

The Original Pink Tape®
HY-TAPE®
INTERNATIONAL INC.



Neonates & Medical Adhesive-Related Skin Injury (MARSI)



Medical adhesives are a necessary part of modern medicine. Intravenous and intra-arterial lines, endotracheal tubes, and certain catheters must be tightly secured to prevent slippage, dislodgment, or even internal trauma to patients. On the other hand, medical adhesives are not without a certain amount of risk. Medical adhesives may cause mechanical problems, contact dermatitis, and other forms of local irritation and inflammation.

Premature and full-term neonates are at particular risk for problems with medical adhesives, yet securing medical devices in the neonatal intensive unit (NICU) is of the utmost importance. Thus, there is an inherent trade-off between keeping tubes and lines secure and preventing medical adhesive-related skin injury or MARSI. Fortunately, there are ways to avoid neonatal MARSI, including proper medical adhesive selection, placement, and monitoring.

What is MARSI?

MARSI is an acronym that stands for medical adhesive-related skin injury. MARSI is not a pressure injury; rather it results in trauma to the skin. Skin injuries caused by medical adhesives fall into three categories¹:

Mechanical trauma

- Epidermal stripping – One or more layers of the stratum corneum are forcibly torn off with the removal of adhesive tape
- Tension injury/Blistering – The epidermis separates from the dermis; may be caused by unyielding adhesive or improper tape application
- Skin tearing – Shear, friction, or blunt force trauma resulting in partial or full thickness skin damage

Dermatitis

- Contact dermatitis – Non-allergic reaction to chemicals within the adhesive or backing
- Allergic dermatitis – Cell-mediated allergic response to the adhesive or backing

Other

- Skin maceration – Wrinkled, light-colored skin that is susceptible to damage
- Folliculitis – Hair follicle inflammation that may or may not be suppurative (pus-filled)

Neonates are at risk for MARSI

The delicate tissues in the skin of premature neonates place them at increased risk of developing MARSI compared to older infants and children. At less than 30 weeks gestation, there may be as few as two or

three layers of stratum corneum compared to 10 to 20 in the full term newborn or adult.² The dermis in even newborn infants is far thinner than it is in adult skin. Moreover, the junction between the dermis and epidermis is underdeveloped in preterm and young full-term infants, meaning there is less cohesion between the layers.²

The risk to immature skin is compounded by the use of medical adhesives, especially in the NICU. The more premature the infant, the longer the NICU stay generally is. Thus, the patient group with least-developed skin is exposed to the greatest amount of medical adhesives.

Epidermal stripping is the most common form of MARSIs in neonates; the prevalence of skin stripping due to medical adhesives in infants is 17%.³ Tension injury and blistering may also occur.⁴ Infants in long-term intensive care may also develop skin maceration due to moisture trapped under medical tape. Contact and/or allergic dermatitis may occur; contact dermatitis resolves within 24-48 hours after the tapes is removed, while allergic dermatitis may last for up to a week.¹

Avoiding MARSIs in the NICU

One way to reduce the occurrence of MARSIs is to select the proper medical adhesive for the purpose. Critical devices such as chest tubes, endotracheal tubes, and vascular access devices require relatively aggressive medical adhesives for a secure hold. The term “relatively” is important because certain adhesives can be too aggressive for NICU patients. While a medical tape should hold strongly enough to serve its intended purpose, importantly, it should also be easy to remove and cause little to no damage to the skin.

It is also advisable to choose a latex-free product to reduce the chances of priming or exacerbating a latex allergy. The adhesive should also be waterproof in that it resists rolling and curling when subjected to fluids (e.g., perspiration, urine).

NICUs and nurseries often use Hy-Tape, which they commonly refer to simply as “pink tape.” Hy-Tape is an excellent all-purpose tape for use in the patient population. It provides relatively aggressive adherence and is suitable for use with critical devices.⁵ While it holds firm and conforms to body contours, “pink tape” can also be removed with ease. The adhesive in Hy-Tape leaves little or no residue when it is removed, and minimizes the risk of mechanical damage to the skin, specifically epidermal stripping, skin tearing, and tension injury or blistering. This especially important for devices that need to be removed frequently and re-taped. (Read about Hy-Tapes unique skin saving qualities)

“Pink tape” can reduce the risk of other forms of MARSI as well. Hy-Tape is latex-free and is not known to cause contact dermatitis or allergic dermatitis when used appropriately. Moreover, Hy-Tape contains a zinc oxide adhesive that is naturally soothing to even delicate, neonatal skin. (request a sample)

Lastly, devices can be made more secure by using particular application techniques. For example, the “chevron” technique, well known to nurses, helps provide maximal security with minimal adhesive contact with skin. The risk of MARSI can be reduced by avoiding tension on the skin at rest or leaving tape on too long. Always remember that any medical tape, including Hy-Tape, should be removed slowly, at a low angle, while supporting the skin. This is especially true in neonates and NICU patients.

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References

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