

Skin Necrosis

Luc Téot
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Véronique Del Marmol
Sebastian Probst
Editors

Second Edition



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 Springer

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Education on Debridement: Non-specialized Nurses and Debridement

73

Paul Bobbink

Taking care of people living with chronic wounds is central to nursing practice [1] and research [2]. Due to the high prevalence of chronic wounds [3] and the allocation of healthcare expenses, non-specialized nurses regularly treat people across hospital wards, nursing homes, or homecare. Therefore, non-specialized nurses should have basic knowledge and understanding of clinical assessment and wound bed preparation, which includes debridement.

For years, best practices recommendations have included debridement to remove devitalized tissue [4, 5] or biofilm [6, 7] to enhance healing. Although evidence to support wound debridement in some types of chronic wounds remains limited [8], this intervention is recommended by multiple guidelines [9–11] and can be repeated frequently, especially for diabetic foot ulcers [12].

In light of variations in nursing education across the world, depending on regulations, healthcare systems, and scope of nursing practice, this chapter aims to provide a basis of knowledge of what a non-specialized nurse should know on wound debridement.

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73.1 Nurses Should Be Able to Assess a Person Living with a Chronic Wound

Prior to debridement, nurses should be able to provide a holistic assessment of people living with chronic wounds to identify contraindications and expected benefits of wound debridement. This first step enables a patient-centred care approach [13] and includes previous patient experiences of wound debridement. Due to the complexity and negative consequences of living with a chronic wound [1] and as patients' needs are frequently overlooked [14], a nurse should have special skills in communication based on interpersonal relationship frameworks and use specific assessment tools like TIMERS [4] or the wound prevention and management circle [15].

73.2 Nurses Should Have Knowledge on Basic Wound Aetiology and Wound Bed Evaluation

Clarifying and confirming a wound's aetiology are part of nurses' clinical practice, as they are regularly involved in dressing changes or follow-up of patients with wounds [16]. During this step, registered nurses should be able to identify the cause of the principal wounds to implement the best clinical guidelines according to aetiology. For example, pressure ulcers (PUs) result from

pressure or pressure and shearing forces applied to soft tissues [17] and need discharge to promote healing. Regarding this aetiology, stable heel eschars should not be debrided [10]. Furthermore, clinical signs and symptoms are indicators of whether or not to perform wound debridement. In clinical practice, intermittent claudication or rest pain indicates peripheral arterial disease (PAD) resulting from poor blood flow. PAD is a contraindication for sharp wound debridement [4, 18] as wound healing needs sufficient blood flow. Regarding diabetic foot ulcers (DFUs), they are defined as a wound localized under the ankle in persons living with diabetes and usually with a diagnosis of neuropathy and/or PAD [19]. DFUs are typically localized in the plantar area, the side of the foot, or the toes, and it is estimated that around half of patients with a DFU also have an ischemic aetiology [20]. Therefore, in this specific population, debridement should be provided after a complete assessment by a multidisciplinary team.

Finally, the nurse must be competent in wound bed evaluation/assessment and should be able to differentiate tissue in the wound bed, for example, granulation, epithelialization, or devitalized tissue like necrosis or slough (see Fig. 73.1). Healthy granulation tissue is red/pink in colour, whereas a friable or bleeding granulation tissue could be an indicator of wound infection [21]. Devitalized tissue such as an eschar or necrotic tissue is generally black or dark brown, usually dry/thick and firmly attached to the wound bed. Slough is also devitalized tissue, yellow-green or brown in colour that is loosely attached to the wound bed and usually moist [22, 23]. Nurses should also be able to identify structures such as bones or tendons in the wound bed, as shown in Fig. 73.2.



