



NURSES SPECIALIZED IN  
WOUND, OSTOMY AND CONTINENCE  
CANADA  
INFIRMIÈRES SPÉCIALISÉES EN  
PLAIES, STOMIES ET CONTINENCE  
CANADA

# DEBRIDEMENT: CANADIAN BEST PRACTICE RECOMMENDATIONS FOR NURSES

developed by

**NURSES SPECIALIZED IN WOUND, OSTOMY  
AND CONTINENCE CANADA**

APRIL 2021

## **HOW TO CITE**

To reference these recommendations use the following citation: Debridement: Canadian Best Practice Recommendations for Nurses: Developed by Nurses Specialized in Wound, Ostomy and Continence Canada. 2021 1st Ed.

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## **ACKNOWLEDGEMENTS**

NSWOCC operates on the traditional and unceded territory of the Algonquin Anishinaabe Nation.

John Gregory, IIWCC, Opencity Inc., edited and produced these debridement recommendations in collaboration with a committee of volunteers.

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# PREFACE

Nurses Specialized in Wound, Ostomy and Continence Canada (NSWOCC) are proud to present *Debridement: Canadian Best Practice Recommendations for Nurses*. We are aware debridement is described in the literature as having a high level of clinical risk that may result in patient harm and complications when performed by untrained nurses. NSWOCC acknowledges specialized knowledge, skills, and competencies are required to enable all nurses to provide safe and effective debridement.

A core finding that emerged during the development of these best practice recommendations (BPR) was the inconsistent requirements for nurses to initiate and perform debridement across provinces/territories and health care settings. The apparent need for consistent and standardized debridement practices for nurses was identified as essential to facilitate optimal clinical outcomes and safety for patients and Canadian nurses. This document is intended for the three categories of nurses in Canada, registered nurse (RN), nurse practitioner (NP), and registered/licensed practical nurse (RPN/LPN). Although nurses may hold additional licensure or designation, such as registered psychiatric nurses, only the three core levels will be referenced within this document.

A competency-based debridement educational and preceptorship program was described in the literature as a foundational requirement for nurses to obtain the essential knowledge, skills, and judgment required to become competent to initiate and perform debridement. In addition, the increased availability of competent nurses with the ability to perform more advanced methods of debridement will reduce overall health care costs associated with prolonged wound healing, mitigate patient risks, minimize potential harm and prevent adverse events related to debridement.

Our intention is for this BPR to positively influence patient safety related to all methods of debridement across the continuum of care and to be circulated and implemented widely by nurses at all professional levels. We also recommend this BPR be reviewed by health care administrators in a variety of health care settings, and by both federal and provincial/territorial Canadian government health agencies, to further define debridement and support safe and effective high quality patient care.

NSWOCC Research and Practice Core Program chairs: Dr. Kevin Woo  
and Nancy Parslow | April 2021

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### **CONFLICTS OF INTEREST**

There are no conflicts of interest noted.

# INTRODUCTION

These national best practice recommendations consider the different modalities of debridement and relevant scope of practice requirements for all categories of licenced nursing professionals regarding debridement across various organizational and practice settings in Canada. Additional health care practitioners performing debridement are referenced within the document to provide a comprehensive overview of those authorized to perform debridement in different provinces or territories.

*Débridement* first appeared as a clinical term in France during the 17th century. Originally defined as *an unbridling or removal of damaged tissue from the wound*, the term has evolved to include many methods, but the purpose of debridement remains the same. In the development of these recommendations, it became clear subject matter experts, researchers, and educators continue to inconsistently classify the various methods of wound debridement. The ongoing debate includes whether larvae (maggots) are considered to be a biological or a mechanical debridement modality and if medical-grade honey is a subset of autolytic, enzymatic or chemical debridement.

This BPR identifies, defines and describes the various methods of wound debridement in an attempt to promote clarification and consistency, but are not intended to provide step-by-step instructions for any debridement modality. Although debridement is the focus of this document, it is imperative decisions about debridement are only made and based on findings from the comprehensive assessment of the patient and the wound and are done in collaboration with the patient. This document may provide some details about the comprehensive patient and wound assessment; however, it will not provide exhaustive information as it is expected nurses engaging in any form of debridement already have completed these actions.

BPRs for health care providers are composed of recommendations for best practices about specific clinical situations that are ideally evidence-based.<sup>1</sup> In the absence of scientific data, best practice recommendations represent statements that are systematically developed by consensus among a group of clinical experts to guide practitioners regarding appropriate health care decisions. Recommendations represent a lower level of rigour than a guideline, which is based on data obtained from the appraisal of systematic reviews. These differ from a standard with is an authoritative statement that sets out the legal and professional basis of nursing practice.

Throughout this BPR we discuss two educational requirements for the nurse to develop competency in debridement. These are completion of a rigorous curriculum-based wound management educational program followed by enrollment in a competency-based debridement program which includes both a theoretical and clinical preceptorship component.

Through the document, we have carefully chosen to use the term *patient* for consistency and conciseness. This is intended as an all-encompassing term that can include clients and residents in a variety of settings. We introduced the use of *significant others* as a similar term to include persons identified as family members and caregivers. The term nonhealing will be used to describe wounds that may be considered maintenance or hard to heal. Terms defined in the glossary appear underlined in the text upon first use.

These recommendations are supplemented by a position paper summarizing nursing requirements regarding different modalities of debridement, with a special emphasis on conservative sharp wound debridement (CSWD).

# METHODOLOGY

**The research question:** What are the scope of practice, credentials, training, competencies, and regulatory requirements regarding wound debridement for nursing practice in Canada?

The development of this BPR comprised seven overlapping stages including:

1. identifying relevant studies and information;
2. study selection;
3. charting the data using a scoping review process;
4. collating, summarizing and reporting the results;
5. synthesizing emerging themes;
6. summarizing evidence-informed practice statements; and
7. building consensus.

Databases searched encompassed organizational websites and libraries, including:

- Allied and Complementary Medicine Database
- CINAHL
- Cochrane Database of Systematic Reviews
- DARE Dissertations International
- Effective Practice and Organization of Care (EPOC)
- EMBASE
- ISI proceedings: science and technology
- Joanna Briggs Institute
- MEDLINE
- WOCN Society library.
- Other websites where guidelines or practice documents may be posted were searched, including the National Guideline Clearinghouse, Canadian Medical Association (CMA) infobase, and the Guideline Advisory Committee.

The search strategy employed focused on the following keywords and phrases:

debridement: methods: benefits, indications, contraindications, risks, policies, including autolytic, mechanical, enzymatic/chemical, larvae/maggot therapy, hydrotherapy: whirlpool, forceful irrigation, technological modalities: ultrasonic, conservative sharp wound debridement, hydrosurgical and surgical. All papers in English were considered with no limitation on the year of publication. Additional terms included standards of practice, scope of practice, practice requirements, medical directives, procedures and nursing roles for professional categories of nursing including: RN, RPN/LPN, registered psychiatric nurses, Nurse Specialized in Wound, Ostomy and Continence (NSWOC) or advanced practice nurse (APN)

as an umbrella term incorporating NP and clinical nurse specialist (CNS). Requirements for nurses to initiate and perform methods of debridement, including educational, competencies, certification, and preceptorship/mentorship; legal considerations per type of debridement; patient considerations and educational requirements for all methods of debridement.

The task force connected with existing knowledge users and networks to generate additional information related to the research question. We also explored various professional and wound care association websites to look for any existing guidelines, guidance documents, consensus statements, and their reference lists. The inclusion criteria were broad given the exploratory nature of the scoping review to examine the range of material that may be available.

A scoping review of identified papers was recommended to enable inclusion of the broad range of papers identified by the literature search. Unlike systematic reviews, a scoping review does not involve in-depth critical appraisal of the quality of individual studies, but facilitates comparison of information, identifies contradictory evidence and delineates gaps in the evidence. The review was conducted by the task force following the methodological framework proposed by Arksey and O'Malley (2005).<sup>2</sup> A data capture matrix was created based on the Joanna Briggs Framework to guide mapping, review, and synthesis of the wide range of existing evidence. The task force used two independent reviewers for data extraction from each of the relevant papers.<sup>2</sup> By creating BPRs based on both available scientific evidence and practice-based evidence, the objective was to provide concrete guidance for nurses and improve the lives of individuals with chronic wounds. Although the target readers are nurses, findings are beneficial to point-of-care health professionals throughout the health system. The review sheds light on areas for future research to address unanswered questions.

The evidence was synthesized and summarized into 12 practice recommendations. These

statements were reviewed and finalized by the task force through a modified Delphi method to achieve consensus. After each round of voting, we summarized and presented the results and reasoning to the task force. Recommendations that did not meet at least 70% of agreement were discussed and revised to reach a higher level of consensus. All statements exceeded over 80% agreement.

The levels of evidence for each recommendation and supporting rationale were assessed by the task force based on the *Interpretation of Evidence* established by Registered Nurses' Association of Ontario (RNAO).<sup>1</sup> These can be found in **Appendix 1**.

Peer reviewers were identified by task force members and further revisions were made based on the feedback provided. A total of 38 peer reviewers participated in the peer-review process. Feedback was obtained via Survey Monkey during March 2021. Overall, 89% of the reviewers would recommend this BPR to colleagues and administrators to direct debridement practices for nursing professionals in all care settings in Canada. Minor refinements were made to the document and the overall results and insights were discussed with the task force members. Finally, the completed recommendations were approved by the NSWOCC Board before publication.

# SECTION 1

## THE 12 BEST PRACTICE RECOMMENDATIONS WITH RATIONALE

An abridged version of the 12 recommendations is included in **Appendix 2** as a quick reference guide.

### 1 – SCOPE OF PRACTICE [Level of Evidence IV-V]

All classes of nurses including RN, RPN/LPN, and NP must work within the controls of federal and provincial/territorial legislation, regulatory bodies, organizational policies and individual competency. For debridement of wounds, this includes having the knowledge, skills, judgment, and authority to perform all forms of debridement. Nurses are accountable for knowing their national code of ethics and expectations, respective provincial/territorial practice standards and guidelines, employer's policies, procedures, and operational guidelines, and own competence and limitations for all methods of debridement.

### RATIONALE

The provincial/territorial nursing regulatory bodies are responsible for defining scope of practice for each category of nurse. The role of the nursing regulatory body is to ensure patient safety is at the forefront and nurses' practice safely according to their level of education and training and within their scope of practice. Nurses must act, at all times, in the best interest of the public.<sup>3</sup>

- There are four levels of control that regulate nursing practice:
- national nursing framework and federal legislation;
- provincial/territorial legislation and practice standards;
- employer/organizational policies and procedures; and
- individual competence.

