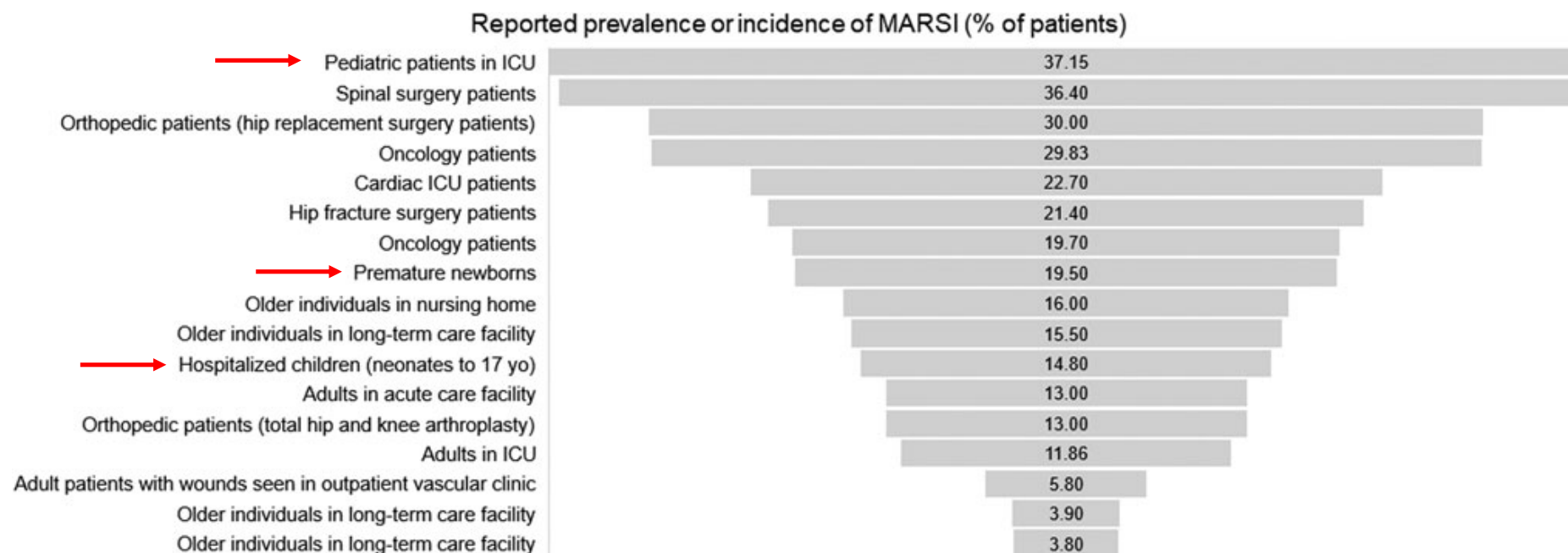


Figure 1. Examples of reported prevalence or incidence of MARSI in the literature, in percent of patients affected. Sources (from *top* to *bottom*): Wang et al¹⁰; Kim and Shin¹¹; Schwartz Sellaeg et al¹²; Zhao et al¹³; Alcantara et al,¹⁴; Polatsch et al¹⁵; Zhao et al,¹⁶; de Oliveira Marcatto et al¹⁷; White et al¹⁸; Konya et al¹⁹; McLane et al²⁰; Farris et al²¹; Jester et al²²; Gao et al²³; Ratliff²⁴; Koyano et al²⁵; Sanada et al.²⁶ MARSI, medical adhesive-related skin injury.

Qualità delle cure erogate e lesioni cutanee

L'integrità della cute rappresenta uno standard di qualità dell'assistenza infermieristica erogata ed è riconosciuto come uno degli indicatori di outcome dell'assistenza infermieristica stessa.



FIGURE 1. Medical adhesive-related skin injury and chemical injury in a preterm neonate.

Standardizzazione delle procedure di reparto

Utilizzo di scale per valutare il rischio della cute e la valutazione della stessa

[Catherine Noonan¹](#), [Sandy Quigley](#), [Martha A Q Curley](#)
Skin integrity in hospitalized infants and children: a prevalence survey
J Pediatr Nurs 2006

36. VASCULAR ACCESS DEVICE SECUREMENT



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- N. Be aware of the risk of catheter-associated skin injury.
 - 1. Assess skin when the securement device is changed; anticipate potential risk for skin injury due to age, joint movement, and presence of edema.^{39,46,60,61} (III)

Practice Recommendations

- A. Use a securement method, such as adhesive securement device (ASD), integrated securement device (ISD), subcutaneous anchor securement system (SASS), or tissue adhesive (TA), in addition to the primary dressing, to stabilize and secure VADs. Inadequate securement can cause dislodgement and complications requiring premature removal.
 - 1. Additional securement as an adjunct to the primary dressing reduces motion at the insertion site and associated complications. Adequate securement can reduce pain, fear, and anxiety and reduces health care costs associated with VAD replacement.¹⁻¹¹ (I)
- B. Choose the most appropriate method for VAD securement based on factors including VAD type, patient age, skin turgor and integrity, anticipated duration of therapy, previous adhesive skin injury, and any type of drainage from the insertion site.¹²⁻¹⁴ (III)
- C. Avoid the use of sutures, as they are not an effective alternative to a securement method; sutures are associated with needlestick injury, support the growth of biofilm, and increase the risk of catheter-associated bloodstream infection (CABSI).^{15,16} (III) Evaluate the effectiveness of a combination of securement measures to reduce complication and failure.

Lesione della cute

- ✓ Evento potenzialmente prevenibile
- ✓ ↑ tempo di ospedalizzazione e ↑ rischio di infezione
- ✓ Dolore → sviluppo neurologico
- ✓ Esiti permanenti funzionali ed estetici

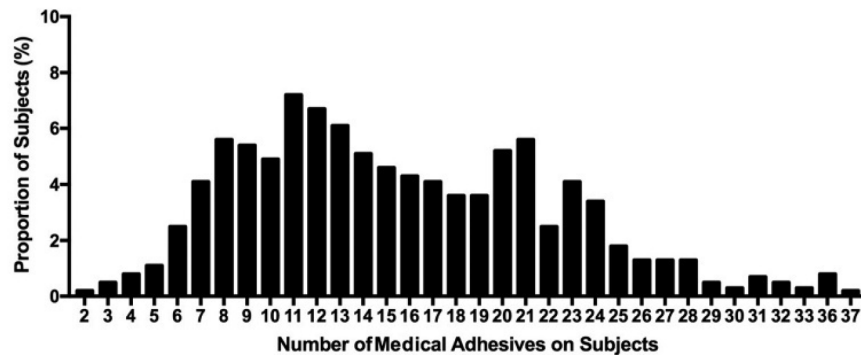


Standardizzazione delle procedure

CASI-MARSI: entità del fenomeno

- +++Neonati, Prematuri, Prime settimane di vita (tipicità della cute)
- +++Bambini delle Terapie Intensive Neonatali e Pediatriche più esposti (female, age 2 years or younger, hospital stays longer than 5 days, infection, edema, and surgery as independent risk factors)

Figure 1.
ADHESIVE USE ON SUBJECTS



Adv Skin Wound Care 2019 Apr;32(4):176-182.

Entità del fenomeno

Epidemiology in NICU

- is the number 1 cause of iatrogenic neonatal cutaneous injury;
- From 10% to 15% of neonatal graduates leave the neonatal intensive care unit (NICU) with a scar;
- approximately 5% are functionally and cosmetically significant.

Medical adhesive-related skin injury (MARSI)

Epidemiology in Pediatrics



In a one-day prevalence audit, 8% of hospitalized infants and children were found to have tape-related skin stripping.⁸

8 McNichol L, Lund C, Rosen T, Gray M. Medical adhesives and patient safety: state of the science. Consensus statements for the assessment, prevention and treatment of adhesive-related skin injuries. J WOCN. 2013;40(4):365-380.

Medical adhesive-related skin injury (MARSI)

Epidemiology in PICU

Adv Skin Wound Care. 2019 Apr;32(4):176-182. doi: 10.1097/01.ASW.0000553601.05196.fb.

Medical Adhesive-Related Skin Injuries and Associated Risk Factors in a Pediatric Intensive Care Unit.

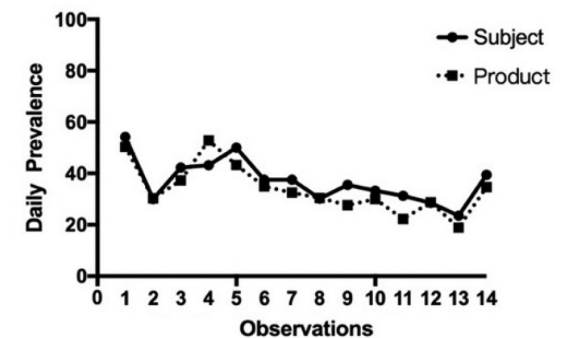
Wang D¹, Xu H, Chen S, Lou X, Tan J, Xu Y.

MAIN RESULTS:

The MARSI prevalence ranged from 23.53% to 54.17% (mean, 37.15%). Multivariate analysis identified being female, age 2 years or younger, hospital stays longer than 5 days, infection, edema, and surgery as independent risk factors. Prevalence by product ranged from 19 to 53 per 1,000 product-days with a mean of 34 MARSIs per 1,000 product-days. The major MARSI types were epidermal stripping and skin tear. The face was the most common MARSI site, and tracheal intubation was the most common inciting condition. Implicated products were acrylate tapes with elastic cloth backings.

Figure 2.

PREVALENCE OF MARSI



Case Report

A 6-day old,
24-week gestation,
500-g neonate

umbilical line placement
disinfected with 2%CHG-70%
isopropyl alcohol solution
hydrocolloid dressing.



transcutaneous
carbon dioxide probe

The area was cleaned
with NS and covered
with an acrylate film

FIGURE 1. Medical adhesive-related skin injury and chemical injury in a preterm neonate.

Courtesy of Dr. Boyar
Director of Neonatal Wound Services,
Cohen Children's Medical Center of New York,
New Hyde Park;



combination of medical- grade
honey gel covered by foam and
gauze

Once the dry exudate was
softened, gentle debridement
with a monofilament debrider
was performed

FIGURE 2. Medical grade honey, covered by nonadherent foam, covered by gauze.

healed completely within 2.5 weeks



FIGURE 3. Healing after week 1.



FIGURE 4. Results at 2 months.

In conclusion, NEONATES are at high risk for MARSI.

Use of antiseptics can complicate the overall injury.

Nonalcoholic liquid skin barrier and silicone adhesive releaser can prevent the majority of injuries.

Courtesy of Dr. Boyar
Director of Neonatal Wound Services,
Cohen Children's Medical Center of New York,
New Hyde Park;

Perchè i neonati e i bambini sono a maggior rischio di MARSI?

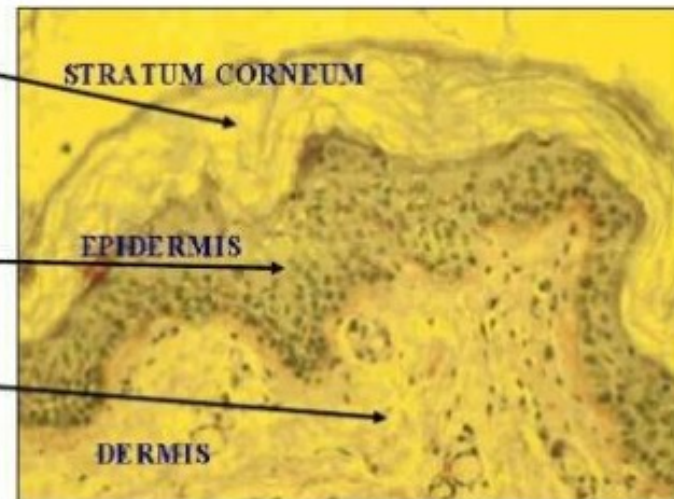


Full Term Infant Skin



Healthy infants

- Well-formed stratum corneum.....note multiple layers (10-20)
- Thick epidermis
- Structural proteins present in the dermis

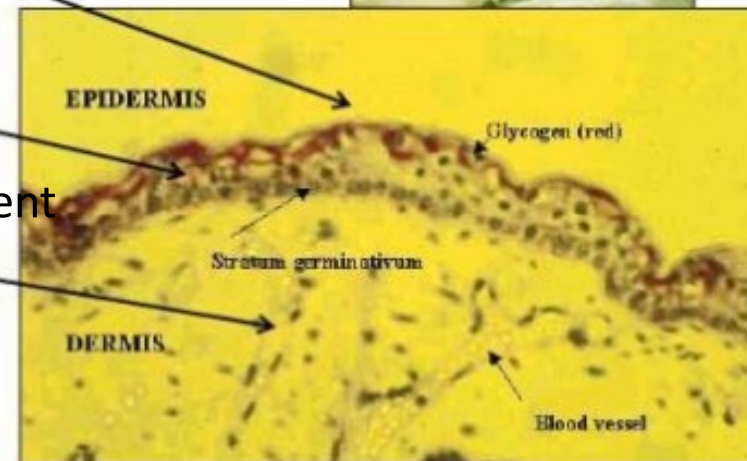


"Shaping the Future of Pediatric Vascular Access 2012"



Premature Infant Skin

- Stratum corneum poorly developed or absent
- Thin epidermis
- Dermis not fully formed and deficient of structural proteins

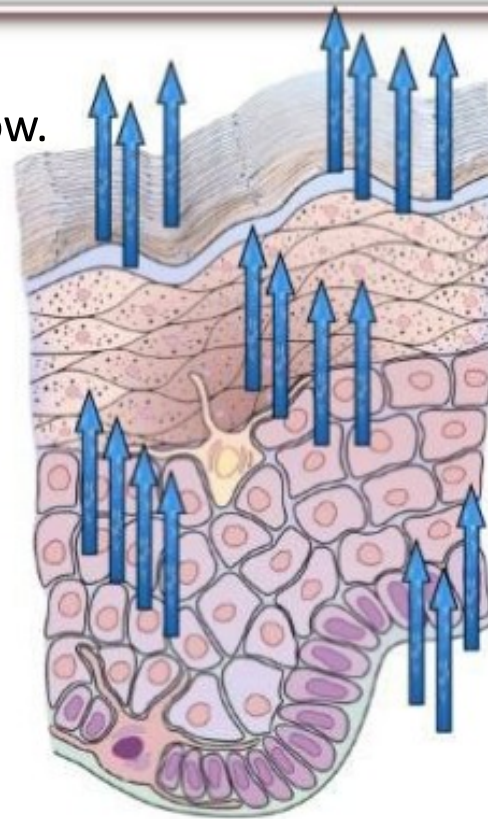


"Shaping the Future of Pediatric Vascular Access 20

These characteristics amplify the risks for pressure injury, epidermal stripping, dermatitis, and bacterial colonization and invasion.