Fig. 73.1 Wound with granulation, epithelialization, and few devitalized tissue



Fig. 73.2 Wound with an exposed tendon

73.3 Nurses Should Be Aware of Types of Debridement

In practice, wound cleansing refers to superficial removal of dead tissue, bacteria, or contaminants [24, 25]; debridement refers to deep removal of adherent, devitalized, contaminated or necrotic tissue, including senescent cells, bacteria, and biofilms, that may delay wound healing [26, 27]. Debridement can be mechanical, autolytic, enzymatic, biological, sharp or surgical [26, 27] and may have the aim of promoting healing, preventing infection and odour, or promoting patient well-being by removing excess devitalized tissue [28].

Registered nurses can use autolytic debridement, mechanical debridement, and sometimes sharp debridement, depending on local regulations, scopes of practice, and the contextual situation. As it is recommended that the initial debridement be aggressive [18], it is important to differentiate initial/first wound debridement, which should be practiced by experts, from conservative and repetitive debridement, which can be provided by registered nurses. To make meaningful clinical decisions, nurses should be able to differentiate existing methods of wound debridement and support patient decisions by providing clear explanations of the methods.

Autolytic debridement occurs if a wound is vascularized and moisture balance is present in the wound to rehydrate tissues so that the body's natural enzymes will soften and partially digest devitalized tissue [22]. Depending on wound exudate, various dressings may be applied. For example, hydrogels should be applied in a layer of at least 5 mm thick on wounds with no or small quantities of exudates, whereas dressings like alginates could be combined with secondary dressings to absorb significant amounts of exudates [27]. Autolytic debridement takes place over time and requires frequent dressing changes; therefore, it is recommended for small quantities of slough. Moreover, this is not a painful procedure [22, 27], and therefore it is commonly used for wound bed preparation.

Mechanical debridement is defined as a physical removal of devitalized tissue with gauzes, tulle, or monofilament fibre pads [27]. Mechanical debridement is the most common method [27]

used in wound care. Over the last year, the development and use of debridement pads have increased in clinical practice. These pads are easy to use, will not harm the underlying tissue [27], and are effective for removing biofilm and slough [29]. However, these devices are not recommended for dry eschars [30]. Due to the time necessary for wound debridement, mechanical debridement is one of the most expensive approaches [31]. Therefore, other approaches to mechanical debridement like hydro jets or low frequency ultrasound have been developed, but they require a highly specialized approach.

Sharp debridement is defined as a minor surgical bedside procedure involving cutting away tissue with a scalpel or scissors [27]. It should be used when there is a thick and adherent layer of slough or necrotic tissue. Conservative sharp debridement usually stops above the level of viable tissue. It can be practiced by nurses, but as clinical risks increase with the use of scalpels, sharp debridement is usually part of specialized practice. However, in practice, the amount of remaining devitalized tissue can be greater when an untrained nurse performs the procedure, which limits risks of harm to patients. Sharp debridement, especially with scalpels, requires some mentoring and training.

Surgical, biological, and enzymatic debridement are usually part of specialized nursing practice or other disciplines as they require specific skills, knowledge, and equipment. Nevertheless, registered nurses should know of their existence to refer patients to the right clinicians. For example, nurses should have positive knowledge about maggot therapy, used as biological debridement, to refer patients quickly to a specific team [32]. In all cases, debridement should be performed after the provision of medical advice and fit the scope of practice of local legislation.

73.4 Nurses Should Be Able to Select the Most Suitable Type of Debridement

Selection of the appropriate debridement method should be based on clinical indication or contraindication of debridement, patients' preferences, including their previous experiences, the nurses'

knowledge and skills, the legal aspects of debridement, cost-effectiveness, and contextual resources. Nurses' skills developed during undergraduate education vary across countries, and therefore autolytic and mechanical debridement may be the best solution for nurses without specific training, even if the process is more time-consuming than sharp debridement [28]. Due to discrepancies in undergraduate training, it is of utmost importance that nurses be able to identify their own limits before they engage in wound debridement. Debridement is sometimes an emergency treatment, and therefore nurses should know why, when, and how to refer a patient quickly to an interdisciplinary wound care team. Box 73.1 provides some questions which should be answered prior to wound debridement.

