Medical Adhesive Related Skin Injury (MARSI): Wounds UK Made Easy

In the first of its kind, delegates attended an interactive, digital Wounds UK Made Easy on Medical Adhesive Related Skin Injury (MARSI), and how to prevent and manage MARSI. The session took place on Monday 9 November 2020, and delegates were sent a resource pack that included dressings and Appeel Sterile Medical Adhesive Remover range to use during the session. A presentation by Mark Collier set the scene before Fiona Downie demonstrated and guided delegates on how to use the Appeel Sterile Medical Adhesive Remover range. Appeel Sterile is the only sterile medical adhesive remover available in the UK.

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Medical Adhesive Related Skin Injury (MARSI) occurs because the attachment between the skin and a medical adhesive is stronger than that between the patient's individual cells, causing the epidermal layers to separate or in some circumstances the epidermis to detach from the dermis.

MARSI was formally defined in 2013 by McNicol et al, whereby a MARSI was defined 'as any alteration in skin integrity characterized by erythema and/or other skin damage including skin tears, erosion, bulla, or vesicle that persists for 30 minutes or more after removal of a medical device containing adhesive.' Other groups, such as the International Skin Tear Advisory Panel and the Peristomal group, have refined the definition. The latest definition of a 2020 consensus panel aimed to simplify the definition of any skin damage caused by a medical adhesive to: 'skin damage related to the use of a medical adhesive product or devices such as tapes, wound dressings, stoma products, electrodes, medication patches and wound closure strips' (Fumarola et al, 2020).

MARSIs are well known to have a significant effect on a patient's quality of life (McNichol and Bianchi, 2016). MARSIs are associated with:

- Increased pain
- Increased risk of further complications, e.g. infection, chronicity and/or scarring
- Impact on patient wellbeing and satisfaction with treatment
- Increased visits from/appointments with a clinician.

There is also a significant increased hospital Lengths of Stay (LOS) and costs to the healthcare provider.

CAUSES OF A MARSI

There are three main causes of MARSI, Mechanical, dermatitis and other *(Box 1)*. The general consensus is that MARSIs are often not recognised as such or reported, so the true extent of the issue is unknown. In 2013, it was estimated that nurses treated MARSIs five times a week (McNichol et al, 2013). A 2016 survey of UK wound care clinicians (*n*=918) found that 70.5% of respondents did not report MARSIs in their organisation (Ousey and Wasek, 2016).

Box 1. Causes of MARSIs

1. Mechanical
Skin stripping: removal of one or more layers of the stratum corneum following the removal of a medical adhesive (stripped skin may appear shiny)
Skin tears: caused by shear, friction and/or blunt forces, resulting in separation of skin layers (can be either partial-thickness or full-thickness)
Tension injury or blister: separation of the epidermis from the dermis as a result of distension of skin under an unyielding adhesive (blisters often develop at the edge of the adhesive)
2. Dermatitis (Irritant contact) A patient's skin response to an irritant within the adhesive/medical device used
3. Other – associated with specific patient groups as reflected in definitions

THE IMPORTANCE OF MARSI AND WHY THERE IS A NEED TO RAISE AWARENESS OF MARSI

Assessment

MARSIs are largely agreed to be mostly avoidable if prevention strategies are followed. It is important that the skin of all patients should be routinely assessed before any medical device with an adhesive is applied and that clinicians should recognise particular 'at risk' groups:

- Increased skin fragility
- Neonates and paediatrics
- Older adults
- Dermatological conditions
- Oedema (swelling).

All NHS organisations should consider implementing a standardised approach to skin assessment to promote consistency of care and minimise the risk of MARSIs, in the meantime healthcare professionals should follow local protocols. A full skin assessment plus additional 'risk' assessments should be performed at each application of a medical adhesive, i.e. a dressing or medical device, including stoma appliances (Fumarola et al, 2020):

1. Visual inspection of the skin, and, when relevant, palpate the patient's skin to measure the turgor/elasticity of the skin
2. Assess the skin for:
   - Temperature
   - Colour
   - Moisture level (TEWL)
   - Turgor (measure of elasticity. Lack of turgor [inelasticity] is a sign of dehydration)
   - Fragility and integrity.
3. Observe for local signs of irritation or damage where the adhesive will be, or has been applied
4. Even if there are no problems noted at the time, document the skin assessment and your patient's skin condition as part of a comprehensive holistic assessment in accordance with the current NMC Code and Guidance (2015 updated 2018):
   - Highlight any risks or problems that have arisen, and the management steps taken so that other colleagues have access to all the information in the records.

