Skin tears in the aging population:

Remember the 5 Ws

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Skin tears (STs) are among the most common forms of skin injury to affect frail and older individuals, yet their impact is often minimized by health care professionals.

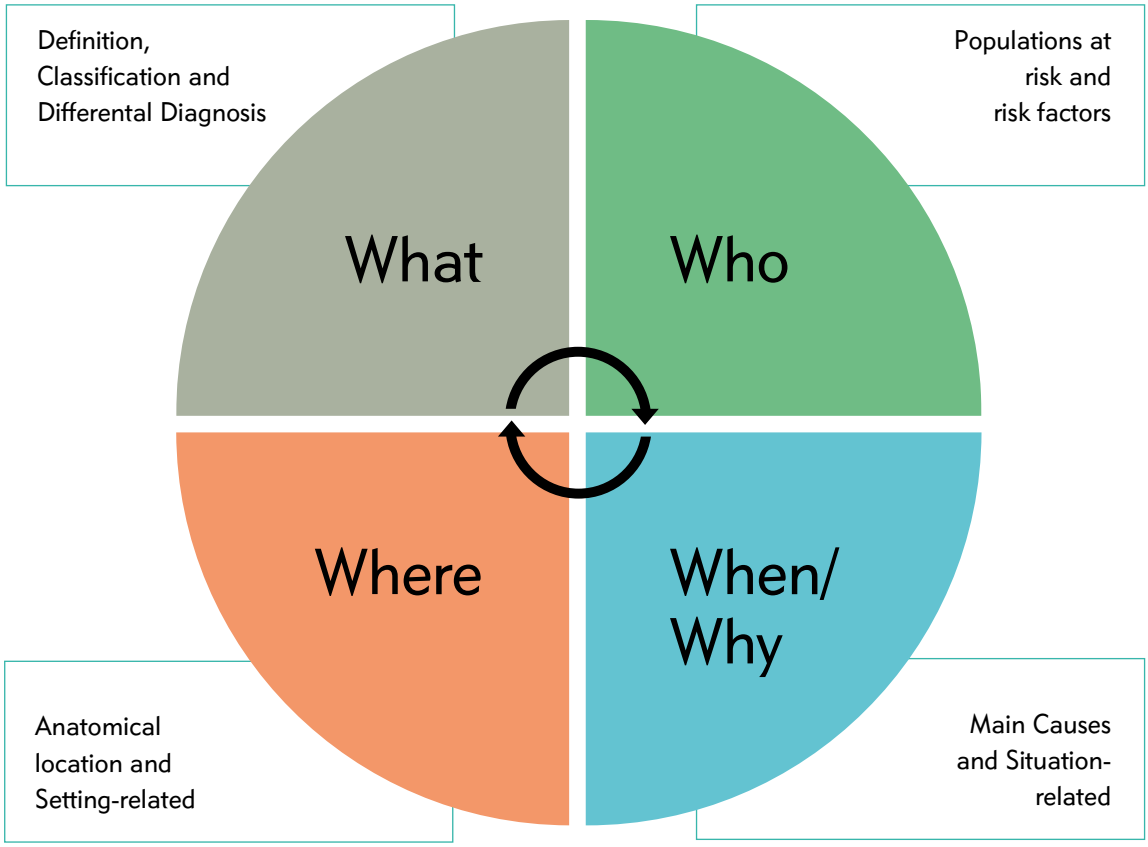

Figure 1: The five Ws of skin tears.

ABSTRACT

Skin tears represent a relevant clinical consequence of age-associated skin vulnerability, and are extremely common among frail and older individuals. They are acute wounds with the potential to be closed by primary intention, however they are often mismanaged and misdiagnosed and transition to become chronic and complex wounds. Reported skin tear prevalence suggests they are a growing healthcare problem which have a profound impact on the health and well-being of affected individuals and a great financial burden to healthcare systems. With the aging global population, it can be assumed that the prevalence of skin tears will continue to increase proportionally with the aging population. In order to minimize the impact of skin tears clinicians must to be aware of what skin tears are, who is at risk, why and when they occur, and how to manage skin tears when they do occur. The purpose of this article is to assist clinicians with the prediction, prevention, assessment and management of skin tears among the aging population across healthcare sectors.

Skin tears (STs) are among the most common forms of skin injury to affect frail and older individuals, yet their impact is often minimized by health care professionals (Carville et al, 2014; Stephen-Haynes,

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Figure 2:
International Skin Tear Advisory Panel (ISTAP) Skin Tear Classification System (LeBlanc et al, 2013).