In Canada, the provincial/territorial governments delegate the power to regulate all categories of nurses to the provincial/territorial nursing regulatory bodies. The jurisdictional nursing regulatory bodies are responsible for the development and maintenance of nursing practice standards and guidelines to describe legislative authority over the patient demographic they can care for and further outlines what type of nurse can initiate, order and perform controlled, restricted or reserved acts such as debridement.<sup>4</sup>

Each employer has the ability to further restrict a nurse's ability to perform an act. In the absence of organizational support and resources, obtaining an order should be considered (or consultation for the NP) prior to performing a procedure regardless of having the authority and competence to carry out the act.<sup>3</sup> Organizational policies must be consistent with national and provincial/territorial legislation, regulations, code of ethics, standards of practice, guidelines and any other practice directions that exist at either of these two levels.<sup>4</sup>

Each individual nurse must work within their respective scope of practice in accordance with their governing body, provincial nursing college, and organizational policies. Ultimately, the nurse is accountable to ensure they possess the knowledge, skills, judgment, experience and authorization prior to initiating or performing debridement (detailed in Recommendation 3). For example, a nurse who does not have the knowledge, skills, judgment and clinical experience required to competently perform debridement should not debride using any method, especially CSWD, regardless of the organizational policy listing their designation as having authority to perform the act. The College of Nurses of Ontario (CNO) states that it is the responsibility of each nurse to ensure that they are competent in both the cognitive and technical aspects of a procedure prior to performing it, and the duty of employers to ensure that there are resources to support the delivery of initial and ongoing education to support nurses to attain and maintain competence.<sup>5</sup>

While scope of practice is determined by the provincial/territorial regulatory colleges, other provincial/territorial legislation may impede the nurse's ability to perform and act within their scope of practice. For example, in Ontario, the Hospital Act restricts nurses from initiating procedures without an order in a hospital, and

the Long-Term Care Homes Act has similar restrictions in long-term care (LTC) facilities.

## **2 – ORGANIZATIONAL RECOMMENDATIONS [Level of Evidence IV-V]**

Employers/organizations should ensure all policies and procedures, or operational resources, related to debridement include, but are not limited to:

- a. type/method of debridement each class of nurse is authorized to initiate and/or perform, including the specific level of education, training (including preceptorship), and experience required to perform the method of debridement.
- b. the completion of a competency checklist before providing authorization to perform debridement with each new employer and at regular intervals to evaluate the continued competency (validation) of the nurse's knowledge and skills to perform the procedure. This includes the nurse's ability to conduct a comprehensive assessment of the patient and the wound, identify wound type and etiological/causative factors, and collaborate with the interprofessional team to develop, implement, evaluate and reassess an appropriate plan of care.<sup>6</sup>

### **RATIONALE**

While initiating and/or performing a procedure below the dermis may be within a nurse's scope of practice, provincial/territorial acts and organizational policies may prohibit the nurse from working to their full scope of practice while employed within their respective organization. Performing a procedure despite a restriction in an employer's policy places the patient at risk of harm and the nurse may face punitive action by their respective college putting them at risk of disciplinary action including the loss of their nursing license. Therefore, nurses should obtain written approval from their manager prior to performing debridement.<sup>7</sup> Policies outlining who is responsible for carrying out specific

procedures and detailing the expectations and accountability of the procedure are fundamental in nurse's delivering safe, ethical and effective care.<sup>3</sup>

It is in the best interest of the employer or organization to establish policies about which level of nurse can provide care based on the complexity of the patient, need for clinical expertise and judgments, ability to assess and critically think, problem solve, perform research, and make evidence-informed decisions.<sup>3</sup>

Establishing policies and procedures for complex wound etiologies including, but not limited to, lower limb and diabetic foot ulcers (DFU), inflammatory wounds, vascular wounds, and skin grafts ensure an appropriate plan of care is initiated and maintained. Policies and procedures outlining intended product usage can prevent unintended autolytic debridement prior to establishing whether the wound is healable or not. Many dressings used in regular wound care practice promote a moist wound environment which stimulates autolytic debridement. Products that increase wound moisture should not be used on certain wound types without establishing healing potential, as they can cause harm resulting in potential infection, sepsis and amputation.

In addition, each organization should promote and standardize utilization of validated wound assessment tools where they exist. Writing a policy and procedure outlining how to use these tools can promote effective communication through standardized documentation. Using electronic documentation systems that allow for integration of these tools or modification to incorporate tool parameters should be considered.

### **3 – PRIOR TO INITIATION OF DEBRIDEMENT (Level of Evidence IV-V)**

Prior to initiating any method of debridement, the nurse must:

- a. be knowledgeable about the different methods of debridement and the level of skill and training required to perform each type;
- b. be aware of their own attitudes, limitations, skills and competency;
- c. recognize and understand the indications, precautions, and contraindications for the various debridement methods;
- d. evaluate the patient's health status, solicit patient preferences and wishes, review wound assessment findings and wound healing potential to determine if decisions about debridement can be made independently, or if consultation with the interprofessional team is warranted;<sup>7,8,9</sup> and
- e. be able to identify, manage and mitigate potential complications and adverse events including, but not limited to, bleeding, pain, anxiety or damage to underlying structures.

#### **RATIONALE**

All methods of wound debridement pose potential risks for the patient. Examples of risk may include infection, pain, bleeding and damage to underlying structures.<sup>10</sup> Prior to initiating debridement, it is essential for the nurse to perform a comprehensive assessment of the patient, including goals, and a detailed wound assessment to establish healing potential to determine if debridement is appropriate. Consultation with the interprofessional team may be warranted to ensure the patient receives the optimal method of debridement at the appropriate time. In some situations, it is advisable to avoid debridement altogether and leave nonviable tissue to dry.<sup>10,11,12</sup> When evaluation of assessment findings support debridement as an appropriate treatment option, the nurse must determine which method is most

likely to achieve the intended outcomes. Decisions must be guided by knowledge and understanding of:

- the various debridement modalities including the mechanism of action, advantages and disadvantages, indications, precautions and contraindications, normal expectations, risks and benefits and potential unintended outcomes for each method.<sup>13,14</sup> Refer to Table 5 in Section 2, page 48, for an overview of the different debridement modalities;
- the skills and training required to attain competency and the authorization required to perform the modality;<sup>9,10</sup>
- patient goals, concerns, preferences and cultural considerations;<sup>9</sup>
- requirements to obtain informed patient consent;<sup>9</sup>
- when to consult and refer to the interprofessional team to ensure the best outcomes for the patient;<sup>9</sup>
- safety considerations regarding the environment for the procedure;<sup>9</sup>
- products and equipment required to perform each modality;<sup>10</sup>
- infection prevention and control considerations; and
- availability of resources required to manage potential complications and promote optimal outcomes.<sup>10</sup>

Patients with multiple comorbidities present complex challenges increasing the risks associated with debridement. Some wounds require specific precautions and should not be debrided until the interprofessional team has been consulted to confirm the wound etiology and plan of care.<sup>9</sup> Refer to **Appendix 3** for a checklist to guide decisions regarding debridement.<sup>9</sup> Reproduced with permission of OmniaMed.

Nurses are accountable to work within the limitations set out by their provincial/territorial

legislation, organizational policies and their individual competencies. Competencies include knowledge of:<sup>13</sup>

- level of knowledge, skills and limitations regarding debridement;<sup>10,13,15</sup>
- provincial/territorial regulations, scope of practice, practice standards and guidelines for various categories of nurses regarding debridement methods;<sup>9,16</sup>
- organizational directives, policies, and procedures that direct requirements for debridement including practice limitations;<sup>9</sup> and
- legal liability requirements associated with the various methods of debridement and components required to obtain informed consent.<sup>16,17</sup>

If debridement has been deemed to be the optimal approach for wound management, to ensure patient safety, the nurse doing the debridement requires the following knowledge of:

1. the principles of wound management including debridement;
2. the anatomy of an area for debridement;
3. the wound etiology and healing potential;
4. the impact of chronic disease processes on wound healing potential;
5. expected outcomes for the method of debridement; and
6. strategies and available resources to prevent and manage potential complications and adverse events.<sup>14</sup>

Patient harm, delayed wound healing and increased costs to the patient and the health care system may result from inappropriate decisions about when not to debride, when to refer to a specialist, or inappropriate selection of debridement method.<sup>10</sup> Involvement of the interprofessional team is important for safe patient care, to support positive outcomes, and to ensure efficient use of resources.<sup>9,14</sup>

#### 4 – EDUCATION & PRECEPTORSHIP (Level of Evidence IIb, IV-V)

Prior to initiating or performing debridement, successful completion of a rigorous curriculum-based wound management program followed by a separate competency-based education program for debridement is highly recommended for all nurses. The debridement education program should include theoretical and clinical preceptorship components. The need for clinical preceptorship may vary based on the method of debridement; however, a clinical preceptorship is recommended as being mandatory prior to independently performing CSWD.<sup>6,18</sup> All forms of debridement can carry high risk when initiated inappropriately; however, CSWD is considered high risk even when performed by nurses with appropriate knowledge, skills, and judgment.

- a. The theoretical component of a debridement education program should enable the learner to understand and describe:
  1. the wound healing process;
  2. parameters for wound bed preparation, including infection;
  3. indications, precautions, contraindications, risks and benefits for all debridement modalities;
  4. barriers to healing including biopsychosocial factors; and
  5. professional scope of practice standards and guidelines for controlled/restricted/reserved acts.
- b. The clinical preceptorship component should include self-reflective learning and is recommended once the theoretical portion has been completed prior to independently performing debridement. Regular updates such as skills labs or workshops, are recommended throughout the nurse's career.<sup>9,16</sup>

To achieve competency in CSWD specifically, the clinical preceptor for this component of the educational program should ensure the nurse is able to:<sup>17</sup>

1. understand when this method of debridement is most appropriate and safe to perform based on the comprehensive patient and wound assessment;
2. distinguish tissue types and avoid potential injury to underlying anatomical structures such as nerves, muscles, tendons, fascia, bone and vascular components that may not be visible beneath nonviable tissue;<sup>8,19</sup> and
3. manage adverse events such as bleeding, pain, anxiety or damage to underlying structures.

