Medical adhesive-related skin injury (MARSI) is a prevalent, under-recognised and preventable complication that occurs across all care settings, age groups and patient types. Use of medical adhesives may affect skin integrity, cause pain, increase risk of infection, potentially increase wound size and delay healing, all of which reduce patient quality of life unnecessarily. In addition, MARSI is costly in terms of nursing time and costs. A new survey of UK wound care clinicians sought to understand clinician experiences of and perspectives on MARSI and found that incidence of MARSI is high, yet education around assessment of risk and prevention are low. The results of the survey show that clinicians both need and want improved educational efforts around MARSI awareness, identification of patients at risk of MARSI and strategies for preventing MARSI. Broadly, more research on the exact pathophysiology of MARSI is needed, in order to deepen understanding and aid the development of formal MARSI education programmes.
hospital-based nurses found that nearly all (n=41) respondents had treated skin injury due to adhesive use in the 12 months leading up to the survey, with a MARS injury rate of 7.1% and an average of 2.8 injuries per patient who suffered skin damage (Maene, 2013).

Although there is a body of knowledge surrounding skin tears, these injuries can be caused by factors other than MARS (LeBlanc and Baranoski, 2011) (Box 1). Furthermore, much of the existing research on skin injuries in general has focused on the use of medical tapes, and does not account for the more recent, broader definition of MARS, which factors in appropriateness of tape selection, appropriateness of dressing selection, adequacy of skin preparation and whether adhesive removal was carried out correctly.

The lack of specific and well-defined research into MARS perhaps attests to a gap in the knowledge of wound care professionals, as well as under-reporting across settings. To deepen understanding around the prevalence and issues surrounding the full breadth of MARS, a survey was commissioned.

**METHODOLOGY**

In August and September 2016, a web-based survey was distributed to UK-based wound care clinicians via SurveyMonkey by Wounds UK (Wounds UK, 2016). Overall, 918 clinicians responded to the survey. Specialities included wound care (37%), GPs (11%) and geriatric clinicians (8%). Nearly one-third (296 respondents) classed their specialism as ‘other’, which included podiatrists (n=61), community nurses (n=71) and district nurses (n=19) as well as vascular, care of the elderly and neonatal clinicians. The split of settings (n=907) respondents work in was 35.4% in the hospital, 28% in community nursing, 7.8% in nursing homes and 12.9% in GP practice. Other settings (15.9%) responses included hospice, clinic and those who worked in a mix of setting types. The survey sought to understand the incidence and causes of MARS, as well as levels of awareness and education regarding MARS and its prevention. Statistical analysis was carried out by an independent medical writer after completion of the survey.

**RESEARCH AND AUDIT**

**Box 1. Skin tears and MARS**

It should be noted that although MARS can be classed as — and is a feature of — a skin tear, there are subtle differences between them.

Skin tears: Traumatic injuries that can result in partial or full separation of the outer layers of the skin. These tears may occur due to shearing and friction forces or a blunt trauma, causing the epidermis to separate from the dermis (partial-thickness wound), or both the epidermis and the dermis to separate from the underlying structures (full-thickness wound) (LeBlanc and Baranoski, 2011).

MARS: 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).
RESULTS

In order to establish the extent of potential for MARSI, the survey explored weekly patient caseloads and the percentage of these patients seen who present with fragile skin. The most frequently given response for number of patients seen each week was 10–20 (35.9% of respondents), with 60.6% of these respondents saying that more than half their patients have fragile skin. Overall, more than half of respondents reported that at least 60% of the patients they see have fragile skin (Figures 1a and 1b). The majority of participants recognise that a wide variety of injury types and skin damage can occur as a result of medical adhesives; only folliculitis (inflammation of the hair follicles) lagged in terms of awareness (Figure 2).

Frequency and aetiology of MARSI

This discrepancy in awareness may be explained by the infrequency with which folliculitis occurs — it is much more rare than other types of MARSI (Figure 3). The results show that there is strong understanding of the causes of skin stripping, tension injury and maceration in particular (Figure 4). Although most research into skin injury has focused on medical tape, two of the top three clinical applications associated with MARSI were non-surgical wound care dressings (67%) and surgical wound care dressings (43%) (Figure 5).

Clinician knowledge of MARSI

Despite these results, 70.5% of respondents reported that MARSI are not recorded in their facility. And just 31.3% of respondents have heard of MARSI as a collective way to describe forms of skin damage caused by medical adhesives. Although only 37% of respondents expressed concern about the incidence MARSI in their area of work, 72% report that the prevention and management of MARSI should be an integral part of skin and wound care training (based on a score of 8, 9 or 10 out of 10). Encouragingly, 78% of respondents said they have used a barrier film to protect the skin before applying medical adhesives, and 11.7% reported that they use barrier film
routinely on all patients (91–100%) — indicating that there is a level of familiarity with and understanding of the types of steps that can be taken to prevent MARSI.

DISCUSSION

Perhaps due to the frequency with which MARSI occurs, there is a low level of clinician concern. However, this may be better explained by correspondingly low levels of MARSI-related education: Over 80% of respondents described the level of training in the area of prevention and treatment of MARSI as either inadequate or unavailable. Furthermore, an overwhelming 97% of respondents said they would recommend that the prevention of MARSI and the identification of patients at risk of MARSI should be integral components of skin assessment.

The results of the survey demonstrate there is a clear and present need for improvement of educational efforts around MARSI awareness, identification of patients at risk of MARSI and strategies for preventing MARSI. Not only does the need exist, but wound care clinicians desire more MARSI-related education. Current research in the field of MARSI has shown that there are several causal factors: composition of the adhesive, length of time the adhesive is left in place, intrinsic patient factors (e.g. very young or very old age, underlying medical conditions), condition and environment of the skin, and extrinsic and/or treatment factors (e.g. certain medications, repeated use of adhesives over a prolonged period) (McNichol et al, 2013; Zeng et al, 2016). More research is needed to pinpoint the precise pathophysiology of MARSI, and more efforts are needed to develop formal MARSI education and prevention programmes (McNichol et al, 2013).

REFERENCES


Wounds UK (2016) Wound Care Questionnaire. Clinician survey conducted on behalf of 3M. London, UK


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