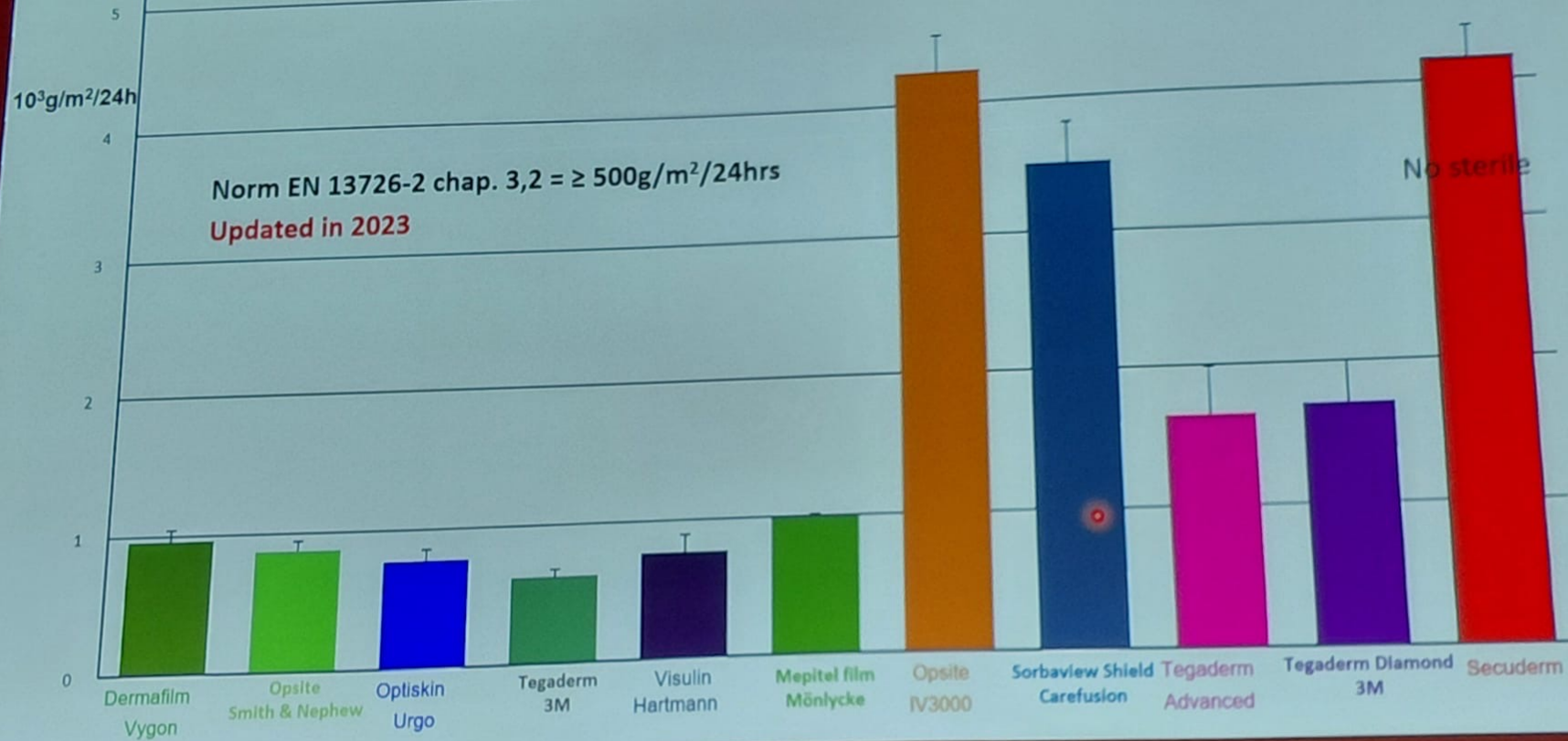
Transepidermal Water Loss (TEWL)

- Water of respiration normally moves through the stratum corneum from below.
- The rate of transepidermal water loss (TEWL, g/m²/hr) is a measure of skin barrier integrity
- TEWL is higher (faster) when the barrier is damaged.



MOISTURE-VAPOR TRANSMISSION RATE (MVTR) – Liquid in contact-

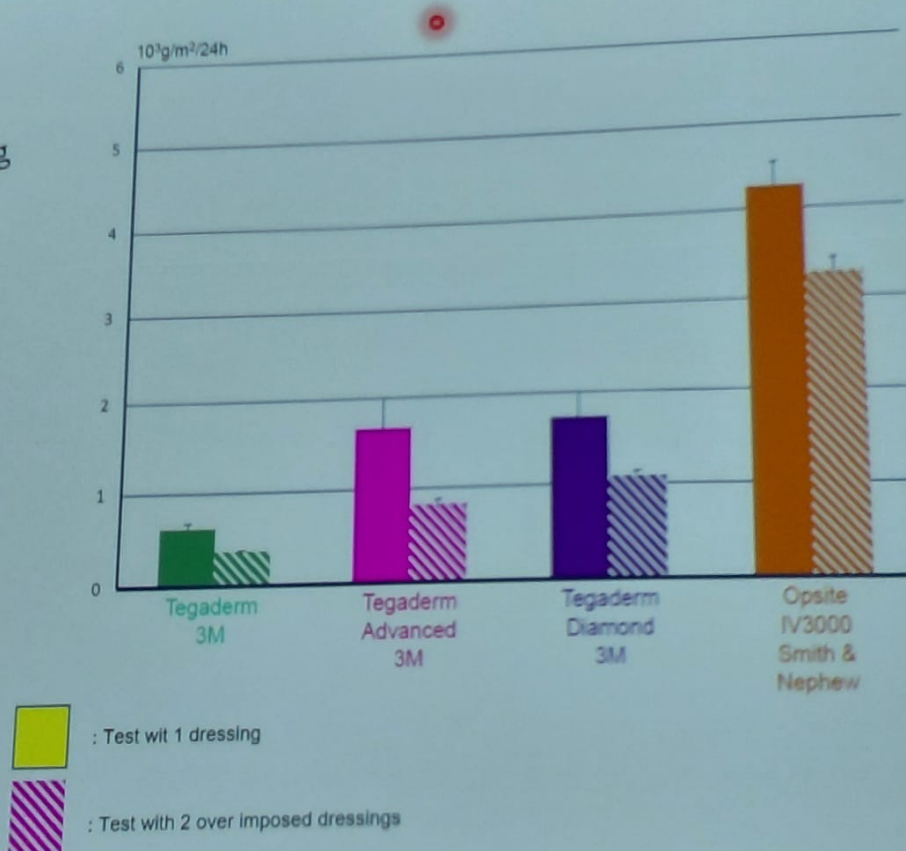
Pansements de cathéters : caractéristiques, limites et points forts des produits disponibles sur le marché
Yves Lurton, 8^{ème} congrès des Dispositifs Intraveineux de Longue Durée, Paris / 29-30 janvier 2016



M.A.R.S.I. & WATER:

-> Do not overlap 2 membranes

Available on gifav.org



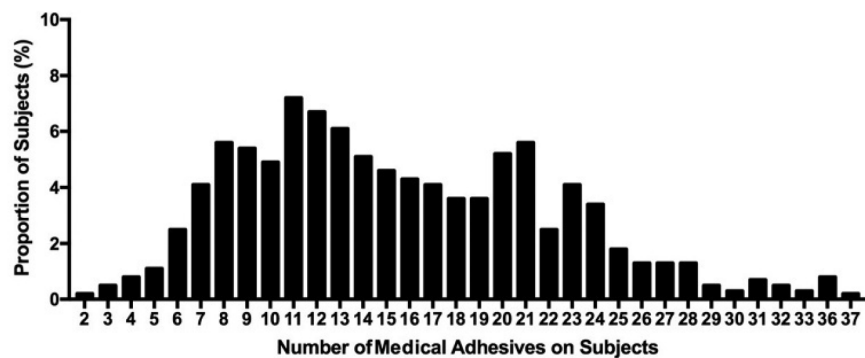
Test de perméabilité à la vapeur d'eau avec 1 et 2 pansements superposés
In Pansement et fixation des cathéters. Y. Lurton Divid 2016

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“Dressing” the NICU Patient



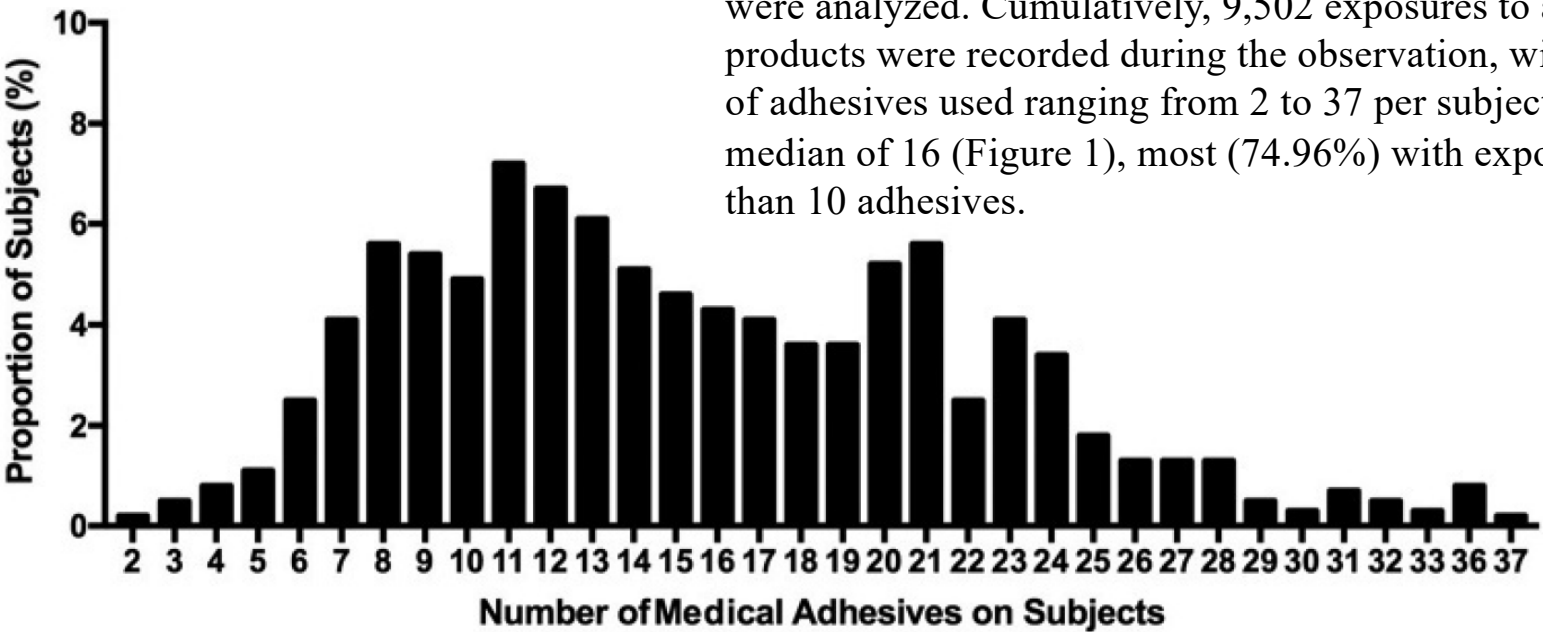
Figure 1.
ADHESIVE USE ON SUBJECTS



“Dressing” the NICU full term Patient



Figure 1.
ADHESIVE USE ON SUBJECTS



A total of 232 patients (median age, 1.07 years; range, 6 days to 14 years) were enrolled. During the 2-week study, 611 persondays were analyzed. Cumulatively, 9,502 exposures to adhesive products were recorded during the observation, with the number of adhesives used ranging from 2 to 37 per subject with a median of 16 (Figure 1), most (74.96%) with exposures to more than 10 adhesives.

Medical adhesive-related skin injury (MARSI)

Epidemiology in NICU

- is the number 1 cause of iatrogenic neonatal cutaneous injury;
- Ten percent (10%) to 15% of neonatal graduates leave the neonatal intensive care unit (NICU) with a scar;
- approximately 5% are functionally and cosmetically significant.
- Chemical burns from topical antiseptics complicate neonatal care from day 1.
- No safe antiseptics and antimicrobials exist and no definitive recommendations have been issued on use of topical antiseptic/chemical injury in the neonatal population. Chlorhexidine (CHG), alcohol, and iodine are used, all with potential for cutaneous injury and systemic absorption.