#### RATIONALE

The need for advanced educational preparation for nurses to perform CSWD is described throughout the literature. Specialized knowledge, skills, critical-thinking abilities, and competencies are essential components for the initiation and provision of safe and effective debridement.<sup>17,18,20,21</sup> Furthermore, it is reported that self-taught education alone did not provide sufficient foundation or training for nurses to safely perform CSWD.<sup>17,18</sup> All methods of debridement can have a high level of clinical risk which may result in patient harm and complications when performed by untrained nurses.<sup>18</sup> Essential competencies required to perform any method of debridement, and more specifically CSWD, safely can be achieved through a rigorous competency-based education and clinical preceptorship program and ongoing mentorship and clinical experience.<sup>16-18,20,22-24</sup>

In-depth knowledge of wound management is essential prior to enrollment in a competency-based debridement educational program. Prerequisite education is identified by the

successful completion of a rigorous curriculum-based wound management program including stringent outcome measures such as examination.<sup>25</sup> For further information regarding prerequisite wound management programs, please contact office@nswoc.ca.

Suggested components of a theoretical debridement education program are provided in **Appendix 4**.

The nursing skills checklist found in **Appendix 5** is a valuable tool for the nurse to verify the acquisition of skills required to develop debridement competencies. The nursing skills checklist part of the British Columbia Provincial Nursing Skin and Wound Committee: *Conservative Sharp Wound Debridement Educational Module* is included in the appendix with permission granted by the Connecting Learners with Knowledge (CLWK) project team.<sup>13</sup>

Successful completion of the theoretical component of an additional debridement educational program prepares the nurse for clinical preceptorship where they will gain practical debridement skills. A qualified and experienced preceptor provides the training and supervision required for the nurse to acquire the skills necessary to develop competency in debridement, and is essential prior to performing CSWD.<sup>13,17,20,26</sup>

**A qualified preceptor** is a health care professional who demonstrates the knowledge, skills, judgment, experience, and competencies to debride, including:

#### **KNOWLEDGE**

- the indications, precautions, and contraindications for methods of debridement being taught, including the mechanism of action, advantages and disadvantages, intended/unintended outcomes, risks and benefits.
- assessment and interpretation of patient and wound assessment findings to identify: wound etiology, biopsychosocial risks factors or barriers that impact healing, healing potential, realistic goals of care (healing, nonhealing, nonhealable) including patient goals and quality of life considerations, and the impact of chronic disease processes on wound healing;
- any required patient education for the debridement method including benefits, potential risk, and what to expect post debridement;
- pain assessment strategies and interventions to prevent and manage pain;
- requirements for obtaining and documenting informed patient consent;
- environmental safety considerations for the method of debridement being taught;
- infection prevention and control considerations including signs and symptoms of wound infection, availability of appropriate equipment to prevent infection and cross-contamination of the wound, patient, significant other and health care professional, type of sterile equipment required to perform a procedure and the Health Canada approved method of sterilization such as autoclave

to reprocess reusable equipment. Prevention of infection also includes the safe disposal of contaminated materials including, biological waste, contaminated dressings, sharps, and larvae;

- the wound healing process and the parameters for wound bed preparation;
- the anatomy of the area to be debrided;
- products and equipment required to perform debridement modalities, including manufacturer's instructions for use (IFU), mechanisms of action, benefits, precautions and costs associated with the debridement modality;
- legal liability considerations for the method of debridement being taught;
- provincial/territorial regulations, scope of practice, practice standards and guidelines for various categories of nurses regarding debridement methods; and
- organizational directives, policies, and procedures that direct requirements for debridement including practice limitations.

#### **TECHNICAL SKILLS AND EXPERIENCE**

- actively performs debridement at regular intervals as part of routine practice; and
- demonstrates the skills required for the debridement method being taught. For example, the use of scissors, scalpels and curettes for CSWD.

#### **CRITICAL THINKING AND JUDGMENT**

- strategies and resources required to prevent and manage potential complications and adverse events, including, but not limited to, bleeding, pain, anxiety or damage to underlying structures;
- when collaboration and consultation with the interprofessional team and/or a referral to a specialist is required; and
- ability to develop and implement an appropriate plan of care, including reassessment to evaluate outcomes such as wound progression or deterioration, treatment objectives, effectiveness of the debridement modality, the need to pursue alternate methods of debridement, or modify the care plan as required.

#### **EDUCATION**

Additional preceptor qualifications that are considered beneficial include:

- completion of a recognized curriculum-based wound management program and additional debridement educational program;
- regular reassessment of knowledge and clinical skills throughout their career such as participation in skills labs or workshops; and
- current examination in debridement (where available).

Every effort should be made to find a qualified preceptor for debridement within the profession of nursing; however, this may not always be feasible. In instances where exhaustive efforts have failed to identify a qualified nurse preceptor, other health care professionals who have the ability to initiate care below the dermis and demonstrated competency in debridement may be appropriate.

Nurses requesting preceptorship by a health care practitioner outside of the profession of nursing must establish expectations and make their scope of practice known to the preceptor prior to commencing any patient care under the guidance of the preceptor. Nurses must be aware of the scope of practice of the profession of the preceptor and ensure all care provided is restricted to their own professional nursing scope when performing CSWD as part of patient care. Nurses need to be aware of the limitations of their current scope of practice and only practice within their own scope during the preceptorship.

A clinical preceptorship by a qualified preceptor will enable the nurse to achieve competency and increase confidence in their ability to:

- distinguish and avoid potential injury to underlying anatomical structures that may not be apparent beneath nonviable tissue such as nerves, muscles, tendons, fascia, bone and vascular components in an area to be debrided;<sup>19,24</sup> and
- perform CSWD safely, avoid patient harm, and manage potential complications.<sup>8,10,16-20</sup>

The preceptor observes the preceptee's interaction with the patient and performance of debridement techniques to ensure the nurse has achieved the knowledge and skills to provide safe and effective patient care.<sup>17,18</sup> Competency is achieved when the nurse is able to demonstrate the application of appropriate knowledge, technical debridement

skills, critical-thinking abilities, and the management of adverse events in actual patient situations while being supervised by the preceptor.

Knowledge and skills include the ability to:<sup>10,13,17,18,20</sup>

- assess the patient and their wound to determine the most likely wound etiology, goals of care and wound healing potential;
- describe the indications and contraindications for debridement;
- identify strategies to prevent and manage potential adverse events;
- provide patient education regarding the debridement procedure including potential risks, benefits and normal outcomes post debridement;
- obtain informed consent;
- develop and apply an appropriate plan of care;
- identify anatomical structures and differentiate tissue types in the area to be debrided;
- evaluate outcomes;
- develop a reassessment plan; and
- demonstrate appropriate collaboration with the interprofessional team.

The preceptee and the preceptor determine the number of supervised demonstrations required to achieve a basic level of competency.<sup>14,18</sup> Competency is evaluated by the number of prompts or cues needed by the student to safely and effectively achieve each competency statement.<sup>18</sup> Some debridement educational programs in Canada recommend the use of a competency skills checklist as a guide to evaluate knowledge, debridement skills and to record ongoing education and training required to maintain skills.<sup>7,9</sup> A checklist is available in **Appendix 6** to assist preceptors to evaluate skills of the preceptee. The CSWD mentor skills checklist is reproduced with permission from Winnipeg Regional Health Authority (WRHA).<sup>7</sup>

Successful completion of a discipline specific competency-based examination in debridement, if available, is recommended to verify competency once the debridement course has been completed. Reexamination is recommended every 3-5 years to validate competency in debridement, including current knowledge, clinical skills, and is a requirement for CSWD in some provinces/territories.<sup>7,10</sup>

Nurses are accountable to maintain current knowledge and level of skills and to recognize limitations to their competency when practicing debridement.<sup>9</sup> Regular participation in continuing education seminars and skills workshops is recommended to maintain competency.<sup>9,17,20</sup> In addition, maintaining a record of the number and type of procedures performed in clinical practice is encouraged to evaluate ongoing competency to safely perform a procedure in addition to written examination.<sup>7,10</sup>

In Canada, there is a need for the development of national nursing competencies for debridement and a national standardized competency-based education program to provide the theoretical component and detailed checklist of requirements for the clinical preceptorship. This program would ensure knowledge translation related to best practices for debridement including current research and technological developments, legal and ethical issues, health and safety concerns for the patient and the nurse, advocacy, and strategies to facilitate safe patient outcomes.<sup>17</sup>

## **5 – PATIENT ASSESSMENT (Level of Evidence III-V)**

Prior to initiation of any method of debridement, the nurse must conduct a comprehensive patient assessment. Assessment include, but may not be limited to, a detailed medical and surgical history; psychosocial, environmental and system considerations; etiological/causative agents; intrinsic and extrinsic patient factors such

as current prescription and nonprescription medications; nutritional status; lab values; lifestyle factors; smoking history including vaping and recreational drug use; vascular assessment for wounds on the lower limb including an ankle brachial pressure index (ABPI), and or toe brachial pressure index (TBPI) (if ABPI results are unreliable); level of loss of protective sensation (LOPS); and, other tests that may impact the patient's level of risk and potential for wound healing.

## **RATIONALE**

Health care professionals must recognize the many intrinsic and extrinsic patient factors affecting wound healing. Ultimately, the patient's body must heal itself, so the purpose of the health care team is to optimize this natural process to prevent or heal a wound. Performing a comprehensive patient assessment is an essential first step toward wound healing. The assessment aims to gain an overview of the patient's medical conditions and factors that may impede healing. Once the nurse has assessed the patient, identified any underlying conditions affecting the ability to heal, interpreted results from appropriate tests (e.g., lab values, including glycated hemoglobin [HbA1c], hemoglobin [hgb], International Normalized Ratio [INR], prealbumin, C-reactive protein [CRP], platelet level), and perform a focused skin, wound and periwound assessment can a nursing diagnosis and wound healing goals be established with the patient. Wound healing is anticipated when there is adequate perfusion to the affected area and when underlying causative factors and the negative cofactors impacting wound healing can be alleviated or decreased. Patient risk factors such as poor nutritional intake or smoking should be identified in the patient assessment and optimized or managed as part of the plan of care. It is also important the patient understands the purpose of the assessment and is willing to participate in the care. If

the assessment determines there are underlying factors impacting the healing potential of the wound, it is important to provide the patient with the necessary information to mitigate or manage these factors. Providing an exhaustive list of requirements for a comprehensive patient assessment exceed the scope of this document; however, a summary of key considerations for patient assessment can be found in Table 1. Wounds with nonmodifiable cofactors such as in end-of-life care are often nonhealable and a plan of care should be developed to minimize the impact of the wound on the person. Refer to Table 3 in Recommendation 8, page 26, for further information on wound healing ability.

