MARSI: an essential update

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This article is based on a Made Easy workshop held at the Wounds UK annual conference in Harrogate, UK, on 8th November 2021. The focus of the workshop was on protecting patients' skin from medical adhesive-related skin injury (MARSI), with practical strategies for reducing the risk of this largely preventable patient harm being introduced and discussed during the session.

At the beginning of the workshop, attendees were invited to apply an adhesive dressing to their own skin – as firmly as possible and ideally on a hairy area of the arm – for removal later on in the session, to assist the facilitators in demonstrating the principles of dressing removal and the avoidance of a MARSI.

Attendees were asked about their knowledge and experience of MARSI, as well as their job role and care setting. The majority of attendees across two sessions worked in primary and secondary care, with some also working in nursing homes, independently or in other settings.

Most of the attendees had recently identified a patient with a MARSI and understood the term; however, the majority were not confident that they could accurately define or describe a MARSI to a colleague if required.

WHAT IS MARSI?

Mark Collier (Nurse Consultant and Associate Lecturer, Tissue Viability, Lincolnshire) explained that MARSI can be described as a prevalent and largely preventable but under-recognised/reported complication that occurs across all care settings and can affect all age groups, usually due to a lack of education/instruction regarding the optimum technique for the application and/or removal of medical products that incorporate a medical adhesive, resulting in tissue trauma, impacting patient safety and quality of life and increasing healthcare costs (McNichol et al, 2013).

A 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).

While it is important to differentiate between MARSI and other wound aetiologies (Fumarola et al, 2017), MARSI is often discussed in terms of skin tears, as skin tears can occur as a result of MARSI (Le Blanc et al, 2018).

MARSI is most commonly caused by skin stripping or a reaction to a medical device adhesive. In general, the aetiology of a MARSI falls into three categories:

- Mechanical: e.g. skin stripping, skin tears, tension injury, blistering
- Dermatitis: e.g. irritant contact or allergic dermatitis, moisture-associated skin damage (MASD) relating to stoma
- Other: e.g. folliculitis, maceration.

PREVALENCE AND RISK FACTORS

All forms of MARSI tend to be under-reported, so the true prevalence (both local and national) is unknown. Anecdotal evidence has suggested that nurses may be treating this type of injury five times per week in practice (Maene, 2013). Accurate reporting of MARSIs is vital, it was suggested, in order to accurately monitor prevalence data and develop appropriate prevention strategies.

A MARSI can affect any patient in any care setting; however, some patients may be at increased risk. These include:

- Patients with generally increased skin fragility (e.g. due to skin integrity issues, including certain comorbidities or medications that affect the skin)
- Children and neonates
- Older adults
- Patients with dermatological conditions affecting skin integrity.

It is important not to 'pigeonhole' patients when considering risk assessment; even if an individual does not fall into any of these categories of increased risk, fragile skin – and, resultantly, a MARSI – it is important to remember that a MARSI can affect any patient.

WHY IS MARSI PREVENTION IMPORTANT?

The most important factor is the impact of MARSI on patients. MARSI can be painful and affect a patient's wellbeing and quality of life, as well as increasing the risk of wound healing complications such as infection. In turn, this increases the use of already stretched resources and clinician time, for example by increasing the number of outpatient or community-based appointments or the length of hospital stay required by the patient.

As attendees agreed, it should be emphasised that MARSI is largely preventable, therefore risk reduction and prevention should be of key importance when selecting, applying and removing dressings. Assessing patients' risk for MARSI should guide decision-making when considering dressing selection, and products such as medical adhesive removers should be used whenever necessary.

ASSESSMENT AND PRODUCT SELECTION

Fiona Downie (Senior Lecturer, Tissue Viability, Anglia Ruskin University, Cambridge) provided practical guidance on how to assess the patient in order to make appropriate product selections. She emphasised the importance of using a medical adhesive remover to remove dressings, to minimise the risk of harm to the patient, particularly in patients who may be at increased risk of skin damage.

