Findings from a multidisciplinary focus group meeting to discuss the issue of medical adhesive-related skin injury (MARSI) in the UK: the way forward

KEY WORDS

- Adhesive use
- Dressing selection
- MARSI
- Skin integrity

This article is based on a focus group meeting that was held in London on 29th June 2017 and sponsored by 3M. The focus group was convened so that an expert multidisciplinary panel could discuss the underreported issue of MARSI. The aims and objectives of the meeting were to: gain an understanding of MARSI in practice, identify gaps in knowledge base, and discuss strategies to raise the profile of MARSI in the UK.

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The group initially discussed the definitions of MARSI and what this means in practice, as it was agreed that definitions are currently unclear, which may contribute to the underreporting and lack of general awareness of the problem.

WHERE ARE WE NOW?

Definitions and terminology

The acronym MARSI stands for medical adhesive-related skin injury — which is often commonly referred to as skin tears or 'skin stripping', a simplification that may contribute to a lack of focus in accurate diagnosis and care. Anecdotally within the group, it was agreed that a lot of skin tears are seen in practice but clinicians did not always realise that this could be adhesive-related (and often misinterpreted the cause of the injury, or were unclear on the terminology).

The group discussed the most useful definitions of MARSI and how this could be applied to practice. As defined by McNichol et al (2013), MARSI is: '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.'

The 30-minute rule included in this definition is a part of defining MARSI, which the group agreed may be helpful. However, they noted that monitoring this may not always be feasible in practice (i.e. due to time constraints, it may not be possible to observe whether MARSI persists for 30 minutes post adhesive removal). In such cases, individual clinical judgement should be applied.

In this instance, 'medical adhesive' is also defined by McNichol et al (2013) as: *a product used to approximate wound edges or to affix an external device (i.e., tape, dressing, catheter, electrode, pouch or patch) to the skin*'. While emphasis is often placed solely on wound care dressings, more specialist issues such as securement of vascular access devices should also be considered (Hitchcock and Savine, 2017).

There are several different types of MARSI. These include different types of mechanical MARSI, which are:

- Skin stripping: removal of one or more layers of the stratum corneum following removal of medical adhesive; stripped skin may appear shiny
- Skin tear: wound caused by shear, friction and/or blunt force, 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 (McNichol and Bianchi, 2016).

In addition to mechanical types of MARSI, dermatitis (both irritant contact and allergic dermatitis), plus maceration and folliculitis may be classified as MARSI (McNichol and Bianchi, 2016). The group agreed that focusing on mechanical MARSI is more helpful, as including all possible types may be too broad and potentially confusing for the clinician.

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Prevalence and reporting

The group agreed that MARSI is a significant problem that requires further awareness and education. There are currently gaps in knowledge that need to be addressed.

Prevalence of MARSI in the UK is unknown and is believed to be generally under-reported. However, it has been estimated that nurses treat this type of injury approximately five times per week (Maene, 2013), which the group agreed was a realistic estimate.

The group considered the reasons why such a significant issue appears to be underreported. It is possible that underreporting may be due to clinician beliefs that MARSI is not an unexpected outcome or adverse event, instead it is often thought of as unavoidable and 'just one of those things'. However, this may be due to a lack of awareness – it is in fact a problem that should be avoidable and addressed.

The group discussed how clinician perception of MARSI can vary across areas of care. For instance, while adhesive-related injuries have been reported as the most common source of skin breakdown in neonatal intensive care units (Kuller-McManus, 2001), anecdotal evidence suggested that MARSI is an issue that is more well-known within neonatal and paediatric settings, due to the recognised risk factors of young and fragile skin. On the other hand, older patients are also at high risk of MARSI, and care of older skin should be a key issue (Wounds UK, 2012), but this is often under-recognised and the appropriate care less likely to be taken. Evidence has shown that a structured skincare regimen can lessen the incidence of unnecessary injury in vulnerable older skin (Wounds UK, 2012) and best practice in this area should be considered of paramount importance.