**Table 1**  
*Summary of key considerations for the patient assessment*

ASSESSMENT	RATIONALE
<b>PATIENT ASSESSMENT</b>	
<ol style="list-style-type: none"> <li>1. Patient's understanding of the wound and its ability to heal based on the assessment.</li> <li>2. Patient's preference, cultural values and ability or motivation to participate in the established plan of care.</li> <li>3. Impact on social or financial status, quality of life, or environment.</li> <li>4. Availability of support system to manage biopsychosocial concerns.</li> </ol>	<ul style="list-style-type: none"> <li>▪ For the care plan to be effective, the patient and/or family must understand the treatment and agree on goals of care.<sup>7</sup> For success, the patient needs to be an active member of the team and participate in their care.</li> <li>▪ Ensuring systems are in place to manage the impact the wound has on lifestyle factors will set the patient up for success and prevent situations where depression may be of concern.<sup>26</sup></li> </ul>
<b>RISK FACTORS FOR DELAYED WOUND HEALING</b>	
<ol style="list-style-type: none"> <li>5. Hypotension, angina, myocardial infarction (MI), chronic obstructive pulmonary disease (COPD), cancer, heart failure, anemia, or renal disease.<sup>26,27</sup></li> <li>6. Peripheral arterial disease (PAD).<sup>28-31</sup></li> <li>7. Diabetes, autoimmune diseases, immunosuppression, and advanced age.<sup>29</sup></li> <li>8. Spinal cord injury, spina bifida, multiple sclerosis, muscular dystrophy, and cerebrovascular accident.<sup>28</sup></li> <li>9. Medications that interfere with wound healing (e.g., nonsteroidal anti-inflammatory drugs (NSAIDs), antineoplastics, systemic corticosteroids, anticoagulants, platelet inhibitors and vasopressors).<sup>31</sup></li> <li>10. Medical conditions such as venous (edema) and/or arterial (ischemia) insufficiency, inflammatory conditions such as vasculitis and rheumatoid arthritis, bleeding disorders, other forms of heart disease, anemia, renal failure (especially those undergoing hemodialysis), cancer, and end of life.<sup>26,31,32</sup></li> <li>11. Radiation and/or chemotherapy used in cancer treatments.<sup>26</sup></li> <li>12. Lifestyle factors such as substance use, including illicit drugs, alcohol and tobacco, poor personal hygiene, lack of exercise or immobility.<sup>26-29</sup></li> </ol>	<ul style="list-style-type: none"> <li>▪ Many of these underlying disease process decrease the amount of oxygen and nutrients available for delivery to the wound. This occurs at the cellular level. All wounds need oxygen and nutrients to heal.</li> <li>▪ The skin changes and thins as age increases increasing the risk of superficial tears and traumatic wounds.</li> <li>▪ Comorbidities that reduce the level of perfusion have a similar result in that oxygen and nutrients are not being delivered to the site of injury.</li> <li>▪ Impaired immune function and status, LOPS, and impaired mobility increase the risk of traumatic wounds.<sup>7</sup></li> <li>▪ Medications can interfere with wound healing by interfering with clot formation or platelet function, the inflammatory response and cell proliferation in the wound causing delayed healing.<sup>34</sup></li> <li>▪ A detailed assessment of risk factors is necessary to determine if precautions or contraindications to CSWD are present.</li> <li>▪ Radiated tissue can be fibrotic and friable.<sup>26</sup></li> <li>▪ Smoking causes vasoconstriction, platelet adhesiveness resulting in microvascular occlusion and carbon monoxide attachment to red blood cells reducing the cell's capacity to carry oxygen and impairing the healing process.<sup>35</sup></li> </ul>

**ASSESSMENT****RATIONALE****RISK FACTORS FOR DELAYED WOUND HEALING**

- |  |   |
|--|---|
| <p>13. Obesity, poor glycemic control, low body weight, cachexia.<sup>28</sup></p> <p>14. Nutritional deficits including dehydration, certain diets and prolonged nothing by mouth (NPO) status prior to surgery. Low protein and caloric intake, and in situations where the patient continues to diet as a form of weight loss.<sup>33</sup></p> | <ul style="list-style-type: none"> <li>▪ Inadequate intake of macro and micronutrients results in impaired wound healing processes such as the formation of new blood vessel, fibroblast production, cross-linking, and wound remodeling. It also reduces leukocyte phagocytosis and increases the risk of acquiring infection.<sup>33</sup></li> </ul> |
|--|---|

**LOWER LIMB ASSESSMENT**

- |  |   |
|--|---|
| <p>15. A lower limb assessment (LLA) should be mandatory for all wounds located on the lower limb or foot regardless of etiology.<sup>27-29,36</sup></p> <p>16. The LLA should include a visual inspection to differentiate signs of ischemia, vascular assessment including pulses, capillary refill, ABPI, TBPI and photoplethysmography (PPG), if available. If not available, consider potential benefit of a bilateral lower extremity angiogram and a referral to a vascular surgeon. Pain history and structure of the limbs should also be assessed.</p> <p>17. When assessing the foot of a person with diabetes or nondiabetes related neuropathy, a LOPS test should be conducted using a 10g monofilament.</p> | <ul style="list-style-type: none"> <li>▪ Assessing the circulation and level of perfusion to the lower limb is essential for any decisions related to the plan of care.</li> <li>▪ Presence of pulses in the foot may not be a reliable indicator of perfusion due to calcification especially if the person is diabetic.</li> <li>▪ Limbs without adequate perfusion should not be treated using moist wound healing and require a referral to a vascular surgeon.</li> <li>▪ Performing any type of debridement from autolytic through moist wound healing to CSWD in a limb that does not have adequate perfusion can result in deleterious outcomes such as infection, amputation, loss of limb or life.</li> </ul> |
|--|---|

**PAIN**

- |  |  |
|--|--|
| <p>18. Identify whether acute wound pain exists versus chronic pain and further identify the type of pain (i.e., vascular versus neuropathic).</p> <p>19. Use a validated pain assessment tool such as numeric rating scale to allow the patient to subjectively score their pain.</p> <p>20. Consider the onset and duration of pain with each dressing change and provide appropriate analgesia.</p> <p>21. Identify the source of pain such as venous, vascular, or infection related pain.</p> | <ul style="list-style-type: none"> <li>▪ It is important to differentiate between different types of pain as there are many ways to treat pain and each type of pain may require a different type of treatment.</li> <li>▪ Using a validated pain assessment tool will reliably indicate a pattern as to whether the pain is getting better, worse or staying the same.</li> <li>▪ Identifying the source of pain can provide information on what the major concern is at that moment (e.g., pain in an otherwise insensate foot with erratic glucose control is an emergency situation).</li> <li>▪ Uncontrolled pain has been known to impact wound healing.<sup>29</sup></li> </ul> |
|--|--|

## 6 – WOUND ASSESSMENT (Level of Evidence IV-V)

In addition to the comprehensive patient assessment, a comprehensive wound and periwound skin assessment using a validated assessment tool (where available) is recommended to assist the nurse in identifying the wound etiology, stage/categorize/grade the wound, and identify barriers to healing. Use of standardized validated assessment tools will facilitate consistent assessment, documentation and communication between assessors and enable evaluation of wound outcomes over time. Debridement of any kind is contraindicated for adherent dry eschar on heels, ischemic limbs, toes, and digits. An urgent referral for surgical debridement is recommended for unstable eschar when acute infection or sepsis is suspected and if aligned with the goals of care.<sup>10-12,26</sup>

### RATIONALE

The combination of information obtained from the comprehensive patient assessment and wound assessment findings, including current and previous wound history will provide a foundation to aid in the identification of wound etiology and/or complicating factors and determine the goals for wound management including debridement.

Wound assessment requires the consistent and regular use of validated assessment and documentation tools to record baseline wound features and to monitor wound changes over time.<sup>24</sup> Standardizing assessment ensures consistent information is described during each assessment. Information collected during the assessment will provide a uniform method to communicate wound findings to other assessors including the interprofessional team and patient. It also provides a method to monitor treatment effectiveness, wound healing progression or deterioration, debridement outcomes, and the need for alterations to the plan of care.<sup>7,9,28,37</sup> All nurses caring for a patient with a wound must be

able to conduct a comprehensive wound assessment to ensure accurate interpretation of the findings and to develop, implement and evaluate the treatment plan and debridement outcomes.<sup>9</sup>

The comprehensive patient and wound assessment assists the nurse to identify underlying conditions that may increase risk factors associated with debridement, recognize factors that impact healing, and determine the appropriateness of debridement including the recommended method of debridement. Ongoing evaluation of the treatment plan at each dressing change is important to identify subtle variations in assessment findings, unintended outcomes, the need for further debridement, or benefits of an alternate intervention.<sup>7,9,21,37,38</sup> In addition, lack of wound progression improvement or wound deterioration may provide clues as to underlying conditions such as ischemia, inflammation, infection or others.<sup>7,9,37</sup>

A comprehensive wound assessment should include all core nursing assessment parameters including observation, inspection, percussion and palpation and documentation using consistent assessment methods and terminology to describe wound features.