It should be noted that, when selecting any dressing, removal should also be considered: consider the whole process and having a suitable removal product available from the outset. It is important to remember that pain at dressing change should not be the norm, and it is important to listen to the patient: 'if a patient says it hurts, it hurts.'

Fiona then went on to highlight one of the medical adhesive removal products currently on the market.

APPEEL® STERILE MEDICAL ADHESIVE REMOVER

Appeel Sterile Medical Adhesive Remover (CliniMed) is designed to facilitate the quick and easy removal of dressings and other adhesive products, protecting the patient's skin and reducing the risk of MARSI. Appeel Sterile is the only range of fully sterile medical adhesive removal products, making them ideal for use in wound care, as they can be used on intact or injured skin. Reducing infection risk (particularly in patients who are at increased risk, such as those with open wounds or immunocompromised patients) is key, so Appeel Sterile products are particularly useful in these patients.

The products are not metabolised by the skin, so do not affect wound healing. They also do not reduce the adhesive properties of the next dressing or adhesive product after use, so can be easily used when dressings or other adhesive products are being removed and then a new dressing or adhesive product is applied.

Appeel Sterile products are available in a range of product formats:

- Appeel Sterile Foam Applicator
- Appeel Sterile Liquid Sachet
- Appeel Sterile Wipes
- Appeel Sterile 100ml Spray.

These product formats facilitate use in a range of wound aetiologies and clinical scenarios. Table 1 lists the product formulations, suitable clinical scenarios for use and tips for use in practice.

DRESSING REMOVAL TIPS

When approaching dressing removal, it is important to consider the following factors in all patients:

- The patient's anxiety levels
- The position/location of the dressing
- The size of the dressing
- The care setting (primary/secondary care).

The key consecutive steps for removing adhesive medical devices (Fumarola et al, 2020) were highlighted and are listed in Table 2. It should be noted that this consensus document (Fumarola et al, 2020) specifically recommends the use of medical adhesive removers whenever necessary – with sterile medical adhesive removers recommended in patients who are at risk of infection – emphasising that this should be a clinical decision based on the existing evidence and not a procurement decision.

FEEDBACK ON APPEEL STERILE REMOVAL PRODUCTS

Workshop attendees spent the session with adhesive dressings applied to their own skin, and then worked in pairs to use Appeel Sterile products to remove the dressings. The group agreed that this resulted in pain-free dressing removal for the patient, even when used on hairier areas of the arm, and made dressing removal easy in practice for the clinician, as well as being more comfortable for the patient.

Table 1. Appeel Sterile Medical Adhesive Remover: product formats, suitable use and tips in practice

Product Format	Suitable use	Tips for use in practice
Appeel Sterile Foam Applicator	Ideal for delicate areas or where precision is required; also suitable for patient self-care	Can be used without having to touch the wound/dressing itself, so ideal for patient self-care without risk of contamination
Appeel Sterile Liquid Sachet	Ideal for large wounds and removal of large dressings, such as abdominal or spinal wounds	Cost-effective for large wounds, where large dressings need to be removed; packaging designed to control the amount used and reduce waste; suitable for multiple uses in a single patient
Appeel Sterile Wipes	Ideal for removal of small dressings and devices, such as removing tape around tubes or devices	Individually packaged for single use, to reduce waste
Appeel Sterile Spray	Ideal for hard-to-reach wounds or where the skin is too painful to touch	Can be sprayed from any angle, making it ideal for hard-to-reach wounds; suitable for multiple uses in a single patient

Table 2. The key consecutive steps for removing adhesive medical devices (from Fumarola et al, 2020)

Step for removal (Note that the same steps apply to removal of tape strips and film dressings)	**Loosen the edges of the adhesive product**
	With the fingers of the opposite hand, push the skin down and away from the adhesive
	Gently remove the adhesive product, keeping it as close to the skin as possible. Slowly move the product 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 the fingers of the opposite hand as necessary to support newly exposed skin at the peel line
	Non-bordered transparent film dressings can 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 the dressing to continue stretching it. One hand should continuously support 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 centre of the wound
	Use medical adhesive remover if needed to loosen the adhesive bond. Follow the manufacturer's instructions for use