MARSI PREVENTION STRATEGIES

1. Education of healthcare professionals, patients and family

Education should include an understanding of what a MARSI is, the prevention strategies and how to access skin protection products on the local dressing formulary. It should also include knowledge on how to assess the patient and their skin; how to choose the most appropriate dressing or device for the patient to minimise skin trauma; and which available skin barrier product and medical adhesive remover to reduce trauma to the skin. There should be clear documentation of prevention strategies in the patient's medical notes.

Empowering the patient with knowledge and awareness can support self-care. Patients being cared for in their own home should have supplies of skin barrier products and medical adhesive removers. A patient 'passport' for patients at risk of MARSI to ensure continuity of care between organisations can be helpful. The passport should include the patient individualised skin care regimen.

2. An individualised skin care regimen for the patient

The objective of a skin care regimen is to prepare the skin for the application of adhesives that may cause trauma. This includes hydration of the skin and the patient, e.g. drinking water to keep the skin hydrated, a balanced diet and moisturising the skin daily. The patient where possible should avoid using soaps (unless pH neutral) and any alcohol-based products. Emollients can be used as a soap substitute and as a moisturiser to keep the skin hydrated. The emollient should not be applied on the periwound skin if a dressing is to be applied as the adhesive may not stick to the emollient. After cleansing, the skin should be carefully dried, patting rather than rubbing the skin dry. Sunscreen should be used to protect the skin from UV rays if the patient is spending time outside.

As well as a skin care regimen for the patient, the skin can be protected further with the use of barrier products and medical adhesive removers. When using any products check that the patient is not allergic to the product or any active ingredients, it might be necessary to do a patch test. Ensure the manufacturer's guidance

! Non-sterile, medical adhesive removers designed for stomas should not be used on wound dressings.

is followed when using these products to follow the recommended steps to ensure the dressing or device adheres to the skin. A barrier product can occasionally alter the adherence of the dressing or device being applied.

3. Role of skin barrier products and medical adhesive removers

Skin barrier products protect the skin by placing an interface layer between the patient's skin and the dressing to prevent skin stripping, also known as a MARSI (Cowan, 2019). Barrier products should always be used in populations in the at-risk group. These products can be a film-forming polymer or a silicone-based product. If the patient's skin is open or the patient is immuno-compromised, consider a sterile barrier product or sterile medical adhesive remover.

A sterile medical adhesive remover safely removes dressings or devices that contain a medical adhesive. The aim with their use is to minimise skin trauma and discomfort (Cowan, 2019) and should be considered for patent's at risk of:

- Skin stripping
- Dry/inflamed/macerated skin around the periwound area
- Pain and/or discomfort
- Infection.

Sterile silicone medical adhesive removers are provided in a range of formats (wipes, foam applicators, liquid sachets and sprays) and non-sterile versions as sprays and wipes only. It may be pertinent to use a sterile medical adhesive remover following assessment of the patient and their wound if they are at high risk of infection. A sterile medical adhesive remover should always be used on high-risk patients (Fumarola et al, 2020):

- Immuno-compromised for any reason, including diabetes
- Any surgical wound
- Open wounds
- Co-morbidities such as heart failure, peripheral vascular disease
- Neonates and very young children
- Intravenous access lines, including venous access cannulae.

Appeel® Sterile Medical Adhesive Remover (CliniMed) is a sterile silicone medical adhesive remover so can be used on any wound type including the groups of patients who are significantly at risk of infection. Appeel Sterile is the only sterile medical adhesive remover range available in the UK. Appeel Sterile was developed specifically for use when sterility is required for specific procedures, in immuno-compromised patients or when the risk of infection should be reduced. Non-sterile, medical adhesive removers designed for stomas should not be used on wound dressings.

Appeel Sterile is available as a foam applicator, liquid sachet (5ml), wipe or spray format (100ml), single-use applications (e.g. wipe, foam applicator and liquid sachet) were developed to further reduce the risk of infection and/or cross infection. Non-sterile adhesive removers are only available in a wipe or spray format. During the live demonstration, delegates applied dressings to their arms or legs and Fiona gave practical tips and advice for using Appeel Sterile.

GOOD TECHNIQUE FOR APPLICATION/ REMOVAL OF ADHESIVE DRESSINGS

Basic principles of good application technique

1. Conduct holistic patient, wound and skin assessment. Consider speaking to the family to find out what products have been used in the past successfully or unsuccessfully.
2. Skin barrier products should be applied before putting the dressing in place
3. Do not apply tension or stretch the dressing, smooth out wrinkles
4. Ensure the dressing is in the correct orientation, considering if the patient/area will be subject to movement.