Providing a complete and exhaustive list of the many assessment requirements for wounds is beyond the scope of this document; however, key points for conducting a comprehensive wound assessment as it pertains to debridement include:

- **etiology**—history of current and previous wounds, causative and contributing factors; pressure, vascular, inflammatory, malignancy or others;<sup>7,28</sup>
- **goals**—healing, nonhealing or nonhealable;
- **anatomical wound location and wound shape**—include proximity to vascular grafts, prostheses or dialysis fistulas.<sup>7,26</sup> Ischemic ulcers may have a round punched out

appearance whereas a venous leg ulcer may have an irregular shape. Awareness of wound location and shape may assist in identification of wound etiology;

- **size (volume or surface area)**—measure surface area or wound volume using a consistent method such as longest length by widest width at right angles (plus depth if measuring volume). Tracings, digital and computer technologies, and photographic methods may be useful. Regardless of the method used, it is important all assessments use a consistent method and the patient is in the same position for each assessment. Referencing using head to toe may be useful. Increases in wound size and depth may be a normal expectation post debridement.<sup>7,37</sup> Debridement may identify undermining, tunneling, and sinus tracts which also require measurement and documentation;<sup>37</sup>
- **depth**—debridement enables evaluation of the wound extent.<sup>7</sup> Probing to bone may identify potential osteomyelitis in DFU;<sup>7,28</sup>
- **wound base**—colour, type and amount of each tissue type; devitalized tissue, granulation tissue, and epithelial tissue.<sup>37</sup> Estimate the percentage amount of each tissue type to monitor treatment effectiveness. Necrotic tissue may impair assessment of the entire wound base.<sup>7</sup> Additional findings may include foreign body, hematoma, mesh, internal sutures, exposed bone, fascia, arteries, ligaments, or tendons.<sup>7,10,21</sup> Debridement must proceed with caution to avoid injury to underlying structures that may become exposed during debridement.<sup>7,9,19,37,39</sup> Assess the attachment and demarcation of nonviable tissue.<sup>7,37</sup>  
*Note.* CSWD is contraindicated if the junction between viable and nonviable tissue is not clearly identifiable.<sup>13</sup>  
*Note.* Debridement of firm eschar or soft slough is recommended for wounds that are healable.<sup>6,22,31</sup> Dry eschar on heels,

digits/toes and ischemic limbs should be kept dry, free from moisture and debridement avoided unless the eschar becomes unstable or there is evidence of infection.<sup>10-12,26</sup>

- **exudate**—assess amount, type, and odour. Assessment of the old dressing, wound and periwound skin provides clues regarding the amount of exudate. Also consider the impact of products and frequency of dressing replacement in the evaluation of the exudate amount and type.<sup>7,37</sup> Exudate may increase during the initial phases of autolytic debridement, or with increased bioburden or infection;
- **odour**—chronic wounds may have a wound odour therefore assess for new or change in wound odour after the wound has been cleansed. Consider the impact of products and frequency of dressing replacement when assessing wound odour;<sup>7,28</sup>
- **periwound skin**—assess skin within 10 cm from the wound edge: intact, colour (consider the impact of darker skin tones), erythema (blanchable or nonblanchable), maceration, callous (location), irritation, erosion, denuded, temperature variance from normal skin, secondary infection, rash (candidiasis, dermatitis), edema: pitting or nonpitting, induration; crepitus;<sup>37,40</sup>
- **edge**—area is indistinct with poorly defined; superficial, attached or unattached to wound base, edge is flat, epibole, hyperkeratotic (callous), fibrotic, advancing or nonadvancing;<sup>37</sup>
- **pain**— record the presence of pain, characteristics of pain, contributing factors and the plan for pain management. New pain or increasing pain especially in an insensate area is a potential warning sign of wound deterioration or increasing bioburden.<sup>37</sup> Use of a validated pain assessment tool enables consistent assessment of wound related pain; and
- **infection**—differentiate between

inflammation, local, spreading or systemic wound infection.<sup>41</sup> The classic signs of inflammation include delayed or lack of healing, redness, warmth, swelling and pain.<sup>37</sup> Signs of localized infection may be difficult to identify in patients with dark skin tones and in conditions that decrease the inflammatory and immune response such as in the elderly, persons with rheumatoid arthritis, diabetes, areas with diminished sensation and compromised perfusion, or with use of immunosuppressive medications such as steroids, and chemotherapy.<sup>7,10,24,31,37,42</sup> Patients with diabetes, increased pain, erratic blood sugars and flu-like symptoms may be indications of sepsis which require urgent interventions. The patient's overall health status is a key factor that impacts changes in the wound status from contaminated to infected.<sup>37</sup> Refer to Table 2 for signs and symptoms associated with the wound infection continuum.<sup>41</sup>

**Note.**

Debridement may be contraindicated in an infected wound.<sup>10</sup> Prior to debridement the plan should be reviewed with the primary care physician or nurse practitioner to ensure that debridement is appropriate and to assess the need for antibiotics.

**Table 2**

*Signs and symptoms associated with stages of the wound infection continuum<sup>41</sup>*

<b>CONTAMINATION</b>	All wounds may acquire microorganisms. If suitable nutritive and physical conditions are not available for each microbial species, or they are not able to successfully evade host defences, they will not multiply or persist; their presence is therefore only transient and wound healing is not delayed.
<b>COLONIZATION</b>	Microbial species successfully grow and divide, but do not cause damage to the host or initiate wound infection.
<b>LOCAL INFECTION</b>	<p>Covert (subtle) signs of local infection:</p> <ul style="list-style-type: none"> <li>▪ hypergranulation (excessive vascular tissue);</li> <li>▪ bleeding, friable granulation;</li> <li>▪ epithelial bridging and pocketing in granulation tissue;</li> <li>▪ wound breakdown and enlargement;</li> <li>▪ delayed wound healing beyond expectations;</li> <li>▪ new or increased pain; and</li> <li>▪ increased malodour.</li> </ul> <hr/> <p>Overt (classic) signs of local infection:</p> <ul style="list-style-type: none"> <li>▪ erythema;</li> <li>▪ local warmth;</li> <li>▪ swelling;</li> <li>▪ purulent discharge;</li> <li>▪ delayed wound healing beyond expectations; new or increasing pain;</li> <li>▪ increasing malodour.</li> </ul>
<b>SPREADING INFECTION</b>	<p>Extending in duration +/1 erythema</p> <ul style="list-style-type: none"> <li>▪ lymphangitis;</li> <li>▪ crepitus;</li> <li>▪ wound breakdown/dehiscence with or without satellite lesions;</li> <li>▪ malaise/lethargy or nonspecific general deterioration;</li> <li>▪ loss of appetite;</li> <li>▪ inflammation, swelling of lymph glands.</li> </ul>
<b>SYSTEMIC INFECTION</b>	<ul style="list-style-type: none"> <li>▪ severe sepsis;</li> <li>▪ septic shock;</li> <li>▪ organ failure;</li> <li>▪ death.</li> </ul>

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## 7 – ENVIRONMENTAL ASSESSMENT (Level of Evidence IV-V)

Assess the patient's environment to ensure the setting is safe to perform the debridement modality. Prior to the initiation of CSWD resources and personnel must be available during and post the procedure to manage and monitor for potential adverse events such as bleeding, pain, anxiety, damage to underlying structures or loss of consciousness. The nurse should also:

- a. evaluate the patient's environment for cleanliness, adequate lighting, the ability to position the patient to ensure visibility of the wound, patient comfort and to avoid physical strain for the health care professional performing debridement. Also ensure that adequate uninterrupted time is available to perform the procedure;<sup>7,25,40</sup>
- b. assess for the type of sterile equipment required such as single-use sterile disposable supplies or reusable equipment with a Health Canada approved method of sterilization such as autoclave to reprocess the medical equipment;
- c. ensure that appropriate equipment is available to prevent infection and cross-contamination of the wound, patient, family and health care professional; and
- d. ensure the safe disposal of contaminated materials, including, but not limited to, biological waste, contaminated dressings, sharps, and larvae.

### RATIONALE

Nurses proficient in debridement should be able to recognize when the initiation of each method of debridement is appropriate, or when to order debridement to prevent suboptimal care such as delayed wound healing, wound pain, infection, and decreased quality of life. Patients should receive the most appropriate form of debridement at the time they need the devitalized tissue removed.<sup>43</sup> Nurses must ensure patient safety at all times for

positive clinical outcomes. Referral to other disciplines should be offered and accessible to every patient to assist with the patient's plan of care, reduce pain and prevent complications.<sup>9,19,36,43-48</sup>

All organizations involved in the delivery of wound care in any health care sector including acute care, LTC, primary care, and home and community care should have debridement resources and policies available based on current evidence. The decision to debride should be made only after detailed information about the method of debridement have been communicated and understood by the patient and family. Obtaining informed patient consent for the debridement procedure is imperative.<sup>9,39,47,49-51</sup>

There should be a debridement checklist and pathway for debridement available in each health care setting. Refer to an example in **Appendix 3**. The patient should be informed of the type of debridement, credentials and skill of the clinician, available resources, and normal expectations post debridement including risks and benefits associated with the delivery of debridement in their respective setting. The patient and family should be empowered to make a decision to proceed based on the information provided and their own personal goals of care and individual needs.<sup>9,10,39,43,47,50</sup> The debridement option selected is also determined by patient location. For instance, a setting without access to emergency services such as in the patient's home may require a more conservative approach to debridement. Practice within the home and community care sector may limit access to equipment, sterilization of instruments, surgical support or anesthesia.<sup>9,19,39,44,49,51</sup> If the home is the only viable option for the patient to receive debridement, it is imperative the nurse assess the environment to ensure the availability of potable water and a clean uncluttered space

to perform the act. This includes adequate lighting, a clean surface and workspace, privacy for the patient, removal of pets from the area, an appropriate method of disposing of any sharps, and the ability to position the patient to enable visualization of the wound without causing strain or skeletal injury to the nurse or discomfort to the patient. Maintaining overall cleanliness will prevent infection and cross-contamination.<sup>36,45,48</sup> Socioeconomic status must also be considered with choice of debridement as patients with lower socioeconomic status have demonstrated higher risk of infection, malnutrition, substance misuse, and issues with adherence.<sup>39,43,47,49,51</sup>

In some instances, debridement may require time in an acute care facility. This can be through an outpatient clinic setting, or a hospital admission, when ongoing surgical debridement is needed or when the required resources are not an option in the community.<sup>39,47,51,52</sup> Patients with unstable clotting factors, malignant wounds, vascular compromise, and wounds in areas of high risk such as the hands, joints, and face require debridement in an acute care setting where access to specialists can be immediately available.<sup>9,42,44,49,52</sup> Some patients in the community may request a virtual assessment to determine the most appropriate environment for debridement.<sup>9,10,19,47,50,51</sup>

**Table 5** in **Section 2**, page 48, summarizes the indications, contraindications, advantages and disadvantages of the different debridement modalities.