(a) Type 1 (No skin loss) (b) Type 2 (Partial skin loss) (c) Type 3 (Total skin loss)

2012). Although STs start as acute wounds, they frequently become painful chronic and complex wounds, which have a high propensity to develop infections. It is important for health care professionals to identify STs as adverse and reportable events that compromise patient safety. For this reason, clinicians must be able to recognize what STs are; identify who is at risk of developing them; understand where, when and why they usually occur; and learn how to treat them in the appropriate way (Fig.1). Thus, to prevent serious complications and promote wound healing, health care professionals must complete a comprehensive assessment and institute ST-specific wound care practices that both promote wound healing and respect fragile skin (Holmes et al, 2013; Vanzi and Toma, 2017). The purpose of this article is to define STs; identify individuals at risk for ST development; explore when, where and why STs normally occur; and determine how to manage STs if they do occur.

What: Defining skin tears

The International Skin Tear Advisory Panel (ISTAP) defines a skin tear (ST) as "'a wound caused by shear, friction, and/or blunt force resulting in separation of skin layers" (LeBlanc and Baranoski, 2011). The wounds resulting from STs may be of partial or full thickness depending on the extent of the injury. Individuals suffering from STs complain of increased pain and decreased quality of life (Carville et al, 2014). In addition, those who are at the highest risk for STs are individuals at the extremes of age and the critically or chronically ill; therefore, these patients are at a higher risk for developing secondary wound infections and also may have co-morbidities that contribute to the transition of STs from acute to chronic complex wounds.

STs are acute wounds that, in cases with no skin loss, have the potential to be closed by primary intention. It has been hypothesized that because of their high prevalence and perceived insignificance, however, STs often do not receive the attention they deserve (Carville et al, 2014; LeBlanc et al, 2014). For example, LeBlanc et al (2014) reported that more than half of STs were found without topical wound dressings or documentation of their causality.

Given their acuity, STs are expected to heal in a timely manner, i.e. 21 to 40 days (Sanada et al, 2015). The literature suggests, however, that acute STs have a high risk of developing into complex chronic wounds with delayed wound healing, localized infection, cellulitis or generalized sepsis if the damaged area remains untreated or is treated inappropriately (Carville et al, 2014; LeBlanc et al, 2017). Chronic wounds adversely affect the individual's physical, social and psychological health, which imposes a huge cost on the community (Sussman and Golding, 2011).

Morphologically, STs usually are jagged and irregular in shape. STs generally tend to be low exudating wounds, but they may be high exudating wounds when they occur in conjunction with other co-morbidities, such as uncontrolled peripheral oedema (Baranoski et al, 2016). Additionally, at the time of the initial injury, bleeding may be an issue, particularly if the individual is on anticoagulation therapy (LeBlanc et al, 2011). Such bleeding may be uncomplicated, e.g. a partial thickness linear tear of the skin, or potentially more complex, involving full thickness skin loss, blood clots, and ecchymosis.
Recent publications have highlighted the clinical challenges inherent in differentiating STs from pressure ulcers

Figure 3:
A skin tear on the right elbow of an 86-year-old patient.

and have emphasized the importance of correctly diagnosing each as a distinct and separate wound type (Black et al, 2015; LeBlanc et al, 2016) to ensure that effective prevention and management strategies are implemented (LeBlanc and Baranoski, 2014). To date, there exists no consensus on the definition of STs, which may explain the absence of a specific category for coding STs in the World Health Organization International Classification of Diseases 10th edition (ICD-10). Misdiagnoses of individuals with STs is a considerable issue which, when it occurs, contributes to prolonged wound healing and additional pain and suffering (LeBlanc et al, 2017).

Once the clinical diagnosis of an ST has been made, it is imperative that health care professionals utilize a reliable and valid method for classification to properly communicate and manage the ST. ISTAP developed and validated an ST classification system (LeBlanc et al, 2011; LeBlanc et al, 2013), which was adapted from both the Payne and Martin classification system (Payne and Martin, 1990) and the Skin Tear Audit Research (STAR) ST classification system (Carville et al, 2007). The ISTAP classification divides STs into three categories of epidermal and dermal loss, depending on the symptoms of the skin flap (Fig.2a, b, c).

Who is at risk for STs?