Vita Boyar Wound Management & Prevention 2019;65(2):8–12.

Medical Adhesives and Medical Adhesive Products

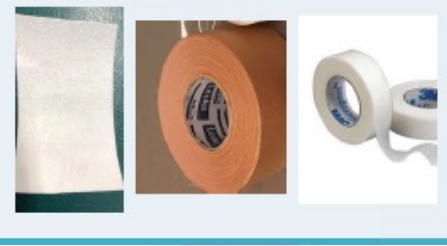
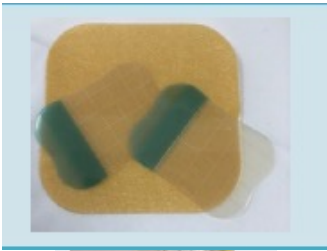
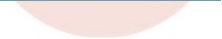
The US Food and Drug Administration (FDA) defines a medical adhesive tape or adhesive bandage as "**a device intended for medical purposes that consists of a strip of fabric material or plastic, coated on one side with an adhesive**", and may include a pad of surgical dressing without a disinfectant.

The device is used to cover and protect wounds, to hold together the skin edges of a wound, to support an injured part of the body, or to secure objects to the skin".

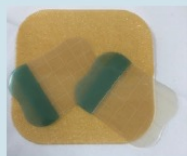
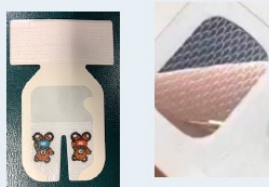
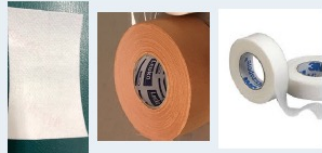


United States Department of Health and Human Services. Medical adhesive tape and adhesive bandage. 21CFR880.5240,

Table 1. Types of medical adhesives.

Adhesive Type	Backing	Uses
Acrylates 	Cloth Silk Polyester (woven, non-woven) Paper, Plastic Foam, Polyurethane (film)	Secure medical devices (ETT, IV, NG tube, oxygen cannula)
Hydrocolloid 	Film	Ostomy care Platform underneath tape Integrated into adhesive products (ETT holder, umbilical catheter securement)
Hydrogel 	Plastic Reflective cover	EKG electrodes Temperature probes
Silicone 	Woven polyester Plastic	Secure EEG electrodes "Platform" between skin and tape Border of wound dressings
Zinc Oxide 	Plastic	Use only on top of hydrocolloid platform

There is limited evidence regarding the frequency of use of removal agents for neonates

Adhesive Base Type			Technique (2 handed)	
Removal Techniques for Adhesive Type	A. Plastic top + acrylate bottom		1	Low & Slow
	B. Silicone (poor adherence to medical devices)			
	C. Hydrocolloid sheet (e.g. DuoDERM®, Comfeel) • <i>high risk of injury</i> ^{5,8-10}		2	Low & Super Slow
	D1. Traditional film, occlusive, polyurethane dressings (<i>border and borderless</i>)		3	Roll & Stretch ⁸
	D2. Newer film dressings with grid adhesive			or Low & Slow ¹¹
	E. Gel adhesive		4	Moisten* , then Rub & Loosen
	F. Fabric top + acrylate bottom		5	Soak* Top Layer; then Low & Slow
G. Paper top + acrylate bottom				
View demonstrational tutorials at: https://www.youtube.com/playlist?list=PLwIZzD33AD9nyXtsyG1MdG-IZ2VkYYdnL				



EEG electrodes attached to scalp using silicone adhesive tape in two infants;
these can be removed from hair with less discomfort.

Acrylate vs silicone adhesives

This table summarizes the qualities of acrylate and silicone adhesives, helping you choose the most appropriate type for each patient. Adhesion ratings range from high (1) to low (7), although this rating isn't entirely linear. A blank cell indicates no information on the feature in question is available.

	Water-resistant	Breathable	Stretches	Long-term adhesion to dry skin	Initial adhesion to damp skin	Initial adhesion to dry skin
Acrylate tapes						
Cloth			N	4	1	1
Nonwoven soft cloth*	Y	Y	Y	1	4	3
Silk*	Y		N	2	6	2
Paper/plastic blend	Y	Y		3	3	4
Clear plastic*	Y			6	5	5
Paper*		Y		5	2	6
Foam	Y		Y	7	7	7
Silicone tape	Y	Y		4	2	4

Adhesion rated 1 (high) to 7 (low)

*Product performance may vary by manufacturer and condition of patient's skin. Content courtesy of 3M.



Medical Adhesives and Patient Safety: State of the Science

Consensus Statements for the Assessment, Prevention, and Treatment of Adhesive-Related Skin Injuries

Laurie McNichol ■ Carolyn Lund ■ Ted Rosen ■ Mikel Gray



3.3
ANCC
Contact
Hours

Classificazione

WOUND CARE



Medical Adhesives and Patient Safety: State of the Science

Consensus Statements for the Assessment, Prevention, and Treatment of Adhesive-Related Skin Injuries

Laurie McNichol ■ Carolyn Lund ■ Ted Rosen ■ Mikel Gray

CE
3.3
ANCC
Contact
Hours

Mechanical

Skin (Epidermal) stripping—Removal of one or more layers of the stratum corneum occurring following removal of adhesive tape or dressing; lesions are frequently shallow and irregular in shape and the skin may appear shiny; open lesions may be accompanied by erythema and blister formation^{1,16,17}



Medscape

Source: NAINR © 2014 Elsevier Science, Inc.

Tension injury or blister—Injury (separation of the epidermis from the dermis) caused by shear force as a result of distension of skin under an unyielding adhesive tape or dressing, inappropriate strapping of tape or dressing during application, or when a joint or other area of movement is covered with an unyielding tape^{16,18,19}



Medscape

Source: NAINR © 2014 Elsevier Science, Inc.

Skin tear—Wound caused by shear, friction and/or blunt force resulting in separation of skin layers; can be partial- or full-thickness²⁰



Photo courtesy of 3M

Mechanical

Classification of MARSI

Skin (Epidermal) stripping—Removal of one or more layers of the stratum corneum occurring following removal of adhesive tape or dressing; lesions are frequently shallow and irregular in shape and the skin may appear shiny; open lesions may be accompanied by erythema and blister formation^{1,16,17}



Photo courtesy of 3M

Tension
caused
tape or
when a

Skin t
separa

McNichol 2013



Photo courtesy of 3M

Photo courtesy of 3M

Two infants with epidermal stripping from removal of medical adhesives.

Mechanical

Classification of MARSI

Skin (Epidermal) stripping—Removal of the epidermal corneum occurring following removal of a dressing. These lesions are frequently shallow and irregular in shape. These lesions may be accompanied by erythema.

Tension injury or blister—Injury caused by shear force as a result of tape or dressing, inappropriate strap or restraint, or inappropriate positioning when a joint or other area of movement is restricted.

Skin tear—Wound caused by shear force, resulting in separation of skin layers; can be partial or full thickness.

Tension blisters on the finger following removal of medical adhesive tape that was securing hand to IV board.



Dermatitis

Irritant contact dermatitis—Non-allergic contact dermatitis occurring as a result of a chemical irritant; a well-defined affected area correlates with the area of exposure; may appear reddened and swollen and vesicles may be present; typically of shorter duration^{10,21}



Photo courtesy of 3M

Allergic dermatitis—Cell-mediated immunologic response to a component of tape adhesive or backing; typically appears as an area of erythematous, vesicular, pruritic dermatitis corresponding to the area of exposure and/or beyond; persists for up to a week^{10,21,22}



Photo courtesy of Ted Rosen



Other

Maceration—Changes in the skin resulting from moisture being trapped against the skin for a prolonged period; skin appears wrinkled and white/gray in color; softening of the skin results in increased permeability and susceptibility to damage from friction and irritants



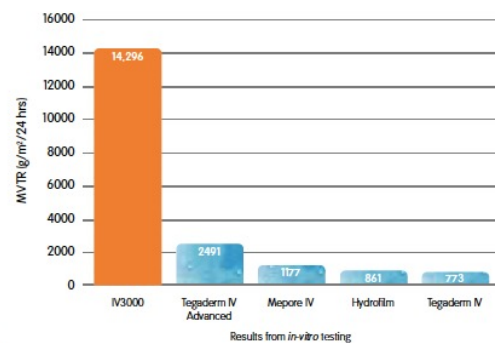
Photo courtesy of 3M

Folliculitis—Inflammatory reaction in hair follicle caused by shaving or entrapment of bacteria; appears as small inflamed elevations of skin surrounding the hair follicle; may be nonsuppurative (papules) or contain pus (pustules)



Photo courtesy of
Teresa Conner-Kerr

Moisture vapour transmission rates (MVTR)^{4,7}



Utilizzare membrane semipermeabili trasparenti ad alta traspirabilità!

B. CASI Wound Management

CASI Condition

1. Erythema; Inflammation; Skin damage (no drainage)



(e.g., Contact dermatitis, Skin stripping, Tension blister)

2. Exudate



(e.g., Contact dermatitis; mechanical skin injury)

3. Local Infection



(e.g., Exit site infection; cellulitis)

4. Skin Tear - viable flap



MARSI SEVERITY

Abbreviation: MARSI, medical adhesive-related skin injury.

^aS] tion.⁹ C

Why MARSI is relevant to your practice?



Clinical impact

Choosing a high-adhesion tape for use on fragile skin may result in MARSI, which may cause pain, increase the risk of infection and delay healing.¹



55

treatments

For every 100 patients who receive a medical tape application, 55 treatments for MARSI will be needed.¹²



Cost impact

MARSI doesn't just affect clinical outcomes and patient well-being. It may also contribute to higher care costs, which can burden the healthcare system as a whole.



125x

greater cost

The average tape-induced skin injury costs \$88.50 to treat, which is 125x greater than the average cost of one roll of plastic tape.¹²



Patient impact

Not choosing the right medical adhesive may negatively impact the patient, affecting everything from their care experience to your facility's satisfaction scores.



62%

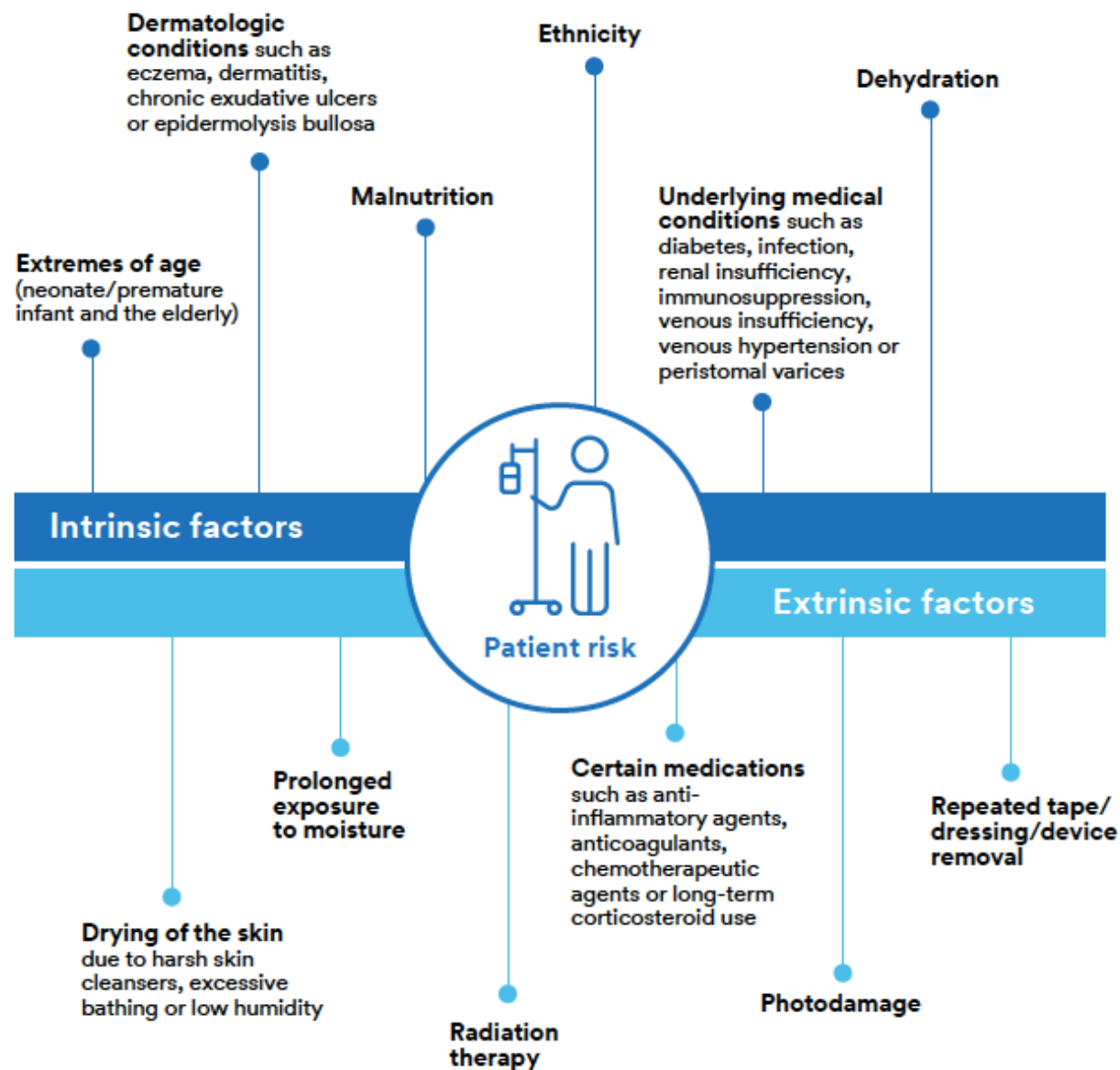
of clinicians

In one survey, 62% of clinicians indicated their current medical tapes do not meet the needs of fragile skin patients.¹³

Prevenzione delle CASI/MARSI

- ✓ Tenere in conto dei fattori di rischio intrinseci ed estrinseci
- ✓ Equilibrio ottimale tra buona stabilizzazione del catetere e il minor rischio di lesione cutanea
- ✓ Quando bisogna cambiare una medicazione al fine di ridurre il rischio di CASI/MARSI?
(Linee guida? Buone pratiche assistenziali?)
- ✓ Utilizzo di algoritmi di gestione dei sistemi di fissaggio e medicazioni dei cateteri venosi
(quali?)