Scale of severity is a key issue, as MARSI often remains unrecognised in many areas of care until major trauma occurs. Therefore, 'minor' incidences of MARSI are likely to be unrecognised, despite potentially affecting standard of care and patient quality of life. It is important to remember that MARSI is preventable and steps should be taken to avoid and/or minimise any unnecessary skin damage from occurring — this is a patient safety concern

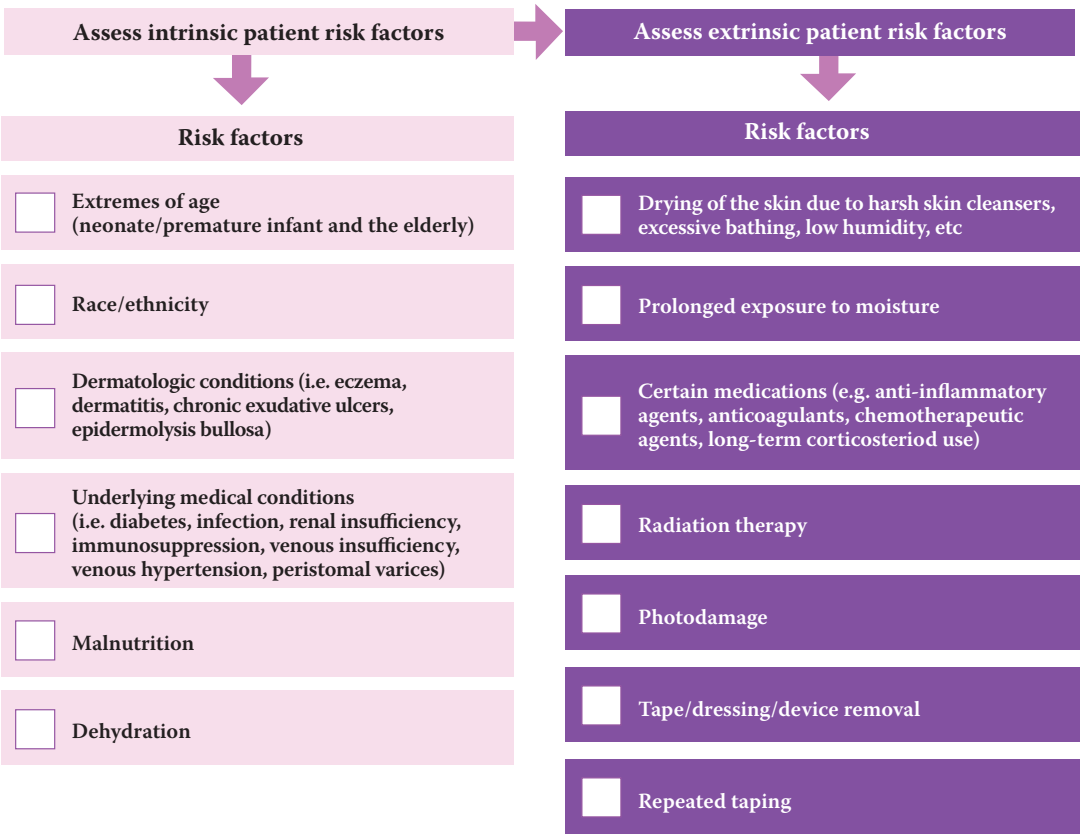

Figure 1: MARSI risk assessment (McNichol and Bianchi, 2016)

and should be used a marker of best-practice care across all disciplines. It was agreed that a grading or 'flag' system with recognised protocol and reporting channels would be extremely useful. The group discussed that there are other skin protocols in place, but these do not currently include MARSI, although this is currently under development.

Diagnosis and risk assessment

Misdiagnosis is also an issue, as MARSI may be incorrectly identified as a general skin tear, or as a category 1 pressure ulcer. The group agreed that there may be a tendency to automatically diagnose skin injury as a pressure ulcer. Correct identification, categorisation and reporting of MARSI is vital.

In reality, MARSI generally occurs due to a combination of intrinsic and extrinsic risk factors, meaning certain patient groups will be more at risk. A structured risk assessment can help to identify at-risk patients and ensure that preventative measures are taken (McNichol and Bianchi, 2016; *Figure 1*).

Gaps in knowledge and education mean that the problem is likely to grow in scale. Raising awareness among at-risk groups as well as clinicians was agreed to be of paramount importance. With patient self-care a current focus, strategies for avoiding MARSI will be key; with life expectancy increasing, vulnerable older skin is also a key area of care in considering risk of MARSI in the patient population (Wounds UK, 2012).