The individuals who are at the greatest risk for STs include those at the extremes of age, i.e. neonates and the elderly; critically and chronically ill patients; and those who are disabled and/or need assistance with personal care (LeBlanc et al, 2011). It is essential to identify the factors that predispose an individual to developing an ST, and how best to prevent an ST from occurring (Sussman and Golding, 2011). Lewin et al (2016) identified that one of the strongest predictors of developing an ST was a history of previous STs. Rayner et al (2015), however, emphasized that there is a lack of quantifiable research for identifying individuals most at risk for STs despite apparent correlations between various patient and specific skin characteristics (Rayner et al, 2015). Moreover, it is not known which risk factors are independent of one another, and whether one risk factor is more important than another (Ratliff et al, 2007; Vanzi and Toma, 2018).

Several systematic reviews have been conducted to address this issue. Serra et al (2017) categorized ST risk factors into seven main areas: age-related skin changes, dehydration, malnutrition, sensory changes, mobility impairment, pharmacological therapies and mechanical factors related to skin care practices. Similarly, Strazzieri-Pulido et al (2015) cited advanced age, dependence on basic activities of daily life (ADL), frail elderly, level of mobility, agitated behaviour, non-responsiveness, greater risk for concurrent development of pressure ulcers, cognitive impairment, spasticity and photoaging as common ST risk factors. Moreover, Rayner et al (2015) reported history of STs, use of steroidal or non-steroidal medications, elderly and frail individuals, and those dependent on others for ADL as common patient characteristics of those with STs, and also cited an equally broad range of common skin features, such as ecchymosis, senile purpura, fragile skin (Fig.3), dry skin, or oedema of the lower limbs. The authors of these studies emphasized, however, that such characteristics are not consistently recorded across all stud-

ies. Such a discrepancy may be due primarily to the largely anecdotal and/or experiential nature of the research design. Lewin et al (2016) conducted a case-control study, from which they proposed a parsimonious model for predicting the development of STs based on six variables: ecchymosis (bruising), senile purpura, haematoma, evidence of a previously healed ST, oedema, and inability to reposition oneself independently, but noted that the predictive ability of these six characteristics needed to be validated in a prospective study (Lewin et al, 2016). Overall, the prompt identification of individuals at risk for STs may be limited by the failure to identify specific patient and skin characteristics (Rayner et al, 2015). Further research is needed to identify risk factors that are associated with STs, which will enable the development of a personalized prevention program that considers each patient's risk and facilitate the correct diagnosis of this wound type.

When and why do STs occur?

There are numerous factors that can cause STs to develop,

Table 1: ISTAP Risk Reduction Program© ISTAP 2014 used with permission

Risk Factor	Individual	Care giver/provider
General Health	• Educate the patient on skin tear prevention & promote active involvement in treatment decisions (if cognitive function is not impaired) • Optimize nutrition & hydration	• Create a safe patient environment • Educate client +/ circle of care / caregivers • Protect from self-harm • Provide a dietary consult if indicated • Take extra caution with extremes of BMI (<20 or >30) • Review polypharmacy for medication reduction /optimization
Mobility	• Encourage active involvement if physical function is not impaired • Facilitate appropriate selection & use of assistive devices	• Conduct daily skin assessment & monitor for skin tears • Ensure safe patient handling techniques/ equipment & environment (trauma, ADL, self-injury) • Encourage proper transferring/ repositioning • Initiate fall prevention program • Remove clutter • Ensure proper lighting • Provide pad equipment/furniture (bedrails, wheel chair etc.) • Avoid patient contact with sharp fingernails/ jewellery
Skin	• Be aware of medication-induced skin fragility (e.g. topical & systemic steroids) • Wear protective clothing (shin guards, long sleeves, etc.) • Moisturize skin (lubrication and hydration) two times per day • Keep fingernails short	• Individualize skin hygiene (warm or tepid but not hot water, soapless or pH neutral cleaners, skin moisturizer) • Avoid strong adhesives, dressings, and tapes • Avoid patient contact with sharp fingernails/ jewellery
Health care setting		
	• Implement a comprehensive Skin Tear Reduction Program • Include skin tears in audit programs • Utilize validated classification system • Develop a consultative team (Wound care / dietary specialists, rehab/pharmacists)	

Abbreviations: ISTAP, International Skin Tear Advisory Panel; BMI, body mass index; ADL, activities of daily living.

few of which can be controlled. STs are the result of shear and friction (either independently or in combination) or blunt force trauma. Frequently, the causes of STs are attributed to mechanical trauma in relation to an accident (e.g., bumping into something, such as a wheelchair pedal or a door knob, or applying or removing stockings) (LeBlanc et al, 2017). Additionally, particularly in the acute care setting, STs have been attributed to medical adhesive related skin injury (McNichol et al, 2013). STs also are found with no apparent cause, however (Ratliff and Fletcher, 2007). In older adults, STs are often environmentally related (Ratliff and Fletcher, 2007) and they can occur in conjunction with daily activities such as dressing, bathing or toileting. For this reason, several patient-centred strategies should be adopted to prevent STs from occurring, as suggested by the ISTAP risk prevention program (Tab.1)

Where do STs occur?