Prevenzione



Preventing Marsi in the NICU

Table 1: Level of adhesion consideration

Critical securement	Multipurpose	Gentle to skin
Securing medical devices Heavy tubing (e.g. endotracheal tube, chest tube nasogastric tube)	Securing medical devices (e.g. ostomy bag) Immobilising body parts	Anchoring dressings Lightweight tubes/devices (e.g. IV)
		

← Higher level of adhesion

Moderate level of adhesion

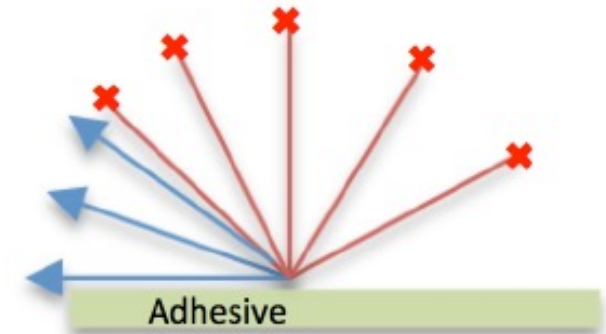
Lower level of adhesion →

Prevenzione: uso di bundles

Table 2

Key elements for adhesive application and removal

1. MARSI is defined as any erythema persisting 30 min post adhesive removal (also known as epidermal stripping) (McNichol et al., 2013)
- 2. Identification of type of adhesives is required to best understand application and removal techniques
3. Adhesive products consist of a top layer (backing) and adhesive layer (base) (McNichol et al., 2013)
- 4. The type and composition of adhesive informs the removal technique (e.g. polyurethane (transparent) films require a different removal technique than hydrocolloid/acrylate adhesives)
- 5. Risk of neonatal MARSI is increased by i) removal of an adhesive within 24 h s of application, ii) use of an incorrect removal angle, iii) use of bonding agents with adhesive application (e.g. Tincture of Benzoin) (Brandon et al., 2018; Lund, 2014)
- 6. Adhesives should be removed with a low angle to the skin (McNichol et al., 2013)
7. Removal of adhesives should i) start with a folded edge (if no folded edge, roll an area of the adhesive until an edge is created), ii) be done by pulling gently and slowly (McNichol et al., 2013)
- 8. Removal should be performed using two hands, one to support surrounding skin and one to pull gently (Brandon et al., 2018)
9. Evidence regarding the safety and efficacy for removal agents is limited (Brandon et al., 2018)
- 10. Non-pharmacological pain management strategies should be used (Nanavati et al., 2013).



Factors	Decreasing Adhesion or Peel Force	Increasing Adhesion or Peel Force
Adhesive composition and structure	Silicones, hydrogels (e.g. gel adhesives)	Acrylates, synthetic rubbers, hydrocolloids, urethanes
Surface area contact between adhesive and skin	Less adhesive cold flow (less contact area)	More adhesive cold flow (more contact area)
Adhesive coat weight	Lower adhesive coat weight	Higher adhesive coat weight
Adhesive coating	Patterned	Continuous
Backing type	Thin, flexible	Thick, more rigid
Removal technique	Low and slow technique, or stretch release technique	Fast and in direction that is perpendicular to skin surface

Figure 1. Factors influencing adhesion to skin or peel force of a medical device.



Cambio medicazione

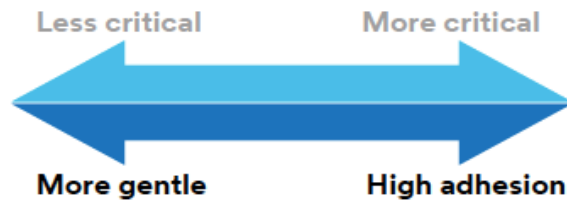
The Centers for Disease Control and Prevention (**CDC**) recommends that in adult and adolescent patients, ***CVC transparent dressings be changed at least weekly, except in those pediatric patients in whom the risk of dislodging the catheter outweighs the benefit of changing the dressing.***

-
1. O'Grady N, Alexander M, Dellinger E, et al. *Guidelines for Prevention of Intravascular Catheter-Related Infections*. Bethesda, MD: Centers for Disease Control and Prevention, National Institutes of Health. *MMWR*. 2002;51(RR-10).

The National Association of Neonatal Nurses (**NANN**) guidelines state that :
“in light of the potential for damage to the stratum corneum layer of the skin and dislodgement of the catheter when the dressing is removed, a dressing change is recommended when the transparent dressing no longer adheres to the catheter or skin or becomes damp or soiled.”

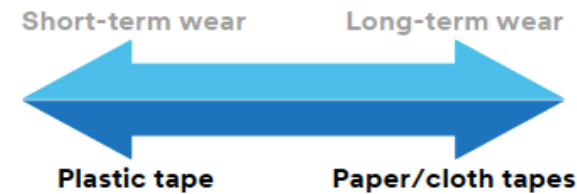
Gauze and tape dressings, a transparent dressing with gauze underneath or an occlusive tape on top, require changing every 48 hours.

Pettit J, Wyckoff MM. *NANN (National Association of Neonatal Nurses) Peripherally Inserted Central Catheters Guideline for Practice*. 2nd ed. Glenview, IL: National Association of Neonatal Nurses; 2007.



1. Intended use of the product

The foremost patient consideration is the intended use or purpose of the product (i.e. securement of a critical device, non-critical device or dressing, wound closure, etc). Depending on the application, clinicians must balance the need for adhesion and the need for gentleness.



2. Anticipated wear time

The intended use of the product directly influences anticipated wear time. Some tape materials are better suited for either short- or long-term wear, meaning clinicians should consider the trade-offs between tapes with plastic backing versus paper or cloth backing.



3. Anatomical location

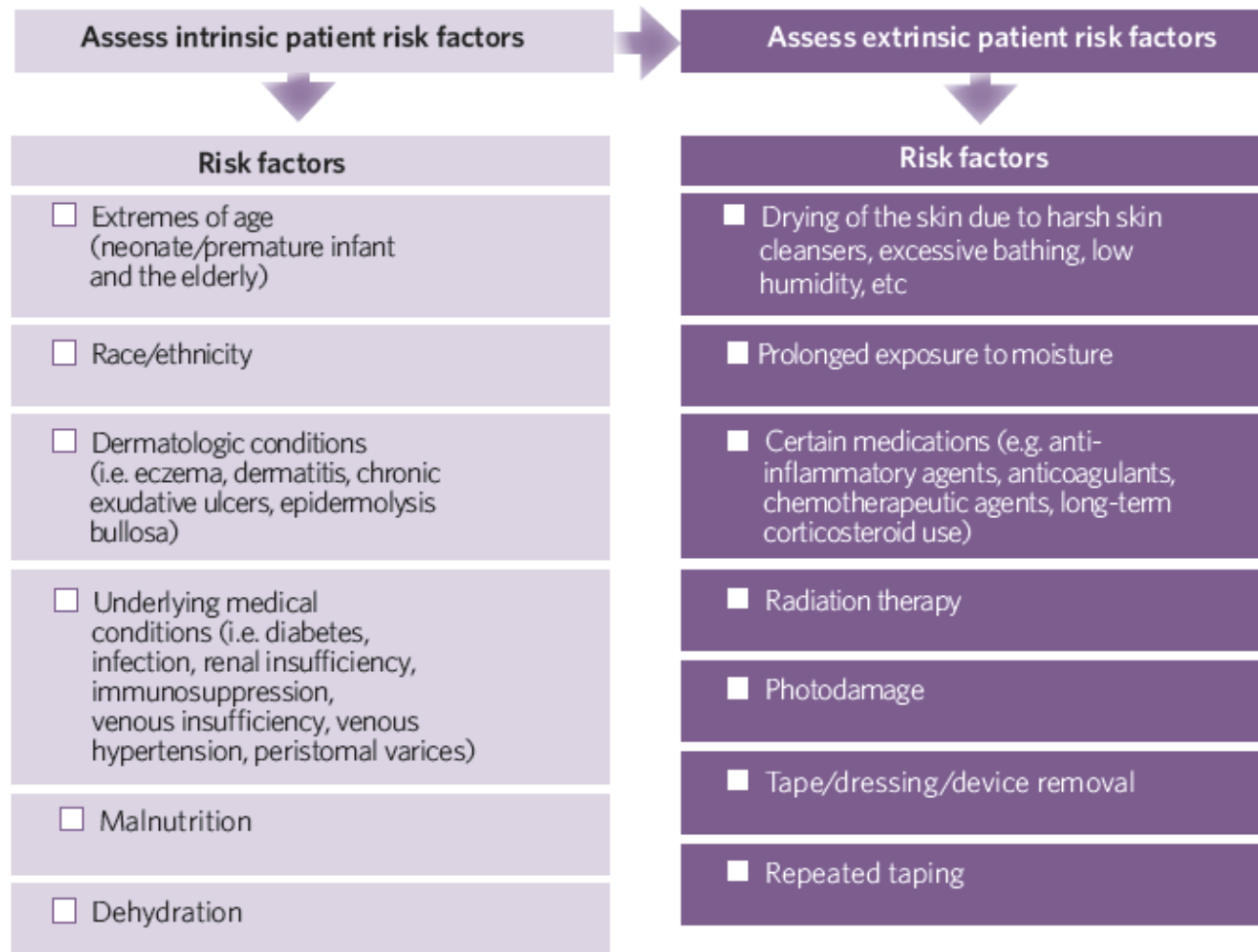
If the location has potential for skin distention or movement (i.e. areas with joint articulation or in cases of edema), the risk of adhesive-related skin damage may be reduced by using tapes that stretch and flex with the body.



4. Ambient conditions present at the site

Consider whether the area is smooth or contoured, subject to movement or friction, or exposed to moisture, perspiration, humidity, exudate and/or body fluids. Some products are designed with these challenging conditions in mind.

Factors That Can Increase the Risk of Medical Adhesive–Related Skin Injury



Two-part MARSII risk assessment

Preventable Causes of Medical Adhesive–Related Skin Injury

Improper application technique

- Tension on application (ie, strapping)

- Applying in wrong direction (ie, not allowing stretch in direction of expected swelling/movement)

- Applying to wet/moist skin

- Use of alcohol-based skin preps, which are drying to the skin

- Not allowing skin preps/barriers to dry (a common cause of irritant contact dermatitis)

- Not clipping/trimming hair prior to application

- Excessive use of substances that increase the stickiness of adhesives (ie, tackifiers, bonding agents)

Scegliere il giusto adesivo per il giusto scopo!

Improper choice of tape

Using tape with excessive adhesion for the purpose

Wrong choice of tape (ie, not using a tape with stretch for an area where swelling or movement is anticipated)

Table 1: Level of adhesion consideration

Critical securement	Multipurpose	Gentle to skin
Securing medical devices Heavy tubing (e.g. endotracheal tube, chest tube nasogastric tube)	Securing medical devices (e.g. ostomy bag) Immobilising body parts	Anchoring dressings Lightweight tubes/devices (e.g. IV)
		

← Higher level of adhesion

Moderate level of adhesion

Lower level of adhesion →

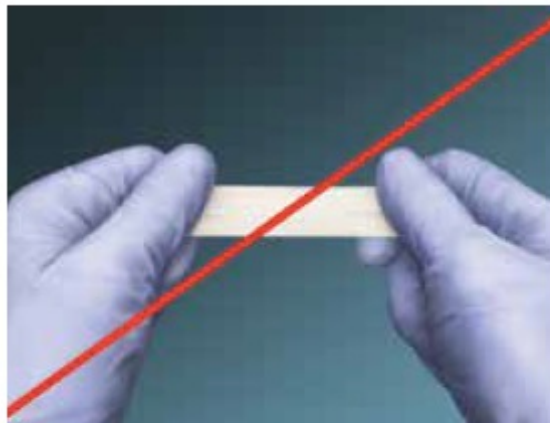
Utilizzare le corrette tecniche di applicazione!



1. Apply tape to skin without stretching or tension.



2. Apply firm pressure to activate the adhesive and gain full contact with the skin.



Application tips

- Tape should not be pulled or stretched when applied.
- Minimize touching adhesive surface to retain adhesive levels.
- Avoid gaps and wrinkles that can allow moisture to get between the tape and the skin, tubing or dressing.
- Do not encircle a limb completely with tape.
- If swelling occurs, loosen and replace tape. 3M™ Kind Removal Silicone Tape can be repositioned without compromising adhesion.
- When securing dressings, tape should extend a minimum of one-half inch (one inch is preferred) beyond the edge of the dressing to hold the dressing in place.

Utilizzare le corrette tecniche di rimozione!

Proper tape removal is critical in reducing the incidence of MARSI.