WHAT DOES MARSI MEAN IN PRACTICE?

The group shared their personal experiences of dealing with MARSI in practice. All agreed that MARSI is a significant issue, occurring across their areas of care.

In practice, when MARSI occurs, this can be problematic both for patient and clinician. It is detrimental to care and can delay or complicate healing. It is a particularly difficult issue, as it is often seen to occur despite best efforts at gentle adhesive removal.

The group members agreed that MARSI can often be distressing to the clinician, as it indicates care has 'gone wrong' despite best efforts. The fact that MARSI affects patient quality of life is a key issue that must be emphasised.

MARSI is a significant complication, causing issues including:

- Increased pain to the patient
- Impact on patient wellbeing and satisfaction with treatment
- Increased risk of further complications (e.g. infection, potentially delayed healing, scarring)
- Increased clinician time and healthcare costs (McNichol and Bianchi, 2016).

The practical and economic cost of MARSI in practice

It was agreed that MARSI has a practical and economic cost, both in terms of delaying healing and complicating care, and thus increasing both clinician time and treatment costs.

Cost reducing drives were identified as an issue that may affect the incidence of MARSI. The group highlighted examples of MARSI as a result of the choice clinicians have to make between cheaper products or more limited dressing selection. While staff accept procurement decisions, there is a perception that use of cheaper products is automatically better; however, this may cause further problems in the long term.

The focus on cost may represent a false economy, as complications in care (which may be a direct result of product selection) increase costs and clinician time. The impact of potentially avoidable skin injuries such as MARSI must be considered in this context. The group emphasised the importance of ensuring that cheaper products do not require more frequent changing or inadvertently increase the risk of MARSI due to difficulties in dressing removal.

Limitations in formulary resulting in a lack of choice for clinicians may also cause further problems in providing appropriate care. For instance, dressings used in hospitals may not be available in the community, in addition to a general lack of clinician choice; geographic location is also an issue, with provision varying between areas.

TRAINING AND EDUCATION

The group identified that there are current gaps in knowledge that must be addressed. This has been increased with a reduction in educational funding available for clinicians to attend study days, conferences and University modules in addition to clinical pressures.

Education is required across the multi-disciplinary team, and also for patients and their carers — for

instance, the group noted that problems may arise when patients are discharged and sent home and not given full instructions on the best way to remove dressings themselves.

The group emphasised that basic education could have a significant effect in practice. Currently, many clinicians do not have an in-depth awareness of products and techniques that should be highlighted to prevent MARSI; awareness leading to small changes in practice could make a big difference.

Guidance: the way forward

The group agreed that there is a strong need for a UK consensus document. The current US consensus document (McNichol et al, 2013) provides 25 statements relating to assessment, prevention and treatment of MARSI. These statements fall into the following categories:

- Assessment
  - General
  - Allergy/sensitivity
- Prevention
  - General
  - Selection, application and removal
  - Electrodes
  - Infection prevention
- Treatment
- Future research.

The majority of the statements concentrated on prevention: preventative skincare measures for at-risk patients, appropriate product selection and dressing application and removal techniques. The group agreed that prevention should be the key area of attention.

Guidance is required in general skin protocol and should be directed to all at-risk patients, as well as across areas of specialist care (e.g. oncology, radiotherapy patients, surgical procedures). Research on MARSI associated with vascular access devices (Hitchcock and Savine, 2017) demonstrates the need for awareness across specialist areas of care. The group suggested that MARSI could be included in guidelines from the UK Oncology Nursing Society, particularly around the issue of appropriate dressing use in oncology care.

Specific areas of care have different requirements that need to be considered. For instance, in podiatry, the combination of dressing and padding can cause problems, such as skin reactions and increased adherence due to the pressure from the foot when walking. Comorbidities and medications can affect the skin and increase risk (e.g. medication for rheumatology patients can cause fragile skin; oncology and radiotherapy patients are at increased risk).

While the US statements were considered useful, the group agreed that simplified and UK-specific guidelines are required to promote awareness and support best practice. There is scope for MARSI being included as part of guidelines as well as standard operating procedures. The development of UK-specific guidance and consensus could be particularly useful in directly addressing practical and financial issues in local practice, and how MARSI prevention can be carried out despite time and resource constraints, ensuring that clinicians would be able to carry out appropriate measures in practice.