Sterile instruments are required for CSWD. Items that must be sterile include the dressing tray, drapes, scissors, forceps, scalpels, and curette. If there is more than one wound or area requiring debridement it would be important to have multiple sterile instruments to avoid cross-contamination of the wounds.<sup>42,46,48,53</sup> The area including the skin around the area should be cleansed well

with an antiseptic solution prior to debriding any tissue. Do not reuse cleansing cloths or double dip in the container of solution as this will cause cross-contamination. Use of a dedicated collection device such as a bowl or alternate to collect irrigation fluid or solution is recommended when a dressing tray is unavailable.<sup>36,46,53</sup>

Ensure meticulous hand hygiene is performed prior to the donning of appropriate personal protective equipment. Sterile gloves are recommended to avoid potential contamination when performing CSWD. Additional benefits include proper sizing to ensure a tight fit enabling better control of the instruments. Other items that may be warranted include mask, goggles, and gown.<sup>9,45,46,48,53,54</sup>

The circumstances for CSWD outside of an acute care institution are discussed in more detail in **Section 3**, page 57.

It is imperative nurses be familiar with current methods and regulations for sterilization. Additionally, nurses who are self-employed and employers should ensure there is a policy and procedure outlining the steps required for reprocessing medical equipment that is consistent with guidelines and processes set out by the Public Health Agency of Canada (PHAC).

## **8 – WOUND HEALING GOALS** (Level of Evidence IV-V)

Prior to the initiation of any method of debridement it is essential to establish realistic goals that align with the patient's goals for wound care and the goals for wound healing (healing, nonhealing/maintenance, nonhealable). Use a patient- /family-centred approach to collaborate with the interprofessional team (including the patient and significant others) to ensure respect for patient concerns, culture and traditions and to identify risk factors that may impact healing goals.

## RATIONALE

Information obtained from the comprehensive evaluation of the patient, the wound, and the patient's environment will assist the nurse to collaborate with the interprofessional team including the patient to establish realistic goals for wound care including decisions regarding debridement. Discussion should include internal and external barriers to healing such as wound etiology, perfusion status for wounds on the lower extremities, lifestyle factors such as activity level, mobility, smoking and diet, debridement options including potential risks and benefits, and quality of life considerations. Patient education and support enables the patient and family to make informed decisions and incorporate their cultural values and practices into the plan of care. Inclusion of the patient and family goals for wound care will increase the likelihood the patient will accept and adhere to the plan of care. The patient's goals may not be for wound healing, rather for relief from pain and discomfort, independence with activities of daily living, increased mobility, control of wound symptoms such as odour and exudate, financial concerns, social isolation, or depression and anxiety related to living with a wound.<sup>37</sup> The patients' health status, lifestyle choices, and availability of resources will impact the achievement of wound healing goals. If these factors cannot be modified then the goals for wound healing may not be attainable and the wound may be deemed difficult to heal (nonhealing) even when the wound has the physical capacity to heal.<sup>24,27</sup> If the goal is not for healing then conservative interventions are often recommended.

Wound management goals are guided by assessment findings. Goals are described as healing, nonhealing or nonhealable as outlined in Table 3.<sup>7,37,24</sup>

**Table 3**

*Factors affecting the ability of wounds to heal*

HEALING WOUND	NONHEALING WOUND (MODIFIABLE FACTORS)	NONHEALABLE WOUND (NONMODIFIABLE FACTORS)
<ul style="list-style-type: none"><li>adequate perfusion;</li><li>causative factors identified and managed;</li><li>debridement indicated;</li><li>patient factors managed;</li><li>comorbidities managed;</li><li>debridement acceptable to patient; and</li><li>appropriate treatment and resources available.</li></ul>	<ul style="list-style-type: none"><li>inadequate perfusion until revascularization occurs;</li><li>patient unable or unwilling to follow the recommended treatment plan at the time;</li><li>appropriate resources not available at the time;</li><li>medical conditions not optimized at the time; and</li><li>lack of patient consent for debridement.</li></ul>	<ul style="list-style-type: none"><li>inadequate perfusion with no ability for revascularization;</li><li>malignant wound;</li><li>disease process impairs healing;</li><li>patient and medical factors impair healing; and</li><li>debridement not appropriate.</li></ul>

**Goals for healing wounds:** Candidate for all debridement options such as surgical, conservative sharp, autolytic, mechanical, enzymatic, or biological. Goals are for the prevention and management of infection and promotion of moist wound healing.<sup>24,37</sup> Wound healing may become stalled due to prolonged inflammation which may occur as a reaction to a foreign body or other factors that contribute to rising levels of matrix metalloproteinases (MMPs). High levels of MMPs increase inflammation resulting in degradation of growth factors, increased senescent cells, rising bacterial levels and biofilm development.<sup>37</sup> Interventions such as CSWD may be required to remove senescent cells and biofilms to reduce inflammation and stimulate healing for wounds where progression has stalled.<sup>37</sup>

**Goals for nonhealing wounds:** Healing may be impaired by factors such as inadequate tissue perfusion, patient lifestyle choices, lack of required resources, lack of consent for treatment or lack of support. Multiple comorbidities such as neuropathy, edema, excessive pressure on the skin, inadequate protein intake, coexisting disease, skin aging, and interactions of some medications may impair wound healing potential.<sup>37</sup> Difficult or slow healing wounds are classified as nonhealing wounds which have the ability to heal if the factors contributing to nonhealing can be modified or resolved.

Interventions include support for the patient to eliminate or modify factors that impair healing, conservative debridement with the use of topical antiseptics to control bacteria, and moisture reduction to stabilize necrotic debris until factors that impair healing can be optimized.<sup>37,55</sup> A referral to a specialist may be recommended to manage underlying issues such as nutritional deficits, inadequate off-loading or assessment for potential surgical revascularization to improve perfusion.

**Goals for nonhealable wounds:** When factors contributing to nonhealing cannot be modified such as when perfusion cannot be optimized or with wound etiologies such as malignant wounds then goals are described as nonhealable wounds and the focus is on providing a supportive conservative approach and promoting quality of life.<sup>24,37</sup>

Goals may include providing patient comfort, management of wound symptoms, reduction of bacterial burden through use of antiseptics, potential conservative debridement of necrotic tissue to reduce bulk, odour and exudate management, and reduction of moisture to maintain and promote drying of devitalized tissue to reduce the risk of external contamination and to delay and manage wound deterioration.<sup>10-12,24,26,37,55</sup> Care for palliative patients may include goals for nonhealable wounds, but also could be for nonhealing or even wound healing.<sup>37</sup>

Goals for wound management and debridement are determined by evaluation of information obtained from the patient and family including goals, the wound assessment findings and consultation with the interprofessional team. Patient acceptance of the plan of care is essential to support adherence to the plan and achievement of wound goals.

## **9 – INFORMED CONSENT (Level of Evidence V)**

Informed consent should include legal and ethical considerations, organizational requirements, and should be obtained for all forms of debridement. While written consent may not be required in all instances, the method used to obtain informed consent and the patient's response must be documented in the patient's record.

## RATIONALE

Consent is generally either implied or expressed verbally or in written form. Expressed consent by the patient, and/or the legal guardian/power of attorney, is part of care provision when performing debridement. Informed consent is the process by which the nurse and other health care professionals disclose appropriate information to a competent patient so the patient can make a voluntary choice to accept or refuse treatment.<sup>13,56</sup> Expressed consent should be obtained for all forms of debridement and must be obtained for CSWD, as it may cause pain and carries a significant risk for the patient. The adequacy of the explanation by the health care provider is determined by the *reasonable patient* standard; whereby, the health care professional provides all information that one would expect to hear in that patient's situation prior to giving consent.<sup>57</sup> Information empowers the patient to make informed decisions about the course of treatment and debridement methods enabling them to be a full partner in their care.<sup>6</sup> When patients understand the reason for their treatment, including the associated benefits and risks, they are more likely to participate in and adhere to the plan of care.<sup>48,56</sup> Some argue that "not obtaining consent results in legal ramifications such as negligence of trespassing."<sup>58</sup>

Informed consent includes discussion and disclosure of the following information:<sup>6,13,48,56</sup>

- a description of the type of debridement, how it is performed, and what type of products and/or equipment are used to achieve desired results;
- what to expect before, during, and after the procedure (e.g., length of treatment time, potential increase in wound size, and patient education regarding aftercare);<sup>6,48</sup>
- alternative methods of treatment;<sup>48</sup>

- the benefits of debridement for the patient;<sup>6,7,26,48</sup>
  - removes devitalized tissue quickly;<sup>6</sup>
  - reduces the risk of infection;<sup>6</sup> and
  - promotes healing.
- risks to the patient associated with debridement;<sup>6,7,26,48</sup>
  - may cause treatment related pain and bleeding;<sup>6,7</sup> and
  - can cause damage to underlying structures such as tendons, fascia, ligaments, muscle and bone.
- explanation to ensure the patient understands they can request to stop the procedure at any time.

For consent to be valid, the person giving the consent must understand the information provided and be capable of giving consent. If the patient is not competent to give consent a family member, patient representative, substitute decision maker or significant other who is aware of the patient's situation and has received appropriate information can agree to the procedure on behalf of the patient.<sup>7,10,56</sup> The form of expressed consent required should be identified in the employer/organizational/agency policy and, regardless of method, must always be documented in the patient's record.<sup>59</sup> Nurses recognize and support a capable person's right to refuse or withdraw consent for care or treatment at any time. Nurses recognize that capable persons receiving care may place a different weight on individualism and may choose to defer to family, cultural expectations or community values in decision making while complying with the law of consent.<sup>60</sup>

## 10 – PRODUCT KNOWLEDGE (Level of Evidence V)

Nurses must be knowledgeable about wound care products and therapies used both above and below the dermis prior to use in practice. This knowledge includes the manufacturer's instructions for use, mechanisms of action, benefits, precautions, contraindications and approval for product use by Health Canada. Product usage that does not adhere to the approved guidelines for use is considered to be *off-label use* and is not recommended, as it exposes the patient to unknown risks and the health care provider to potential sanction.

### RATIONALE

There is an ever-expanding list of dressings and therapies available for use in wound care. It is imperative nurses know and understand the mechanism of action of the products they are using to treat wounds as each product will impact the wound in its own way. When selecting the most appropriate method of debridement, nurses must take into consideration the goal of treatment (healing, nonhealing or nonhealable); the needs and risk factors of the patient; the wound characteristics including level of bioburden; current phase of wound healing; indications, precautions, and contraindications; overall product and service utilization cost; product availability; ease of use for the nurse and the patient or family caregiver including ease of application and removal; and, compatibility with the patient's lifestyle including quality of life. Studies have shown appropriate dressing selection can improve patient outcomes, decrease pain with dressing changes and increase cost-effectiveness.<sup>34,55</sup> Nurses also need to be aware of institutional product availability and the policies and procedures for the application of specific dressings or dressing selection in general. Knowledge of Health Canada's approval and licensing process for wound care products is beneficial for nurses involved in procurement. This is especially important since the majority of

advanced wound care products perform an action directly on the wound bed, such as facilitating autolytic debridement, so even generalist nurses need to be very cautious when choosing products to dress the wound.