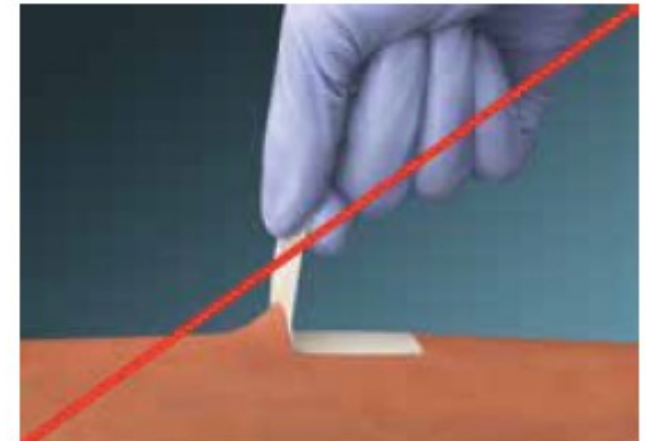
1. Loosen edge of tape.

Tip: To start the edge, press a small separate piece of tape onto a corner of the piece to be removed. This serves as a handle for lifting the edge of the tape.



2. Stabilize the skin with one finger at the peel line.

3. Remove tape "low and slow" in the direction of hair growth, keeping it close to (parallel with) the skin surface while pulling it back over itself.

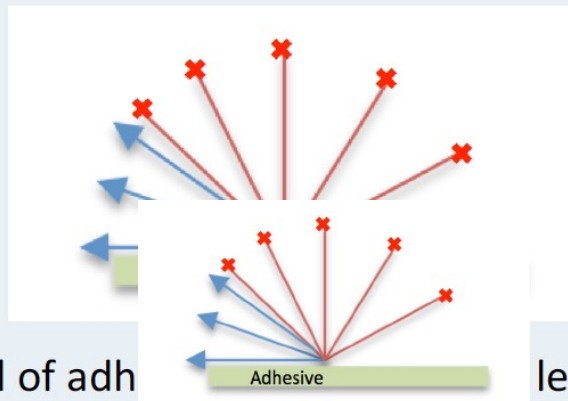


4. Pulling tape at a vertical angle (perpendicular) to the skin will pull at the epidermis, increasing the risk of MARSI.

5. As tape is removed, continue to support the skin at the peel line.

Tip: For tape that is strongly adhered to skin or hair, consider using a medical grade adhesive remover or moisturizer to soften the adhesive along the peel line (peel edge).

Practices and products that increase risk of skin injury



- removal of adh less than 120°³
- natural rubber or hydrocolloid adhesives^{2,5}
- zinc oxide/acrylate adhesives applied directly to skin⁷
- removal of adhesive less than 24hrs after application^{3,5}
- bonding agents (e.g. Tincture of Benzoin)^{5,8}
- pressure applied to adhesives on application

Bonding Agents



ATTENZIONE aumentano il rischio di lesione cutanea!

Adhesive Removers

Removal Agents*

- Avoid agents with high alcohol content and scent⁸
- SILICONE derivative products or WATER are currently preferred (based on pediatric studies⁴)
- Clean any residual removal agent from the skin prior to reapplication of adhesive(s)
- More evidence is required regarding emollients and oils as removal agents
- There is limited evidence regarding the frequency of use of removal agents for neonates

ATTENZIONE a quali
prodotti si usano, alcuni
sono tossici!



Utilizzo di film barriera sulla cute

Il film barriera non irritante Cavilon è un film barriera privo di alcol, a base di terpolimero acrilico che forma un rivestimento protettivo trasparente e traspirante sulla cute per proteggerla dalla frizione, traumi adesivi e fluidi corporei (quali urina e/o feci e essudato della ferita).

- ▶ Non irrita, anche su pelle lacerata o irritata¹⁶
- ▶ Non interferisce con i rivestimenti dei dispositivi assorbenti per incontinenza¹⁷
- ▶ Conveniente offre fino a 72 ore di protezione¹⁸
- ▶ Trasparente per agevolare il monitoraggio della cute
- ▶ Compatibile con preparati per uso cutaneo (quali clorexidina gluconato e iodopovidone)¹⁹
- ▶ Consente l'adesione di medicazioni, prodotti adesivi e dispositivi¹⁹
- ▶ Consente al vapore-umidità di traspirare dalla cute
- ▶ Non è necessario rimuovere il prodotto tra un'applicazione e un'altra



Skin barrier availables in liquid wipes, applicators, or spray formulated from various substances such as acrylic, polymer organic and anorganic, and silicon.



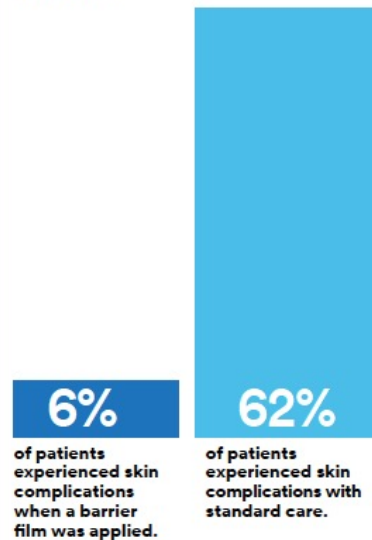
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Benefits of a barrier film

In one study of skin complications around peripherally inserted central catheter (PICC) lines, local skin complications were noted in 62% of patients in the standard care group compared to just 6% in the barrier film group.¹⁶



George M, Pal U, Guduri V, Smith G. Use of a skin protectant (3M™ Cavilon™ No Sting Barrier Film) to reduce local skin complications around PICC lines. WCET Journal 36(4) 8-13, October-December 2016.

Recommended Procedures for Applying and Removing Adhesive-Containing Products

Application	Removal
Ensure that the area is clean and dry. Clip hair if necessary. Apply an alcohol-free skin barrier film to protect at-risk skin. Allow all preps to dry thoroughly before applying the adhesive product. Apply the adhesive product without tension, pulling, or stretching. If desired, an edge could be folded over to form a tab to facilitate removal. Smooth the adhesive product into place with firm gentle pressure, avoiding gaps and wrinkles. Use gentle, stretchable adhesive products if edema/movement is anticipated, considering the direction of the stretch when securing the product. If compression is needed, stretch the adhesive over the dressing only and press remaining tape onto skin without tension.	Loosen the edges of the adhesive product. If there is no folded edge/tab already in place, a small piece of tape may be affixed to an edge of the product to form a tab to facilitate removal. With the fingers of the opposite hand, push the skin down and away from the adhesive. Remove the adhesive product low and slow back over itself in the direction of hair growth, keeping it horizontal and close to the skin surface. As the product is removed, continue moving fingers of the opposite hand as necessary to support newly exposed skin. Nonbordered transparent film dressings may also be removed by loosening a corner of the dressing and stretching it horizontally in the opposite direction of the wound (stretch and relax technique). Walk fingers under dressing to continue stretching it. One hand continuously supports the skin adhered to the film dressing. The process can be repeated around the dressing. Tape strips may be removed by slowly removing each side toward the wound. When both sides are completely loosened, lift the strip up from the center of the wound. Use medical adhesive remover if needed to loosen the adhesive bond. Consider using lotion, petrolatum, or mineral oil if not reapplying an adhesive product to the same area.

Prepare the skin



1. Clip/trim hair.
2. Clean and dry the skin to remove soil and/or residue from medical grade adhesive remover, moisturizer or lotion.
3. Apply 3M™ Cavilon™ No Sting Barrier Film to protect at-risk skin.
4. Allow barrier film to dry completely before applying tape.
5. Avoid routine use of tackifiers.

Skin Barrier Products

Skin barrier products provide a protective coating between the epidermis and adhesives, and can reduce the risk of MARSI, as well as protecting skin from body fluids, exudates, urine and stool. These are available as liquid wipes, applicators or sprays, and may be formulated from a variety of substances including acrylates, polymers both organic and inorganic, and silicone. After application, the liquid part of the barrier evaporates and leaves a transparent, breathable protective coating.

Bonding Agents

Examples of these agents include tincture of Benzoin and Mastisol. The use of these products for routine adhesive applications in the NICU is not recommended, particularly if removal will occur in several days' time. This is because the bond that these agents forms with the adhesive to the epidermis is stronger than the fragile cohesion between epidermis and dermis, and can result in epidermal stripping when removed.^[50]



Mastisol Adesivo Liquido

Destinazione d'uso	Procedura d'uso	Applicazione Mastisol	Attendere 20 sec.	Posizionamento Cerotti o bende
				
Fissaggio di cerotti e Medicazioni: - SteriStrip - Medicazioni (epidurali, CVC, PICC) - Tubi endotracheali - Sondini Nasogastrici - Elettrodi - Sacche Ileo-colostomiche Fissaggio TELI: - Teli per campo Sterile - Teli per Ferite VAC	1. Collocare la fiala, ancora nel suo blister (etichetta verso il basso) su una superficie rigida 2. Schiacciare delicatamente la fiala così da far scendere il liquido al tampone. 3. Rimuovere la fiala dal suo blister adottando tecniche sterili	1. Pulire ed asciugare l'area dove verrà applicato il Mastisol 2. Applicare il Mastisol, comprimendo leggermente la fiala, sull'area che verrà coperta da un cerotto (bendaggio, stomia, etc)		Adottando le tecniche convenzionali posizionare la medicazione (o il bendaggio, o il cerotto, o altro) a contatto con il Mastisol



Adhesive Removers

Adhesive removers are sometimes used to prevent discomfort and skin disruption when adhesives are removed from the skin. There are three categories of adhesive removers: alcohol/organic-based solvents, oil-based solvents, and silicone-based removers.



DETACHOL Asportatore d'adesivo

Destinazione d'uso	Procedura D'uso	Applicazione DETACHOL
	 brisser l'ampoule dans le blister	
Rimozione sicura, rapida ed indolore: - SterilStrip - Medicazioni per cateteri venosi (epidurali, CVC, PICC) - Fissaggi di Tubi endotracheali - Fissaggi di Sondini Nasogastrici - Elettrodi - Sacche Ileo-colostomiche Fissaggio TELI: - Teli per campo Sterile - Teli per Ferite VAC	1. Collocare la fiala, ancora nel suo blister (etichetta verso il basso) su una superficie rigida 2. Schiacciare delicatamente la fiala così da far scendere il liquido al tampone 3. Rimuovere la fiala dal suo blister adottando tecniche sterili	Sollevare delicatamente l'angolo della medicazione ed applicare il Detachol premendo leggermente la fiala contro l'angolo della medicazione (o cerotto o altro) continuare l'applicazione fino a completa rimozione della medicazione (cerotto o altro). Pulire l'area con sapone delicato NB: evitare contatto con la ferita cutanea



Medicazione dell'accesso venoso e sistema di fissaggio del catetere



I cateteri venosi vanno stabilizzati e fissati utilizzando specifici dispositivi di stabilizzazione disegnati per tale scopo (engineered stabilization device, ESD).

- Dispositivi ad adesività cutanea
- Sistemi integrati nella medicazione
- Dispositivi ad ancoraggio sottocutaneo

Una stabilizzazione inadeguata può provocare una dislocazione accidentale del catetere con complicanze tali da richiedere spesso la perdita precoce dell'accesso venoso.

medicazioni trasparenti bordate

(a) l'utilizzo di una medicazione trasparente semipermeabile bordata con sistema integrato di fissaggio, oppure

(a) l'utilizzo di una medicazione trasparente semipermeabile associata ad un sistema di fissaggio sutureless ad adesività cutanea.

membrana trasparente semipermeabile (preferibilmente bordata) e fissati con sistema sutureless ad adesività cutanea; in casi particolari (pazienti in età pediatrica, o non collaboranti, o affetti da patologia cutanea o comunque ad alto rischio di dislocazione), il sistema sutureless ad adesività cutanea potrà essere rimpiazzato da un sistema ad ancoraggio sottocutaneo, con maggiori garanzie di stabilizzazione;

Accesso venoso periferico – agocannula per < 72h

- >72 h – settimane (mini-midline/midline)
- PICC – FICC- CICC a breve durata intraospedalieri