Basic principles of good removal technique

1. Use a medical adhesive remover to loosen the edges and, if necessary, to continue loosening the dressing.

Appeel Sterile liquid sachet: The liquid sachet contains 5ml of fluid and is suitable for the removal of larger adhesive appliances or dressings. The sachet has a pinch point to control the flow of fluid on to the adhesive appliance or dressing to release it from the skin. The liquid sachet can be used on permeable and non-permeable dressings. For non-permeable dressings, the fluid must be able to move underneath the dressing. Consider

Declaration

The Made Easy workshop and meeting report were supported by CliniMed.

Watch *MARSI and Appeel Sterile – a demonstration with Fiona Downie and Jacqui Fletcher OBE on TVN*[TV] https://tvntv.co.uk/editors-choice/marsi-and-appeel-sterile/

Medical Adhesive Related Skin Injury (MARSI): An avoidable harm: https://tvntv.co.uk/skin-integrity/medical-adhesive-related-skin-injury-marsi-an-avoidable-harm (originally broadcast in July 2020)

using the liquid sachet over wipes to remove large appliances/dressings as it can take multiple wipes to remove one large dressing. The liquid sachet may be a more cost-effective option.

Appeel Sterile foam applicator: The foam applicator is recommended for removal of any adhesive appliance or dressing where precision is required. The foam applicator can also be useful for patients who are very apprehensive about dressing removal; the patient can also use the applicator easily around their own dressing while maintaining sterility at the wound skin interface. Note: the foam applicator is also useful for when precision is required, i.e. to remove medical adhesive products on the face or a delicate area, or in infants.

Suggested use for Appeel Sterile wipe: The wipe is in an individual sachet and is impregnated with the Appeel Sterile fluid. One wipe is designed for one small dressing or adhesive. The wipe can be especially useful for when removing small adhesive appliances or dressings, such as nasal gastric tubes, ET tubes. If the dressing to be removed is large it is usually more cost-effective to use the Appeel Sterile liquid sachet.

Suggested use for Appeel Sterile spray (100ml): Useful for when the dressing is in a difficult-to-reach or to see area, e.g. a heel wound, as the spray provides 360° coverage. It is a single-patient, multiple-use product, which means it can be used multiple times by or on the same patient. Especially useful if the patient is cared for in their own home by community staff. Non-sterile adhesive removers are only available as sprays containing 50ml.

2. When peeling the dressing back on itself, keep the profile very low which decreases the pull and tension of the dressing on the skin
3. If possible, support the exposed skin with your other hand.

CALL TO ACTION

During the Made Easy, delegates were asked a range of questions (Box 2) including what MARSI prevention and management is in place in their area:

- Is MARSI prevention education available in your organisation?
- Is MARSI management education available in your organisation?
- Are MARSIs covered in the training curriculum of healthcare professionals?
- Do you have access to skin barrier protectors on your formulary?
- Do you have access to a sterile medical adhesive remover specifically designed for wound dressings on your formulary?
- Does your organisation report MARSIs?

If the answers are no when you answer these questions, speak to your TVN, tissue viability link nurse, pharmacist or procurement department. Ultimately a MARSI is a patient harm and MARSIs should be reported to identify patterns, themes for topics of research, and potential strategies for prevention.

Box 2. Poll questions answered by delegates (average %)

Q1. Do you know what a MARSI is?
Yes: 57%
I think so: 25%
No: 18%

Q2. Are you aware of the Appeel Sterile Medical Adhesive Remover range?
Yes: 72%
No: 28%

Q3. Would you only use Appeel Sterile Medical Adhesive Remover liquid sachet on stuck fast dressing?
Yes: 32%
No: 68%

Q4. If you use Appeel Sterile Medical Adhesive Remover, will it prevent the adhesion of the next dressing or medical device?
No: 96%
Yes: 4%

CONCLUSION

Skin and wound care formal education needs to include MARSI awareness and prevention strategies. Skin barrier protectors and medical adhesive removers designed for wound care must be available for all healthcare professionals to access. A sterile medical adhesive remover such as Appeel Sterile, the only sterile product available in the UK, should be used by or on patients who are at high risk of MARSI or wound infection. Appeel Sterile is available in a range of formats so it is possible to use the most appropriate format for the right patient and medical adhesive. WUK

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