## 11 – REASSESSMENT (Level of Evidence IV-V)

Regular reassessment of the patient and the wound is imperative. Reassess the patient for changes in health status and potential adverse responses to wound interventions such as pain. Reassess the wound for indications of progress or deterioration, and review the treatment objectives to evaluate the effectiveness of the debridement modality, the need to pursue alternate methods of debridement and to facilitate modifications to the care plan as required.

### RATIONALE

Nursing competency for debridement not only includes the ability to assess and perform the skill, but also evaluation and reassessment of the plan of care.<sup>17</sup> Ongoing and regular reassessment of the wound is important to evaluate if the chosen method of debridement is meeting the goals identified by the treatment plan, the interprofessional team and the patient.<sup>10,31</sup>

Reassessment frequency should be determined by the nurse initiating or ordering the debridement and based on the patients' response to the treatment and wound status. Additionally, nurses should not change the care plan until sufficient time has elapsed to allow for the treatment effect to occur. If reassessment of the wound identifies minimal or lack of progress, or wound deterioration, the current plan of care may require adjustment.

Reassessment should include all components evaluated during the initial assessment. Indicators of wound progression may include a decrease in wound size or surface area, higher percentage of healthy granulation tissue, and

advancing epithelial edge; whereas, some signs of wound deterioration may include increased size, increased exudate, increased amounts of necrotic tissue, or pain. Increased exudate and pain may be indicative of an increased bioburden or infection.<sup>31</sup>

Reassessment also includes evaluation of the patients' candidacy for an alternate method of debridement, such as in a nonhealing wound when the barriers to healing may have been addressed. For example, when a patient with limited perfusion has undergone revascularization and now has sufficient blood flow to support healing therefore the use of more aggressive methods of debridement may now be appropriate. It is also important to assess for changes in the patients' health status such as an acute illness or hospitalization which may impact healing and require alterations in the treatment plan or a referral to a specialist on the interprofessional team.<sup>31</sup> Patients with ulcers located on the lower limbs require reassessment every 4 weeks at a minimum as signs of wound progression should be evident during this timeframe.<sup>31</sup> A scoping review of international guidelines on venous leg ulcers advise reassessment of ABPI should be performed at 12 weeks if there is no healing progression and thereafter at 12-week intervals.<sup>61</sup>

Lastly, reassessment ensures products are being utilized appropriately to support debridement and to facilitate healing.

## **12 – COST-EFFECTIVENESS (Level of Evidence IV-V)**

Ensure all associated costs are considered before selecting the method of debridement. This includes costs for the health care system, the employer or organization, the nurse, the patient and family.

## **RATIONALE**

While clinical need should be at the forefront of any decision made with regards to delivery of care, the cost of certain procedures may need to be taken into account. These may include costs associated with the environment for the debridement such as hospitalization and surgical costs, products and equipment costs including the frequency of product application and replacement and the management of potential complications such as pain and bleeding. Cost considerations also include utilization costs such as frequency and duration of nursing time/visits, transportation costs between sectors such as LTC to hospital or home to hospital and costs for the patient such as transportation to and from appointments and the cost of parking. There may also be costs for the health care professional to supply their own equipment for debridement.

There are various forms of debridement to consider when assessing the patient and their wound. While the cost of material for certain methods of debridement may be low, they may take longer to effectively debride the wound than others which drive up costs associated with increased duration of treatment and stay on services. For instance, as more advanced wound care products intended to facilitate debridement become available, health technology assessments are showing them to be more cost-effective than traditional gauze because of the decrease in nursing resources.<sup>48</sup> Enzymatic debridement agents may increase the cost of care as they also require a prolonged period of time to be effective which requires an increased length of nursing care. For patients without access to a third-party payer these products can be an expensive cost. Biological debridement is associated with higher costs compared to autolytic and enzymatic debridement; however, it has several advantages including quick wound debridement, elimination of infection,

reduction in pain and overall faster healing rates.<sup>31</sup> Surgical debridement is costly considering it requires a surgeon and possible operating theatre; however, it is the fastest way to remove all devitalized tissue and can lead to better healing rates thereby reducing overall costs to the health care system. Risk of infection associated with the type of debridement is an important consideration as there are significant costs associated with certain antibiotics and their methods of administration.

Regardless of the method of debridement it is important to remember what may be cost-effective for one patient may not be for another as each wound and patient scenario is different.<sup>48</sup> Similarly, one product considered to be cost-effective in one setting may not be in another setting. The use of a higher cost product or therapy is only beneficial if it improves clinical outcomes or decreases costs associated with the delivery of care such as nursing time. In some instances, a patient's financial status may lead to suboptimal care choice by the patient and family when there are costs associated with transportation and parking at a local hospital. This may lead to the patient receiving more conservative debridement in the home versus much needed more aggressive debridement in a hospital setting by a surgeon.

In Canada, over 50% of home care visits alone are directly related to wound care. Increasing access to nurses with the ability to initiate and perform more advanced methods of debridement would greatly reduce overall costs associated with prolonged length of stay on service, and nursing utilization while providing better overall resource allocation and increased patient satisfaction.<sup>30</sup>

# SECTION 2

## MODALITIES OF DEBRIDEMENT

### THE RATIONALE FOR DEBRIDEMENT

Acute wounds should proceed through the four phases of wound healing (hemostasis, inflammation, proliferation, and remodeling) in a normal, timely, orderly sequence. However, if the underlying cause of the wound or existing cofactors negatively affecting healing are not identified and adequately addressed, wounds can become stalled. Such wounds are often referred to as complex hard-to-heal, or nonhealing wounds.

The presence of nonviable tissue is a well-known factor negatively affecting wound healing. Nonviable tissue is not only a physical barrier to wound closure (preventing granulation, contraction, and reepithelialization); it can also harbour bacteria increasing the risk for wound related infection.<sup>37,62-64</sup> The removal of nonviable tissue including cellular and metabolic waste, senescent fibroblasts and epithelial cells, biofilm, and chronic wound fluid by wound debridement creates a viable wound base, facilitating timely wound closure. Wound debridement may also enable adequate visualization of the wound bed, wound edges and any exposed underlying structures.<sup>54,65</sup>

In 2003, the wound bed preparation (WBP) concept was first introduced to promote a holistic, interprofessional approach to the treatment of patients with chronic complex wounds.<sup>66</sup> This model includes three components: identify and treat the cause, address patient- /family-centred concerns, and provide local wound care.

Wound bed preparation and the T.I.M.E. model are not interchangeable terms. "Wound bed preparation is the management of the wound to accelerate endogenous healing or to facilitate the effectiveness of other therapeutic measures."<sup>66</sup> Canadian dermatologist Dr. Gary Sibbald was one of the WBP concept architects from which the original T.I.M.E. model was derived. The acronym T.I.M.E describes the components of local wound care as below.

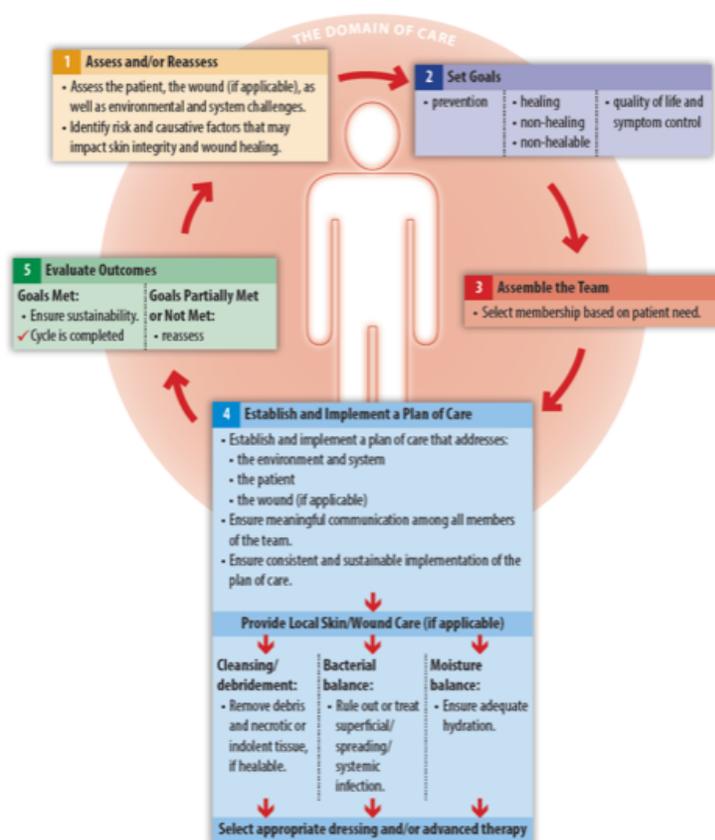
T – tissue, nonviable or deficient;  
I – infection or chronic inflammation;  
M – moisture imbalance; and  
E – epidermal margin, nonadvancing.

These concepts have been widely adopted and have evolved to include evidence which demonstrates its applicability to both acute and chronic wounds. This paradigm was further updated in 2015 and 2021 by Sibbald et al. to include an additional component to determine the ability of a wound to heal.<sup>55,67</sup> Substantial advances have been made in our understanding of the molecular and cellular regulation involved in wound healing.

We now understand the negative impact of microbes and inflammatory cytokines on the impairment of tissue proliferation and the migration of the epidermal margins that prevent wound closure. Research into strategies to counter the management of these challenging biofilms has expanded exponentially in the last decade.<sup>37</sup>

Building on the wound bed preparation paradigm, Wounds Canada published the Wound Prevention and Management Cycle in 2018 (shown in Figure 1).<sup>24</sup> This comprehensive clinician enabler provides a systematic approach to the assessment, prevention, and management of wounds, emphasizing five domains: assess and/or reassess (which includes components one and two of the WBP paradigm), set goals, assemble the team, establish and implement a plan of care (which includes the third component of the wound bed preparation paradigm), and evaluate outcomes.<sup>24</sup>

**Figure 1**  
*The Wound Prevention and Management Cycle*<sup>24</sup>



Note. Reproduced with permission of Wounds Canada.

The fourth domain of establishing and implementing a plan of care builds upon the wound bed preparation and T.I.M.E. paradigms. The two frameworks can thus be viewed as complementary and consistent.