PICC destinati all'uso extraospedaliero;
oppure CICC o FICC tunnellizzati

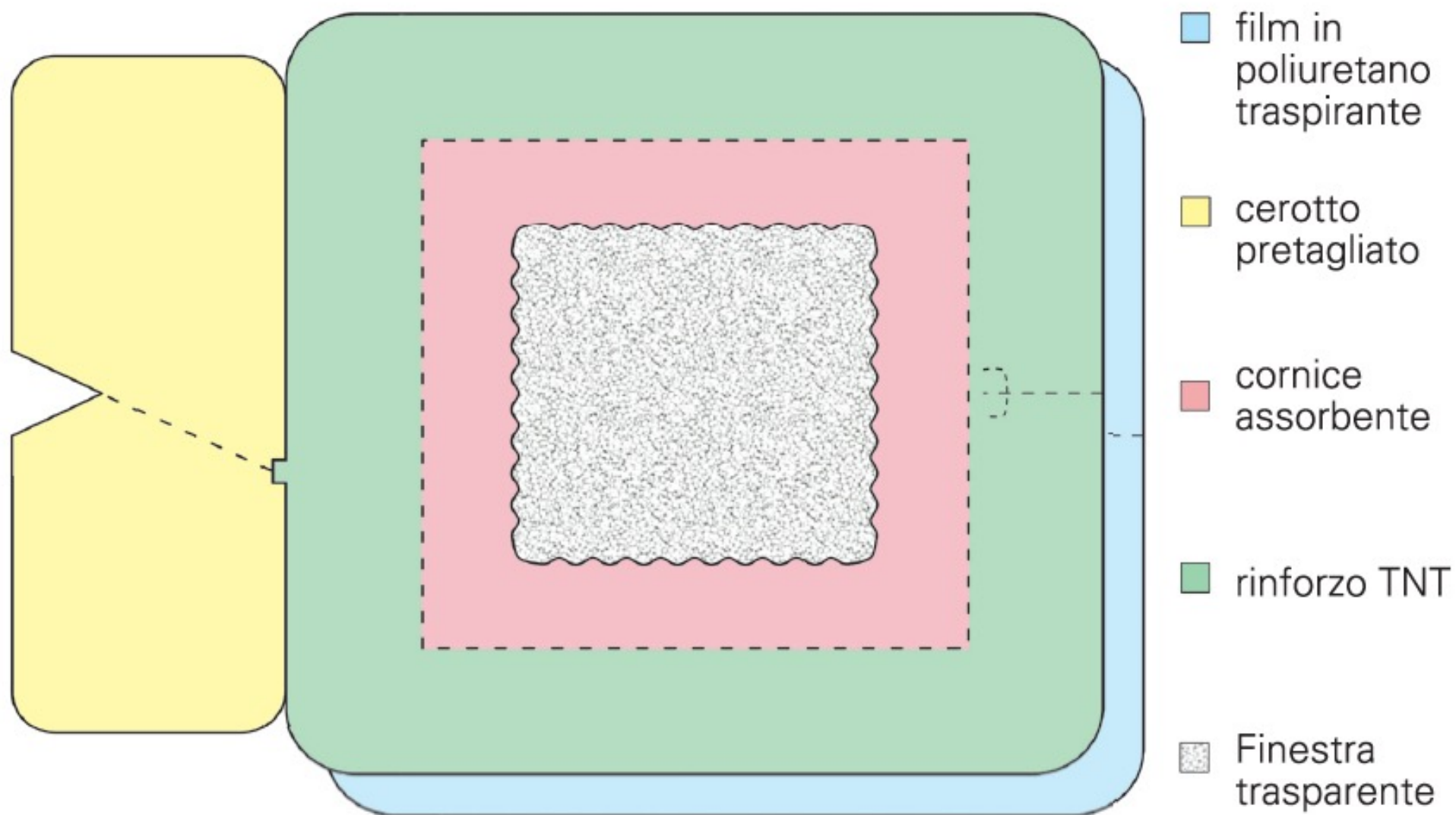
Newsletter GAVeCeLT, medicazione accesso venoso
Scritto da Dott. Mauro Pittiruti, 30 Marzo 2017

Sistema di fissaggio del catetere

Sistemi integrati nella medicazione







Sistema di fissaggio del catetere

Dispositivi ad adesività cutanea

	Codice	Sagomatura	Tipolo
	5804.08		N e



Rimuovi ESD al cambio della medicazione per assicurare appropriate antisepsi cutanea e applica un nuovo ESD.

Sistema di fissaggio del catetere

Dispositivi ad adesività cutanea



Rimuovi ESD al cambio della medicazione per assicurare appropriate antisepsi cutanea e applica un nuovo ESD.

DRESSING CHANGE

The Centers for Disease Control and Prevention (**CDC**) recommends that in adult and adolescent patients, **CVC transparent dressings be changed at least weekly, except in those pediatric patients in whom the risk of dislodging the catheter outweighs the benefit of changing the dressing.**

1. O'Grady N, Alexander M, Dellinger E, et al. *Guidelines for Prevention of Intravascular Catheter-Related Infections*. Bethesda, MD: Centers for Disease Control and Prevention, National Institutes of Health. *MMWR*. 2002;51(RR-10).

The National Association of Neonatal Nurses (**NANN**) guidelines state that :

“in light of the potential for damage to the stratum corneum layer of the skin and dislodgement of the catheter when the dressing is removed, a dressing change is recommended when the transparent dressing no longer adheres to the catheter or skin or becomes damp or soiled.”

Gauze and tape dressings, a transparent dressing with gauze underneath or an occlusive tape on top, require changing every 48 hours.

Pettit J, Wyckoff MM. *NANN (National Association of Neonatal Nurses) Peripherally Inserted Central Catheters Guideline for Practice*. 2nd ed. Glenview, IL: National Association of Neonatal Nurses; 2007.



Rimozione della medicazione trasparente

**Antisepsi appropriata della cute con
Clorossidina al 2% in alcol isopropilico al 70%**

- ✓ Minima quantità necessaria alla disinfezione della cute
- ✓ No scrubbing
- ✓ Rimozione del disinfettante in eccesso con SF sterile

In the meantime we recommend the following on the basis of current evidence: (1) Extreme caution is recommended for use of topical antiseptics particularly alcohol based preparations in extreme preterm infants (Level 2D); (2) Care must be taken to avoid pooling of the solution under infant and washing with normal saline after cleansing with topical antiseptic may prevent severe chemical burn in extreme premature babies (Level 2D); and (3) Povidone Iodine for skin antisepsis should be avoided in extreme preterm infants (Level 2C).

World J Clin Pediatr 2016 May 8; 5(2): 159-171



FIGURE 1. Medical adhesive-related skin injury and chemical injury in a preterm neonate.



Applicazione del protocollo SICA-PED in 104 neonati

(5) reasoned choice of the implant exit site with the RAVESTO Tunneling technique,
(6) anchoring without stitches, and
(7) exit point protection with the use of glue and transparent semipermeable membrane.

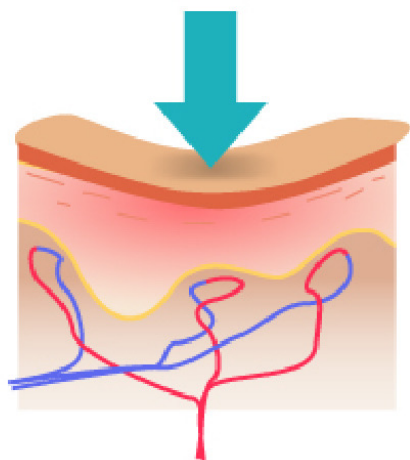
Tab 3. Post-procedural complications: late.

	CICC = 103	FICC = 1
Dislodgment	1 (0.96%)	—
Secondary misplacement	1 (0.96%)	—
Local ecchymosis	—	—
Infection of exit site	1 (0.96%)	—
Local pain at exit site	—	—
Lumen occlusion	—	—
CRT	—	—
CRBSI	3	—

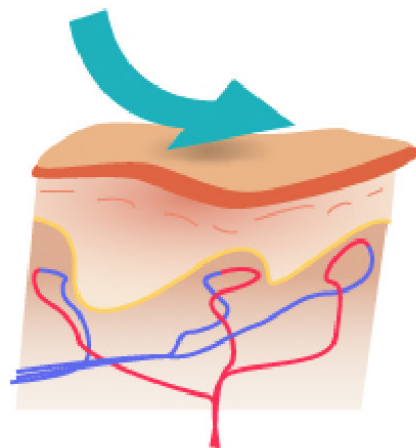


Lesioni da pressione

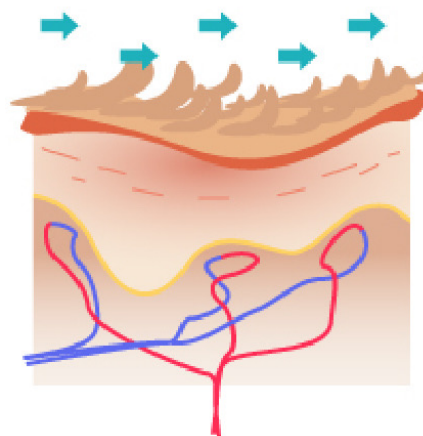
Pressione



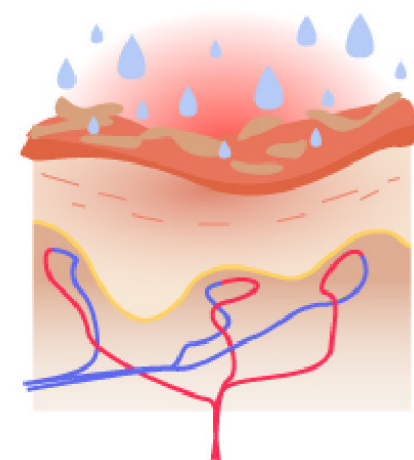
Taglio



Frizione



Microclima



SHORT REPORT



Securement of central venous catheters by subcutaneously anchored suturless devices in neonates

Vito D'Andrea^a , Giovanni Barone^b, Lucilla Pezza^a, Giorgia Prontera^a, Giovanni Vento^a and Mauro Pittiruti^c

Pittiruti et al. [15] reported the use of SAS in 95 pediatric patients (including neonates, infants and children) with a high effectiveness: there was only one case of dislodgment (1.05%), secondary to skin erosion due to an ulcer caused by SAS.

Such complication, though very rare, may be hopefully minimized (a) by a proper technique of SAS insertion (the nitinol anchor should be placed deep under the skin, and not in the layers of the skin), (b) by placing a gauze or some soft silicon or polyurethane pad under the SAS, so to minimize the trauma to the skin, (c) by avoiding traction to the catheter during dressing change, and (d) by proper surveillance of the exit site.



A new entity in neonates



Medscape

Source: NAINR © 2014 Elsevier Science, Inc.

Anetoderma of prematurity seen in extremely low birth weight infant (left lower quadrant of the abdomen, left chest); these atrophic patches of skin due to thinning of dermis layer are often seen where electrodes or other medical adhesives have been applied.

Clinical experience of a subcutaneously anchored sutureless system for securing central venous catheters

Mauro Pittiruti, Giancarlo Scoppettuolo, Laura Dolcetti, Davide Celentano, Alessandro Emoli, Bruno Marche and Andrea Musarò

British Journal of Nursing, 2019,

the analysis of the data allowed the authors to define those categories of patients where the device should have the most benefit: neonates, children,



KEY POINTS

- Subcutaneously anchored securement is effective in preventing catheter dislodgement
- Placement of a subcutaneously anchored securement system is safe and painless, if the anchor is properly placed in the subcutaneous area; also, if properly placed, local complications and pain at removal are uncommon
- Central catheters in paediatric patients should be preferably secured by subcutaneously anchored devices

Colla in cianoacrilato

Techniques in vascular access

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

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

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Vascular Access

The Journal of Vascular Access
1-4
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- L'uso della colla non è stato associato ad alcun effetto avverso.
- La colla si è dimostrata sicura, facile da applicare e efficace nel 100% dei casi nel prevenire sanguinamenti nel sito di venipuntura.
- La rimozione si è dimostrata semplice e senza complicanze.

Epicutaneo-caval catheters in neonates: New insights and new suggestions from the recent literature

The Journal of Vascular Access

1-5

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Use glue for securement

There is a huge heterogenicity between different NICU policies as regards the securement of ECC. Accidental dislodgement and line migration is a frequent complication and it often requires reassessment of the position of the tip and/or replacement of the catheter.⁴⁸ Recently, cyanoacrylate glue has been widely used for securing different types of venous access devices. In our institution, we applied cyanoacrylate glue with transparent semipermeable dressing and we were

able to significantly reduce accidental dislodgement from 35% to 20% ($p < 0.007$; unpublished data). Cyanoacrylate glue is safe, inexpensive and easy to apply, and it yields the additional advantage of being very effective in preventing any bleeding/oozing at the puncture site. Removal of cyanoacrylate glue is also consistently easy and harmless.

38. VASCULAR ACCESS DEVICE SECUREMENT

K. Be aware of the risk of catheter-associated skin injury.

1. Assess skin when the securement device is changed; anticipate potential risk for skin injury due to age, joint movement, and presence of edema.^{6,39,40} (III)
2. Apply barrier solutions to skin prior to dressing and securement to reduce the risk of catheter-associated skin injury (see Standard 55, *Catheter-Associated Skin Injury*).^{2,5,6,40,41} (II)



8TH EDITION

REVISED 2021

55. CATHETER-ASSOCIATED SKIN INJURY

Editor's Note:

This Standard includes recommendations from the article, "Management of Central Venous Access Device-Associated Skin Impairment: An Evidence-Based Algorithm." The CVAD-Associated Skin Impairment (CASI) algorithm is shown in **Appendix C** to provide more detailed guidance; terms used to describe skin damage are included in the glossary.