Key feedback points on use of Appeel Sterile in practice

- Pain-free
- Easy-to-use
- Would help to reduce anxiety in patients where dressing change may be an issue
- Would help to reduce risk of patient skin damage
- Suitable for use across care settings (e.g. on home visits)
- Sterile product range ideal for use in wound care and in patients where infection risk is an issue

It was agreed that using Appeel Sterile products would be particularly useful in patients where anxiety is an issue and would make a dressing change potentially a much easier process for all involved.

INFLUENCING PRACTICE

Familiarity with products, as well as products being readily available, were agreed to be key to incorporating products into practice. In this instance, for example, having medical adhesive removers routinely on the dressing trolley to facilitate automatic use whenever needed. Getting all staff on board through education and training is key.

In practice, patients can also be advocates for product selection and influence their own care. Clinicians have found that, if a medical adhesive removal product has been used once and the patient prefers the experience, they will ask for it again if a different clinician changes their dressing. This may support the facilitation of the continuity of care in practice.

For clinicians, striking a balance between firm adhesion and easy removal is important with dressings in particular – for example, in wounds such as diabetic foot ulcers, it is important that dressings stay on and in place, but this can be hard to achieve in practice. This need for firm adhesion can make appropriate use of medical adhesive removers even more important, in removing dressings that have had to be applied particularly firmly, to prevent damage to the patient's skin and any pain and discomfort at removal. Making dressing changes positive and pain-free is particularly important for patients living with chronic wounds or long-term conditions that require

Box 1 : How can you influence practice?

- Positive feedback
- Share good practice
- Take time for education
- Be a role model
- Listen to the patient

repeated dressing changes, so that the process does not become associated with pain or anxiety. It was suggested that when working with children, this can be turned into a 'game,' by asking the child to help 'paint' their own dressing with adhesive remover to aid removal.

It was agreed that the COVID-19 pandemic has increased awareness of the need for use of medical adhesive removal products, particularly in intensive care settings, as there has been increased need to remove devices and fixations from the face, requiring careful removal with medical adhesive removal products; Appeel sterile foam applicator is particularly useful in this situation.

Budget availability is always a requirement when considering product selection, therefore case studies and evidence for use, in order to make the case for procurement, are needed. In particular, this would include thorough documentation of MARSI and of dressing removal technique being changed in practice through the increased use of medical adhesive removal products, demonstrating a reduction in skin damage and ideally the cost effectiveness of the change.

It is important to consider the whole picture: MARSI is largely avoidable and may have implications for patients, clinicians and organisations. Clinicians are able to be agents for change within their teams and organisations, in order to prevent avoidable damage and improve patient wellbeing and outcomes.

See Box 1 and Figure 1 for tips on how to influence practice. WUK

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REFERENCES

Fumarola S, Allaway R, Callaghan R et al (2020) Overlooked and underestimated: medical adhesive-related skin injuries. *Journal of Wound Care*

Fumarola S, Ousey K, Cooper K, Hitchcock J (2017) Findings from a multidisciplinary focus group meeting to discuss the issue of medical adhesive-related skin injury (MARSI) in the UK: the way forward. Available online at: https://www.wounds-uk.com/journals/issue/450/article-details/findings-from-a-multidisciplinary-focus-group-meeting-to-discuss-the-issue-of-medical-adhesive-related-skin-injury-marsi-in-the-uk-the-way-forward (accessed 25.11.2021)

Le Blanc K, Campbell K, Beeckman D et al (2018) Best practice recommendations for the prevention and management of skin tears in aged skin. *Wounds International*

Maene B (2013) Hidden costs of medical tape induced skin injuries. *Wounds UK* 9(1):46-50

McNichol L, Lund C, Rosen T, Gray M (2013) Medical adhesives and patient safety: state of the science: consensus statements for the assessment, prevention, and treatment of adhesive-related skin injuries. *Orthop Nurs* 32(5):267-81