Future education and innovative strategies

The group noted that the messages around MARSI prevention need to be simplified and condensed, in order to raise general awareness and ensure that clinicians have time to receive the key education needed to enable change in practice.

E-learning and app-based education could benefit clinicians, but are currently underused. The group agreed that many clinicians do not know the options available; it was noted that 'bite sized' educational modules can help to provide the relevant information within the limited time available.

The 3M℠ Healthcare Academy app is currently developing educational content around MARSI; this incorporates prevention and management strategies, to include:

- What is MARSI?
- An introduction to skin anatomy
- Using the right medical tape at the right time.

It was agreed that education needs to be generic (i.e. to cover basic knowledge) as well as tailored to different areas of care.

The need to generate basic awareness was agreed. Patient safety campaigns and strategies around preventing harm have been found to have a significant impact in other areas of care, and are required around MARSI. As patient self-care becomes more common, raising awareness among at-risk patient groups is also important (e.g. through patient safety campaigns, online promotion and patient safety days).

Additionally, promoting MARSI awareness within

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mainstream clinician education (e.g. graduate and post-graduate) is required. The group suggested that involvement from the Royal College of Nursing could encourage improvement, as well as potentially attaching MARSI education to clinical guidelines.

PRACTICAL ACTIONS AND NEXT STEPS

It is key to consider the condition of the patient's skin and the potential risk of MARSI *before* using any dressing or adhesive product, as prevention should be the key focus; the group suggested that this is not always happening in current practice. Basic skincare and preparation should be the starting point when using any dressing or adhesive, and increased knowledge of the skin in general and the importance of a structured skincare regimen for improving skin integrity in at-risk patients is required.

Appropriate product selection, particularly dressing selection, may have an effect on potential MARSI. Although this is a key factor for consideration, it is also vital to note that any dressing may potentially damage dry or fragile skin.

Knowledge of products, their mode of action and potential risks is vital; an understanding of the different types of adhesive is key (e.g. considering components, wear time and suitability). However, in clinical reality, it cannot be assumed that the clinician always has the full choice of suitable dressings; practical and financial constraints may mean that cheaper and possibly less suitable dressings need to be used.

Therefore, consideration of application and removal technique is vital and there is currently a lack of knowledge in this area. When applying dressings and products, the effect on the skin should always be considered, particularly if the patient has fragile skin. The simple message for dressing removal is that 'low and slow' is the best technique

PRACTICAL TIPS

- A simple three-step approach can be used to address the risk of MARSI
  - Assessment/preparation
  - Application/treatment
  - Evaluation and removal.
- Awareness of skin protectant products, in both formulation and mode of action, is crucial. Use of additional skin protectants can raise further factors, such as issues with adhesion (for example, padding not sticking if certain skin protectants and/or moisturisers are used), so it is vital to use appropriate products.
- If a barrier film product is used, there should be a 30-second gap to allow drying time before dressing the wound (this is a general rule and may vary according to specific product instructions). This time can be incorporated as part of a structured regimen; for instance, using this time to talk to the patient about their treatment and any issues they may wish to discuss.
- Skin damage can be prevented or minimised by using emollients as part of a structured regimen to promote skin integrity in at-risk patients. Use of emollients improves skin barrier function and thus has been found to reduce the incidence of skin tears. If a once-daily formulation containing humectants is used, in some care settings, this can be included as part of standard care when the patient is washed.
- While infection is a key complication to consider, decontamination products should be used with caution, as they can cause skin damage and may increase risk. For instance, chlorhexadine is widely used, but allergies are common. Awareness of protocol in other modes of infection control may be required, particularly as MARSI may lead to complications including increased infection risk. The group agreed on the need for a national conversation regarding the wider issue of infection prevention.

SUMMARY

- MARSI is unquestionably an issue — it is being seen in practice but the acronym and its specific definition is less well known, resulting in confusion in diagnosis and care.
- Current US guidelines are a useful starting point, but need to be simplified and adapted for UK practice.
- MARSI is a multi-disciplinary issue: education needs to be general as well as specialised across different areas of care.
- Education is required for all clinicians, and for patients and carers. This needs to be both from an academic perspective and in terms of raising basic awareness.
- Practical aspects (e.g. clinician time) and the availability of products are currently an issue in dealing with MARSI.