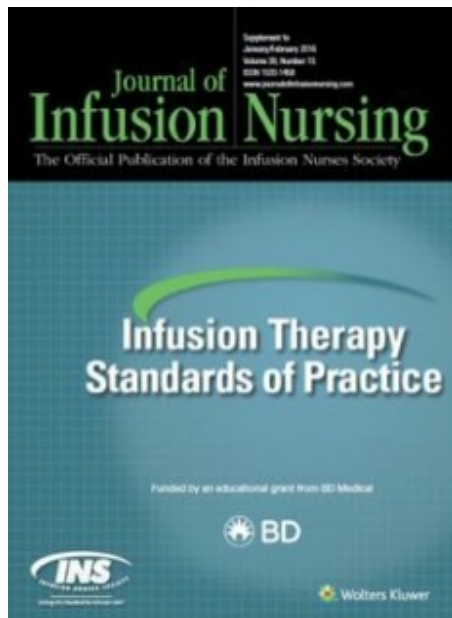
8TH EDITION

REVISED 2021

Sistema di fissaggio del catetere

- Dispositivi ad adesività cutanea

Prendere in considerazione il rischio di danno cutaneo da adesivo (MARSI)



- J. Be aware of the risk of medical adhesive-related skin injury (MARSI) associated with the use of adhesive-based ESDs.
1. Assess skin when the device is changed; anticipate potential risk for skin injury due to age, joint movement, and presence of edema.
 2. Apply barrier solutions to skin exposed to the adhesive dressing to reduce the risk of MARSI. Compound tincture of benzoin should not be used due to increased risk of MARSI because it may increase the bonding of adhesives to skin,

Sistemi di fissaggio del catetere

Studi Clinici dimostrano che i sistemi adesivi hanno una percentuale di dislocazione e migrazione tra il 14-20%

- PICC Securement Dressings – A Randomized Controlled Trial in the Homecare Setting D. Broadhurst, R.Mallick, Ottawa Hospital Research Institute, Ottawa ON Canada. Association for Vascular Access 2014, Poster C3
- Beyond the Dressing for PICCs – Strategy for Cost-Savings and Work Efficiency Jocelyn Hill, MN, RN,OCN, CVAA (c), VA_BC, St Paul's Hospital, Vancouver, BC, Canada Oral Presentation, World Congress Vascular Access, June 2014



OPEN

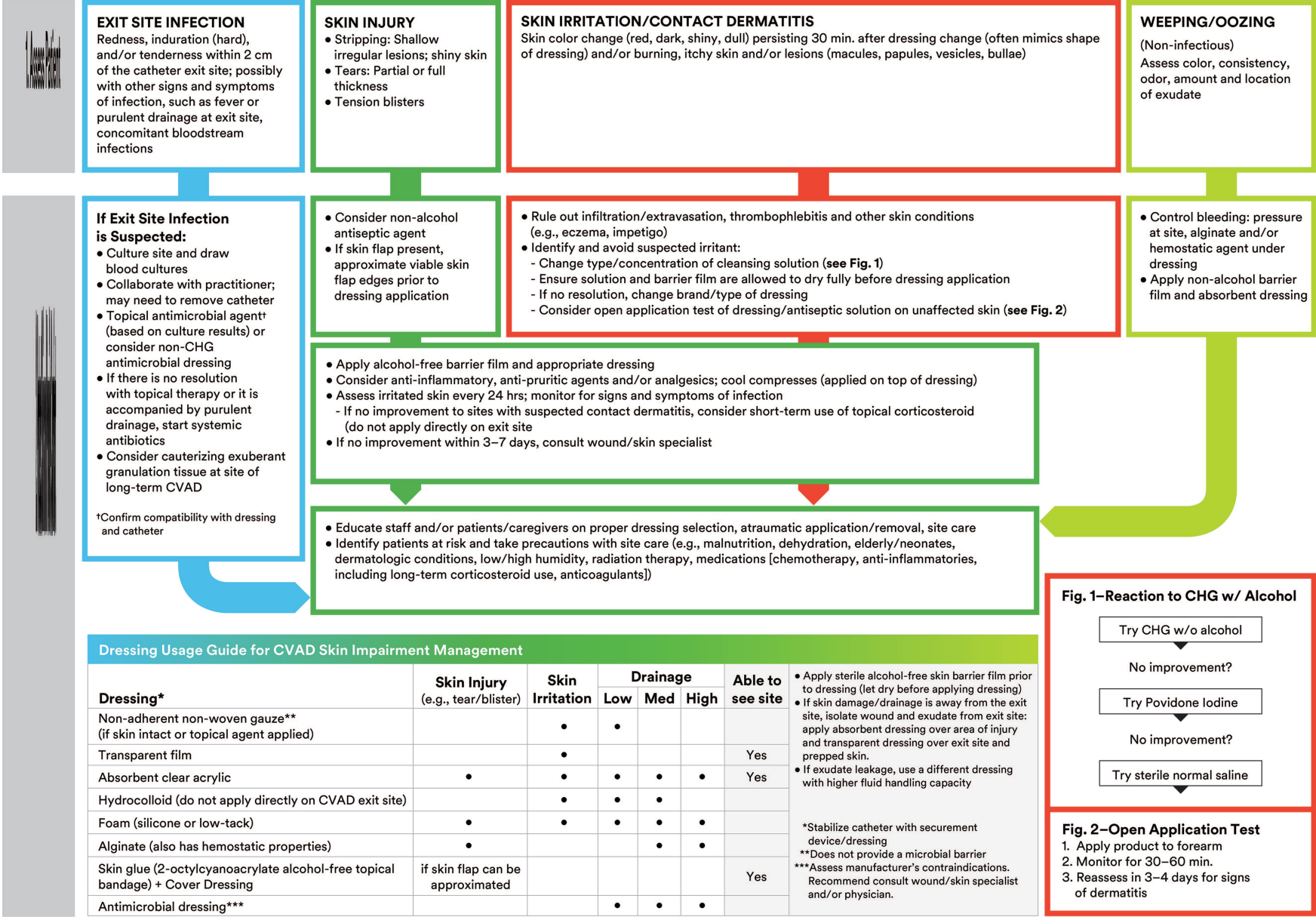
Management of Central Venous Access Device– Associated Skin Impairment

An Evidence-Based Algorithm

Daphne Broadhurst ♦ Nancy Moureau ♦ Amanda J. Ullman ♦ The World Congress of Vascular Access (WoCoVA)
Skin Impairment Management Advisory Panel



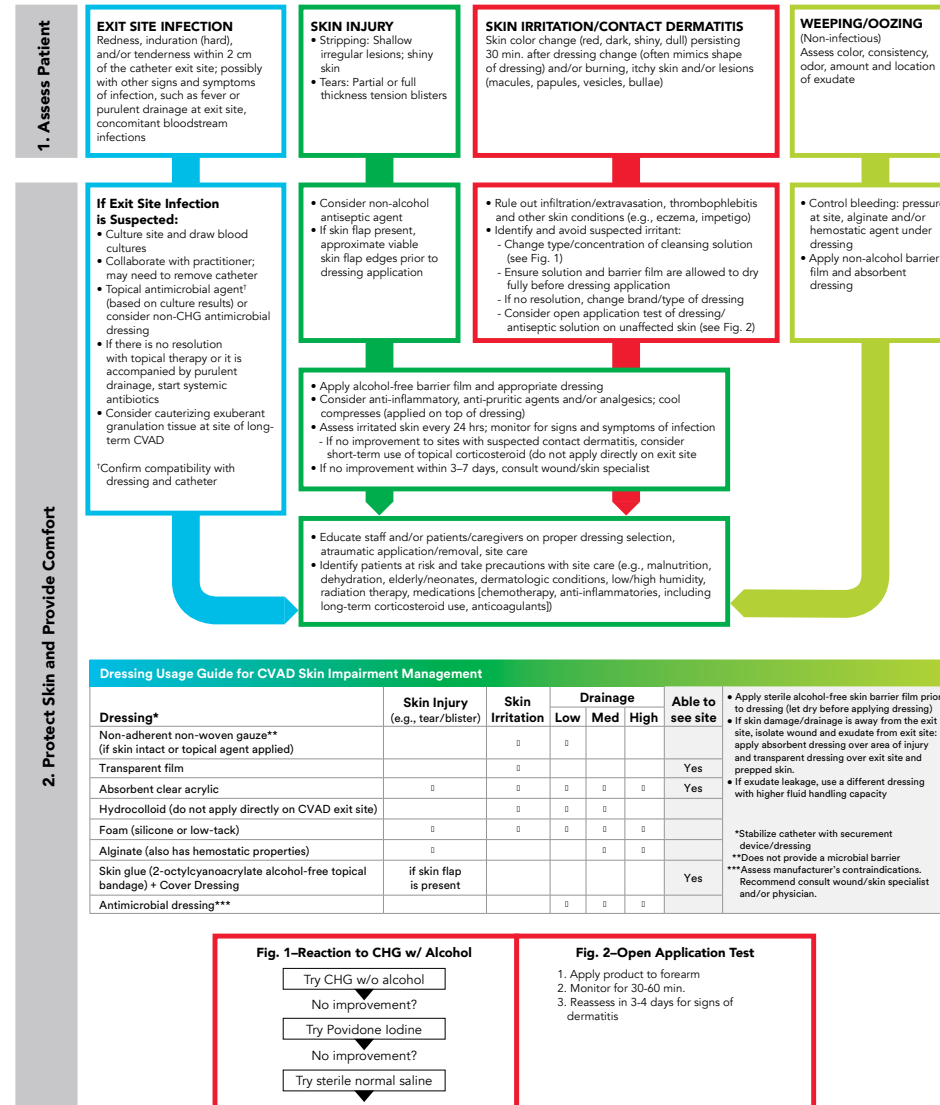
Supported by the World Congress of Vascular Access (WoCoVA), developed an evidence- and consensusbased algorithm to improve CVAD-associated skin impairment (CASI) identification and diagnosis, guide clinical decision-making, and improve clinician confidence in managing CASI.



Management of Central Venous Access Device–Associated Skin Impairment
An Evidence-Based Algorithm

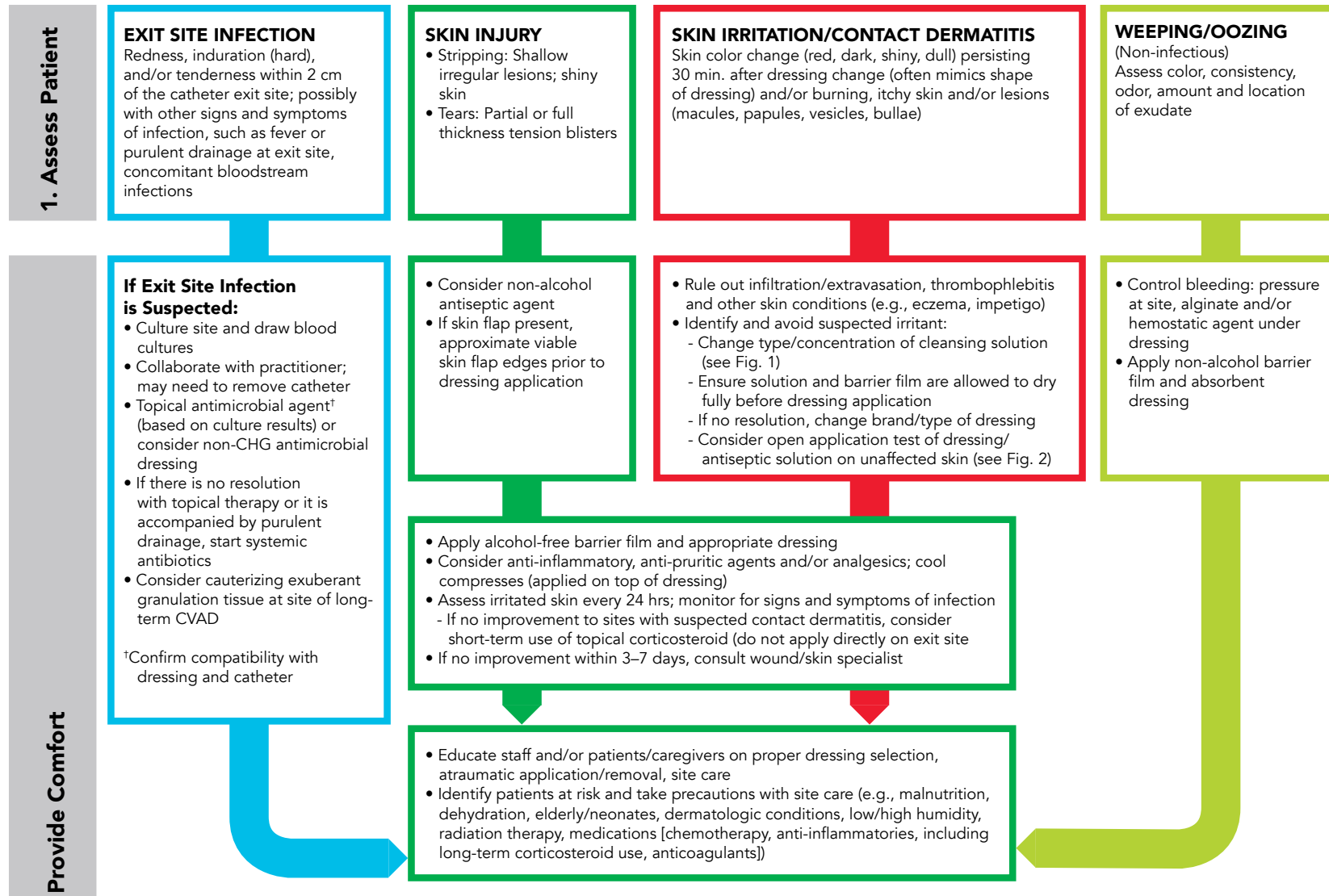
Daphne Broadhurst, Nancy Moureau, Amanda J. Ullman, The World Congress of Vascular Access (WoCoVA) Skin Impairment Management Advisory Panel

CVAD– Associated Skin Impairment (CASI) Algorithm



Reprinted with permission from the Canadian Vascular Access Association. Broadhurst D, Moureau N, Ullman AJ; The World Congress of Vascular Access (WoCoVA) Skin Impairment Management Advisory Panel. Management of central venous access device-associated skin impairment: an evidence-based algorithm. J Wound Ostomy Continence Nurs. 2017;44(3):211-220.