Although STs have been reported to occur anywhere on the body, they are found predominantly on the extremities (LeBlanc et al, 2011). There exists limited literature addressing the burden of STs, but research in this area is growing. Available epidemiological studies confirm that STs are common, with a prevalence of 3.3% to 22% in the hospital setting and 5.5% to 19.5% in home care settings (Strazzieri-Pulido et al, 2017; Skiveren et al, 2017; Chang et al, 2016; Koyano, et al, 2014; LeBlanc et al, 2013). Reported incidence rates of STs ranged from 2.23% to 92% in long-term care facilities and varied from 2.1% among men to 4.6% among women living in the community (Strazzieri-Pulido et al, 2017). Epidemiological studies pertaining to STs are needed across all health care sectors and in all age groups, however, to determine the extent of the problem (Vanzi and Toma, 2017). Monitoring of ST prevalence and incidence in various health care settings also will facilitate benchmarking and implementation programs (LeBlanc et al, 2013). Accurate documentation of STs is therefore needed to track and monitor their prevalence. To date, there is no robust ST prevalence data available for many countries, and the benchmarking of STs is difficult due to the paucity of published studies and the lack of standardized assessment.

Managing skin tears

Ultimately, the goal of ST management is ST prevention. Given the multiple interconnecting causal factors and the skin fragility of those at heightened risk for ST, some STs will be unavoidable. When STs do occur, it is imperative that they are properly managed to prevent them from becoming chronic and complex wounds (LeBlanc et al, 2013).

Initial ST management:

- Control any bleeding
- Re-approximate the wound edges
- Classify, measure and document the ST
- Treat the cause (identify those at risk)
- Implement a prevention protocol
- Provide moist wound healing
- Avoid additional trauma
- Protect fragile peri-wound skin
- Manage exudate
- Avoid infection
- Provide pain control
- Avoid new risks for trauma
- Assess co-morbidities (e.g. venous disease, arterial disease, pressure)

STs are acute wounds that have the potential to close by primary intention. Given the fragility of the skin among the elderly, however, sutures and staples are not viable options for Type 1 STs in this population. Health care providers should consider, when possible, securing Type 1 ST flaps with topical cyanoacrylate adhesives, i.e. skin glue, rather than more traditional methods such as medical adhesive strips, sutures or staples (LeBlanc et al, 2017).

Choose a dressing that will:

- maintain a moist wound healing (method of choice compared to a dry dressing)
- be appropriate for the local wound environment
- protect the peri-wound skin
- control or manage exudate
- control or manage infection
- optimize caregiver time

Many types of skin and wound care products are used to promote healing. Best practice supports that a skin flap/pedicle should be approximated if possible, and covered with one of the following types of dressings: cyanoacrylate topical skin adhesive, hydrogel, alginate, non-adherent contact layers dressings, silicone foam dressings, absorbent clear acrylic dressing or non-adherent impregnated gauze mesh dressing. The actual product selection will depend on the type and location of the ST and the wound bed characteristics (LeBlanc et al, 2013). Hydrocolloids and transparent film dressings are not recommended over STs, as they may cause skin stripping and injury to the healing skin tear if not removed properly (LeBlanc et al, 2013).

Conclusion

STs are acute wounds found frequently in the aging population. Despite presenting as acute wounds that should progress to closure in a timely fashion, STs often become chronic and complex as the result of minimization and mismanagement by health care professionals. By understanding what STs are, who is at risk, why and when they

occur and how to manage STs when they do occur, health care professionals can improve patient outcomes, which will decrease pain, suffering and costs to the health care system. ■

Key messages

- Skin Tears are common wounds found among frail and older individuals, and they represent a troubling consequence of trauma to aging skin.
- Skin tears are acute wounds, which have a high risk of converting to painful complex and chronic wounds if they are mismanaged and mis-diagnosed.
- Clinicians must be able to recognize, assess and treat a skin tear to promote patients' safety, to minimize the risk of further trauma and to improve skin outcomes following an injury.

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