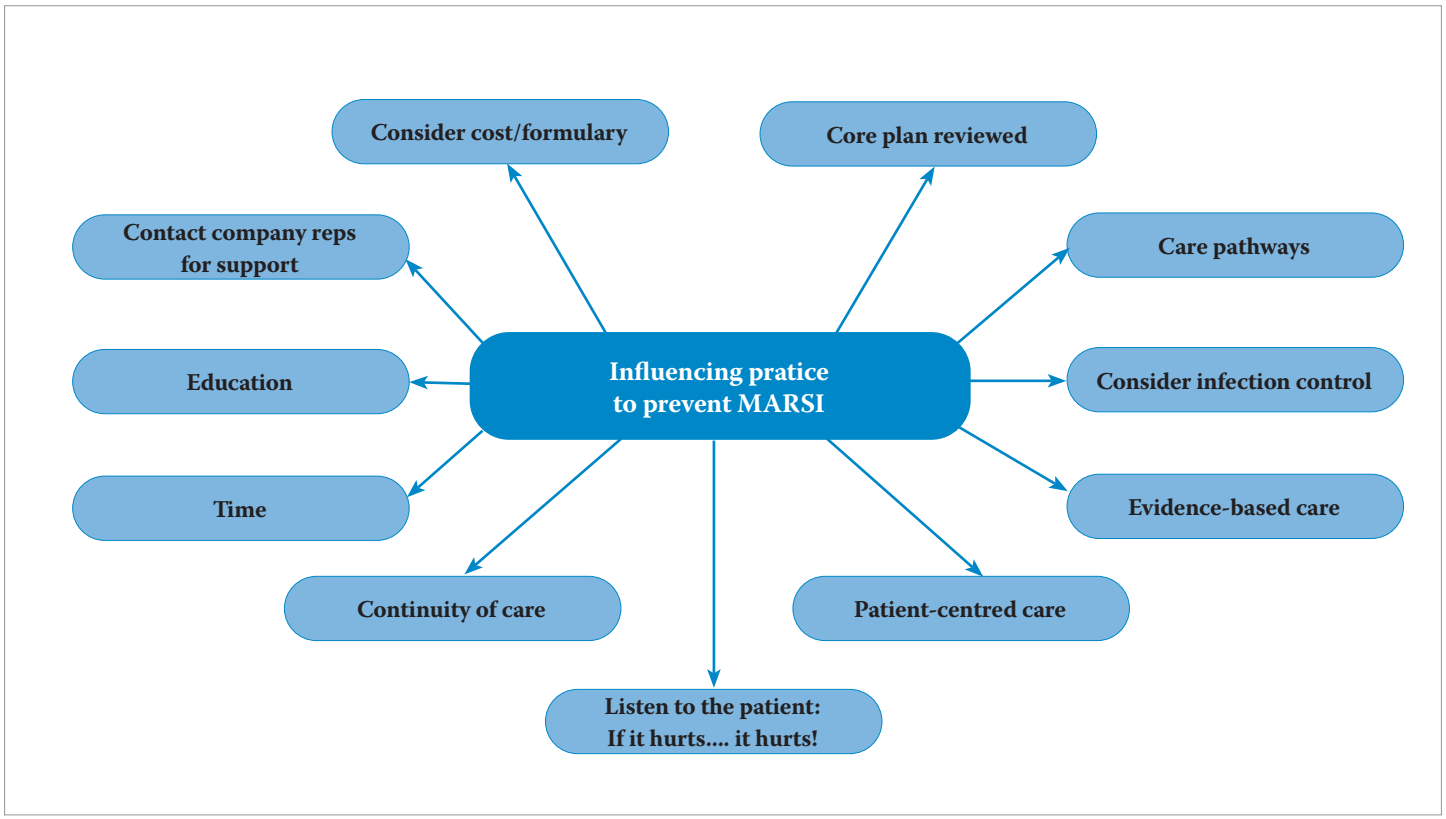

Figure 1. Clinician tips for influencing practice