CVAD– Associated Skin Impairment (CASI) Algorithm



2. Protect Skin and

Dressing Usage Guide for CVAD Skin Impairment Management						
Dressing*	Skin Injury (e.g., tear/blister)	Skin Irritation	Drainage			Able to see site
			Low	Med	High	
Non-adherent non-woven gauze** (if skin intact or topical agent applied)		□	□			
Transparent film		□				Yes
Absorbent clear acrylic	□	□	□	□	□	Yes
Hydrocolloid (do not apply directly on CVAD exit site)		□	□	□		
Foam (silicone or low-tack)	□	□	□	□	□	
Alginate (also has hemostatic properties)	□			□	□	
Skin glue (2-octylcyanoacrylate alcohol-free topical bandage) + Cover Dressing	if skin flap is present					Yes
Antimicrobial dressing***			□	□	□	

- Apply sterile alcohol-free skin barrier film prior to dressing (let dry before applying dressing)
- If skin damage/drainage is away from the exit site, isolate wound and exudate from exit site: apply absorbent dressing over area of injury and transparent dressing over exit site and prepped skin.
- If exudate leakage, use a different dressing with higher fluid handling capacity

*Stabilize catheter with securement device/dressing
 **Does not provide a microbial barrier
 ***Assess manufacturer's contraindications. Recommend consult wound/skin specialist and/or physician.

Fig. 1–Reaction to CHG w/ Alcohol

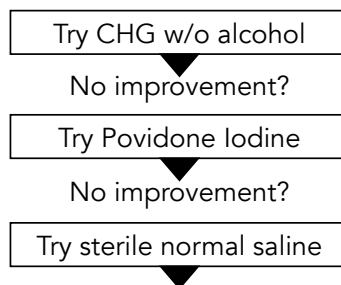


Fig. 2–Open Application Test

1. Apply product to forearm
2. Monitor for 30-60 min.
3. Reassess in 3-4 days for signs of dermatitis

Reprinted with permission from the Canadian Vascular Access Association. Broadhurst D, Moureau N, Ullman AJ; The World Congress of Vascular Access (WoCoVA) Skin Impairment Management Advisory Panel. Management of central venous access device-associated skin impairment: an evidence-based algorithm. J Wound Ostomy Continence Nurs. 2017;44(3):211-220.

Algoritmo di prevenzione e management delle lesioni cutanee

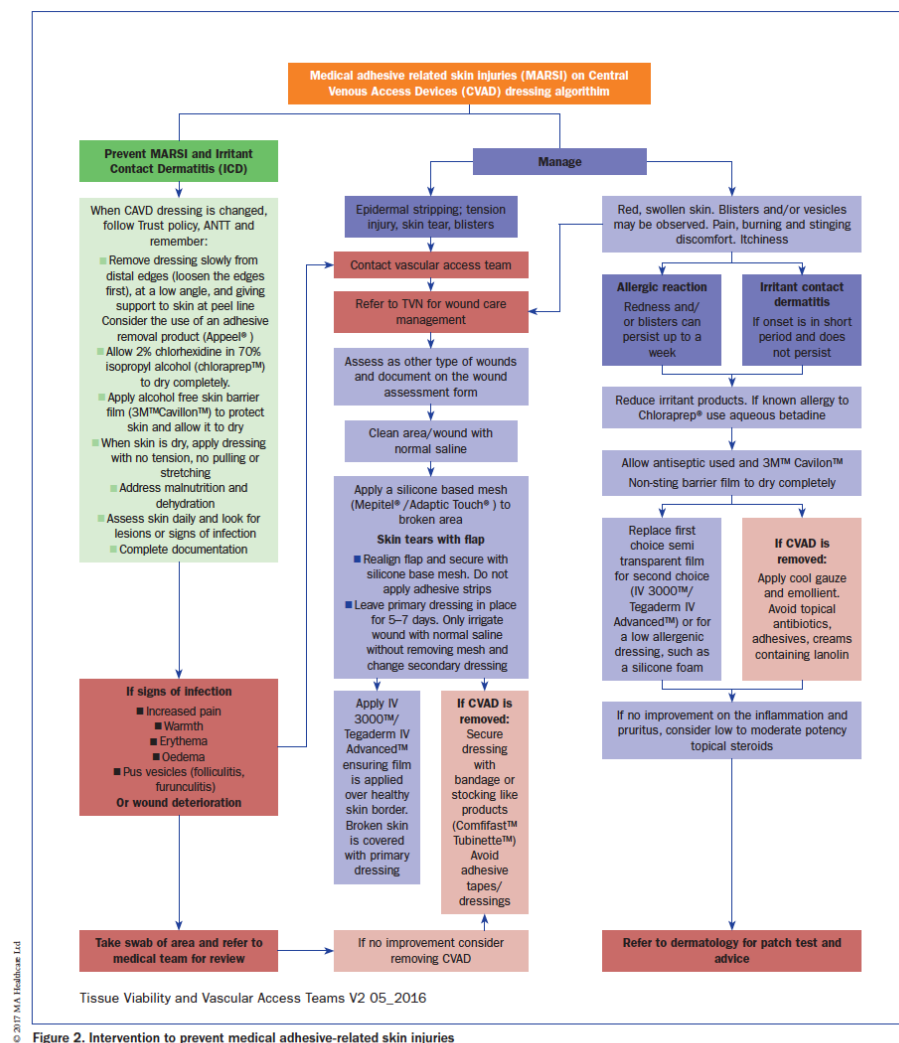


Figure 2. Intervention to prevent medical adhesive-related skin injuries

Chiama l'esperto!



www.shutterstock.com - 2316485399

Jan Hitchcock and Louise Savine
British Journal of Nursing, 2017, (IV Therapy Supplement) Vol 26, No 8

View demonstrational tutorials at:

<https://www.youtube.com/playlist?list=PLwIZzD33AD9nyXtsyG1MdG-IZ2VkYYdnL>

<https://www.youtube.com/watch?v=kUfimFZcNTc&list=PLwIZzD33AD9nyXtsyG1MdG-IZ2VkYYdnL&index=1>

CVAD-associated skin impairment (CASI)



Courtesy of F. Pitta,
AO Santobono-Pausillipon



EXIT SITE INFECTION

Redness, induration (hard), and/or tenderness within 2 cm of the catheter exit site; possibly with other signs and symptoms of infection, such as fever or purulent drainage at exit site, concomitant bloodstream infections

SKIN INJURY

- Stripping: Shallow irregular lesions; shiny skin
- Tears: Partial or full thickness
- Tension blisters

SKIN IRRITATION/CONTACT DERMATITIS

Skin color change (red, dark, shiny, dull) persisting 30 min. after dressing change (often mimics shape of dressing) and/or burning, itchy skin and/or lesions (macules, papules, vesicles, bullae)

WEEPING/OOZING

(Non-infectious)
Assess color, consistency, odor, amount and location of exudate

If Exit Site Infection is Suspected:

- Culture site and draw blood cultures
- Collaborate with practitioner; may need to remove catheter
- Topical antimicrobial agent† (based on culture results) or consider non-CHG antimicrobial dressing
- If there is no resolution with topical therapy or it is accompanied by purulent drainage, start systemic antibiotics
- Consider cauterizing exuberant granulation tissue at site of long-term CVAD

†Confirm compatibility with dressing and catheter

- Consider non-alcohol antiseptic agent
- If skin flap present, approximate viable skin flap edges prior to dressing application

- Rule out infiltration/extravasation, thrombophlebitis and other skin conditions (e.g., eczema, impetigo)
- Identify and avoid suspected irritant:
 - Change type/concentration of cleansing solution (**see Fig. 1**)
 - Ensure solution and barrier film are allowed to dry fully before dressing application
 - If no resolution, change brand/type of dressing
 - Consider open application test of dressing/antiseptic solution on unaffected skin (**see Fig. 2**)

- Control bleeding: pressure at site, alginate and/or hemostatic agent under dressing
- Apply non-alcohol barrier film and absorbent dressing

- Apply alcohol-free barrier film and appropriate dressing
- Consider anti-inflammatory, anti-pruritic agents and/or analgesics; cool compresses (applied on top of dressing)
- Assess irritated skin every 24 hrs; monitor for signs and symptoms of infection
 - If no improvement to sites with suspected contact dermatitis, consider short-term use of topical corticosteroid (do not apply directly on exit site)
- If no improvement within 3–7 days, consult wound/skin specialist

- Educate staff and/or patients/caregivers on proper dressing selection, atraumatic application/removal, site care
- Identify patients at risk and take precautions with site care (e.g., malnutrition, dehydration, elderly/neonates, dermatologic conditions, low/high humidity, radiation therapy, medications [chemotherapy, anti-inflammatories, including long-term corticosteroid use, anticoagulants])

Fig. 1—Reaction to CHG w/ Alcohol

Top CHG w/ alcohol

Dressing Usage Guide for CVAD Skin Impairment Management

Dressing*	Skin Injury (e.g., tear/blister)	Skin Irritation	Drainage			Able to see site	• Apply sterile alcohol-free skin barrier film prior to dressing (let dry before applying dressing) • If skin damage/drainage is away from the exit site, isolate wound and exudate from exit site: apply absorbent dressing over area of injury and transparent dressing over exit site and prepped skin. • If exudate leakage, use a different dressing with higher fluid handling capacity *Stabilize catheter with securement device/dressing **Does not provide a microbial barrier ***Assess manufacturer's contraindications. Recommend consult wound/skin specialist and/or physician.
			Low	Med	High		
Non-adherent non-woven gauze** (if skin intact or topical agent applied)		•	•				
Transparent film		•				Yes	
Absorbent clear acrylic	•	•	•	•	•	Yes	
Hydrocolloid (do not apply directly on CVAD exit site)		•	•	•			
Foam (silicone or low-tack)	•	•	•	•	•		
Alginate (also has hemostatic properties)	•			•	•		
Skin glue (2-octylcyanoacrylate alcohol-free topical bandage) + Cover Dressing	if skin flap can be approximated					Yes	
Antimicrobial dressing***			•	•	•		

Medical Adhesives and Removal Techniques- *MARSI Poster & Video Tutorials*

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Contact neonatalskinforum@gmail.com | September 2018



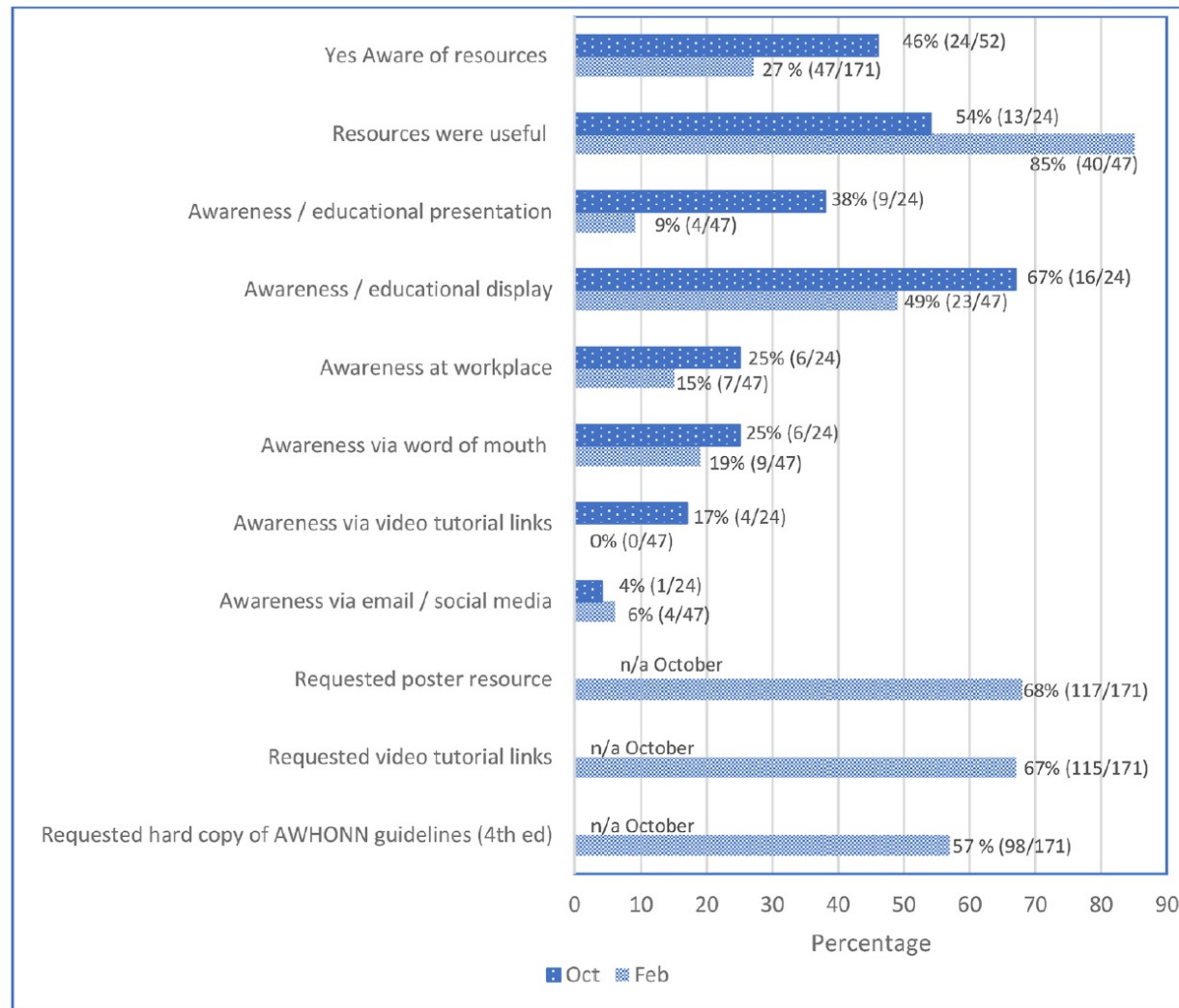


Fig. 2. Survey responses on awareness, usefulness and requests of MARSJ resources.



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Grazie

nicolapozzi71@gmail.com