Box 73.1 Skills and Assessment Checklist Prior to Debridement

- Does this wound need debridement?
- Does the patient agree to debridement?
- Which type of debridement should be used?
- Does this type of debridement fit my skills and scope of practice?
- If I have not received education in this field, have I undergone a training programme or clinical supervision on wound debridement?
- Have I received medical agreement to proceed with debridement?
- If complications of debridement appear, can I refer this patient urgently?
- Is it reasonable to undertake wound debridement in this setting and condition?

Legal aspects of debridement for nurses vary across countries and institutions [33], and nurses should refer to local guidance, taking the context into consideration, before engaging in debridement procedures. Costs related to wound care

interventions are important when implementing clinical recommendations. In a cost analysis in Canada, taking into consideration health care personnel costs, materials, transportation, and frequency of visits, Woo et al. [31] found that, among the debridement methods discussed in this chapter that registered nurses can perform, conservative sharp costs approximately \$1120, whereas autolytic debridement costs \$1500, and mechanical debridement, up to \$1840.

73.5 Nurses Should Have an Understanding of Moist Wound Healing to Implement an Effective After-Debridement Care Plan

Understanding wound healing phases and, more specifically, the benefit of moist wound healing makes it possible to identify the best method for wound bed preparation, including wound cleansing and debridement, and implement an effective 'after-debridement' care plan. The dressing selected after debridement should promote moisture balance [28], prevent complications, or continue to debride with an autolytic approach. Thus, debridement should not be used as an isolated intervention but should be integrated into a global care plan to promote wound healing and patient well-being. Table 73.1 provides an overview of wound types, their characteristics and suggestion for type of debridement selection.

Take-Home Message

One can learn the theoretical aspects of debridement through online or face-to-face education. However, debriding a wound requires psychomotor skills that can only be developed by training, first on specific materials like oranges, pigs' feet or simulators and then by mentoring during clinical practice. The EWMA curricula for nurses Levels 4 [34] and 5 [35] can provide guidance for developing further nursing education and improving congruence in nursing practice.

Table 73.1 Wound type, characteristics, and type of debridement

Wound type	Usual site and characteristics	Type of debridement	Details
Pressure ulcer	Sacrum, heel, trochanter	Sharp, mechanical and autolytic	PU's on the heel should not be debrided. Eschar debridement on PU's could quickly extend the wound size.
Venous leg ulcer	Gaiter area of the leg	Autolytic and mechanical. Sharp debridement may be used depending on patients' experience of pain	When using conservative sharp debridement, implement an effective pain management plan to reduce procedural pain.
Mixed leg ulcer	Characteristics of both venous and arterial leg ulcers	Various approaches may be used. Refer to a specialized wound care team	
Arterial leg ulcer	Toes, heels or ankle	No debridement for non-specialized wound care team.	Evaluate the possibility of revascularization prior to debridement.
Diabetic foot ulcer	Lateral foot, plantar or toe	Plantar: sharp debridement of hyperkeratosis followed by autolytic debridement for the wound bed may be used. Toe: No debridement for non-specialized wound care team	High risk of infection. Ensure correct blood flow to promote healing.
Acute wound		Wound cleansing using tap water or saline No debridement for non-specialized wound care team	
Malignant fungating wound		Use autolytic dressing for comfortable debridement. No aggressive debridement for non-specialized wound care team.	High risks of bleeding

NB Absence of patient consent or a patient with bleeding disorders or contact sensitization to dressing contents are person-related contraindications

Ischemic, infected, bleeding or undiagnosed (atypical, malignant) wounds, specific localisation such as the genital area, head, neck, extremities or near vessels, nerves are wound-related contraindications to debridement by non-specialised nurses

These wounds should **not be debrided** by nurses and should be referred to a multidisciplinary wound care team to implement the best care plan with a patient-centred approach

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