1. Assess and/or reassess the patient, the environment and system.
2. Set goals addressing skin integrity, wound and additional factors.
3. Assemble an interprofessional team, including the patient and significant others.
4. Establish and implement a care plan that treats the cause, addressing patient-centred concerns and local wound care based on the T.I.M.E. model.
5. Evaluate outcomes.

Traditionally debridement has been considered to be a step in the removal of nonviable tissue or slough, but in fact, it has a much more substantial role in facilitating wound healing.

Debridement is the mechanism that can be taken to remove nonviable tissue, the **T** within the acronym T.I.M.E. The process of debridement also impacts the other components of T.I.M.E. The action of debridement removes pathogens attached to devitalized tissue, the **I** in T.I.M.E.<sup>37</sup> Frequent debridement is recommended as an effective method to treat and eliminate the redevelopment of a biofilm.<sup>54</sup> The removal of slough removes proinflammatory cytokines and may help rebalance **M**oisture in the wound

(**M** in T.I.M.E.). The different modalities of debridement may remove senescent cells from the wound base and the nonadvancing epidermal margin to support **E**pidermal cell migration across the wound bed (**E** in T.I.M.E.).

Although the literature cites many different methods of wound debridement, the authors of this best practice recommendation have chosen to classify them into six principal methods (the most frequently cited method classes):

1. autolytic;
2. mechanical;
3. enzymatic;
4. biological;
5. CSWD; and
6. surgical.

The selection of the most appropriate method(s) of debridement is largely dependent on the needs of the patient and their wound and must take into consideration the environment in which the procedure is to be performed (e.g., required and available supplies/equipment, lighting, assistance, etc.), and system factors (e.g., the knowledge, skills, judgment, and authorization for the clinician to perform the procedure, cost of the procedure, etc.). Table 4 builds upon the work of Sibbald et al. (2011) to incorporate CSWD. The table illustrates factors for consideration to guide decisions regarding the methods of wound debridement.

**Table 4**

*The comparative desirability of factors across the six modalities of debridement for a healable wound*

	AUTOLYTIC	MECHANICAL	ENZYMATIC	BIOLOGICAL	CSWD	SURGICAL
<b>Speed</b>	6	3	5	4	2	1
<b>Selectivity</b>	1	6	2	3	4	5
<b>Pain</b>	1	5	2	3	4	6
<b>Exudate</b>	5	3	4	6	2	1
<b>Infection</b>	6	3	5	2	4	1
<b>Cost</b>	1	4	2	3	5	6

*Note.* Where 1 is most desirable and 6 is least desirable. Substantially modified from the original by Sibbald et al. (2011) to incorporate CSWD. With permission of WoundPedia.

*“Debridement at an early and appropriate stage is likely to accelerate wound healing and improve patient care, which will in turn improve patient health and wellbeing, reduce hospital bed days, treatment costs, and readmission rates, as well as optimise the time staff spend with patients.”<sup>9</sup>*

The frequency of wound debridement is dependent on the method(s) of debridement, the needs of the individual patient and the factors listed in Table 4.<sup>28</sup> Repeated debridement is often referred to as serial or maintenance debridement. For example, enzymatic, autolytic, biological, and mechanical debridement is performed with each dressing change until the desired effect is achieved, whereas surgical debridement is often conducted on one occasion. CSWD may be performed repeatedly, particularly if the goal is to disrupt suspected biofilm in a stalled wound or in conjunction with other methods of debridement such as autolytic or enzymatic.

The plan of care must begin with a detailed assessment of the patient to identify the potential underlying wound etiology and patient-centred concerns which guide the goals for care and the assembly of the interprofessional team. Additional considerations must also include management of potential patient risks such as pain and bleeding, local wound characteristics, availability of resources, cost, and health care professional skill and availability. There may be barriers to wound healing such as low hemoglobin, inadequate nutrition or perfusion, or inability to mitigate causative factors. The practitioner must possess the necessary knowledge, skills, judgment, and authority to initiate or perform the method of debridement. It is stated that the choice of debridement modality should not be based on what is available to the health care professional but what is best for the patient.

To determine whether or not wound debridement efforts are successful, it is important to routinely evaluate outcomes. Expected outcomes of wound debridement include:<sup>68</sup>

- reduction in the amount of nonviable tissue;
- better visual assessment of the wound bed, underlying tissues and wound margins;<sup>54,65</sup>
- change in the colour of the nonviable tissue (from black/brown to tan/yellow to white/grey), especially when employing enzymatic and autolytic methods;
- change in the consistency of the nonviable tissue (from hard to soft/soggy to soft/string to mucinous), especially when employing enzymatic and autolytic methods;
- change in the adherence of the nonviable tissue (from firmly adherent to loosely adherent to nonadherent); and
- change in the size of wound.<sup>68</sup>

If the desired outcomes of wound debridement are not being achieved, a referral to a specialist may be indicated.<sup>10</sup>

The following section will describe the different debridement methods including the relationship to specific components of the T.I.M.E. model. Section 3, page 51, describes the scope of practice implications for each debridement method. Finally, this BPR considers the debridement options available across the provinces/territories and the roles of various interprofessional team members.

## **AUTOLYTIC DEBRIDEMENT (AUTOLYSIS)**

*A natural and highly selective process involving the use of moisture-donating products or a moisture-retentive cover dressing to support the activation of the body's enzymes present in wound fluid to promote the destruction of nonviable tissue.*

The process of autolysis harnesses the body's natural wound healing ability by activating proteolytic enzymes typically contained within wound exudate to selectively liquefy, separate and discard nonviable tissues. Increased moisture within the wound bed may occur naturally during the inflammatory phase of the wound healing process or be stimulated by the addition of moisture-donating products and/or by the use of synthetic moisture retentive or occlusive cover dressings. Products that support autolytic debridement speed up this natural process of debridement.

At a cellular level, a moist wound environment facilitates enzymatic phagocytosis. Phagocytic cells, such as macrophages and proteolytic enzymes in the wound bed, liquefy and separate necrotic tissue and eschar from healthy tissue. The phagocytic cells called macrophages and protein-digesting enzymes clear the wound bed of nonviable tissue. Proteinases or peptidases are responsible for promoting this process.<sup>48,50</sup> The moist wound healing environment facilitated by the dressing products promote angiogenesis, epidermal edge migration and wound closure.<sup>69</sup>

Products for autolytic debridement can either donate fluid to dry wounds or maintain and absorb exudate.<sup>48</sup> In this way, they work to address the **T** of T.I.M.E., nonviable tissue and simultaneously address the **M** moisture imbalance and **I** infection/inflammation components. There is a broad spectrum of products that support the autolytic debridement process. These include moisture-donating hydrogels (applied at least 5 mm thick),

occlusive cover dressings such as acrylic dressings, films, and hydrocolloids, moisture-absorbent dressings such as calcium alginates and polyvinyl alcohol foams, cadexomer iodine and hypertonic dressings.<sup>13</sup> Dressings may be considered occlusive with goals to achieve moisture retention and moisture balance by absorbing excess exudate or donating moisture.<sup>9</sup> These products are easy to use, generally cause minimal pain, and are claimed to promote angiogenesis.<sup>31,48</sup> As more people become sensitive to products and preservatives, it is important to know the composition of the dressing used. Propylene glycol, for instance, is used as a preserving agent in many dressings designed to facilitate autolytic debridement and 14% of patients report contact sensitization to this ingredient.<sup>48</sup> The pros and cons of different products were not evaluated during the development of this BPR document as they have been described in detail in other publications.<sup>37,55</sup>

Ramundo et al. (2000) state that progress should be seen within 72-96 hours as wound fluids increase in volume to transform a dry black eschar to a brown/grey colour, eventually becoming stringy yellow slough.<sup>70</sup> To determine the effectiveness of autolytic debridement, the wound should be assessed at every dressing change for a reduction of nonviable tissue measured by a decrease in the percentage amount present in the wound, a decrease in adherence of nonviable tissue and colour changes described above.<sup>36</sup>

Autolytic debridement may also occur simultaneously with other debridement modalities or interventions that may focus on different aspects of the T.I.M.E. model, such as with the management of infection or inflammation.

Autolytic debridement may be a first-line approach for those who experience pain during wound care. Autolytic debridement is often not painful, although pain may increase as nerve endings become exposed when eschar and slough are removed from the wound bed. A comprehensive assessment is required to determine the cause of pain and to manage potential causative factors such as potential infection, dressing procedures and or products. If wound pain persists, a topical analgesic agent may be useful to minimize sensation.<sup>29</sup> Much research has been published regarding strategies to reduce the pain at dressing changes.<sup>37</sup> Patient factors such as pain and the amount of exudate influence the frequency of dressing application and replacement procedures. Refer to manufacturer's instructions to guide the frequency of product application and strategies for painless removal.

Autolytic debridement is the slowest method of the debridement modalities. The nurse should consider if the autolytic debridement method is the most appropriate method to remove the nonviable tissue in the most efficient and timely manner. Autolytic debridement should be considered for use when exudate is minimal, when nonviable tissue and slough are a small to moderate amount, and when there is no urgent clinical need to remove devitalized tissue.<sup>54,71</sup>

A thorough patient assessment is essential to determine the cause of the wound prior to the initiation of any interventions. Autolytic debridement is not indicated for patients with ischemic limbs or digits where the goal of care is to keep the wound dry, nor for clinically infected or deep cavity wounds.<sup>72</sup> McCallon et al. (2014) notes that patients with impaired immune and inflammatory responses (due to medications or disease) may not show an effective autolytic response.<sup>73,74</sup> During autolytic debridement, nonviable tissue

becomes rehydrated, providing a moist environment for bacterial spores to become active. Therefore, this debridement method should be avoided when treating ischemic limbs, where the infection risk is greater. The relative slowness of the autolytic process can also increase the risk of infection.<sup>75</sup> Protection of the periwound skin is essential during the autolytic debridement process as maceration and irritation of the surrounding skin are a potential consequence as increased wound exudate may be a normal expectation during the autolytic process.<sup>75</sup>

There is a paucity of robust evidence regarding the cost-effectiveness of autolytic debridement due to the frequency of dressing changes and the lengthy duration of treatment.

Honey warrants separate mention within discussion of autolytic debridement. The hyperosmolar activity of medical-grade Manuka honey acts to pull interstitial fluid into the wound, supporting wound cleansing and autolytic debridement of the attached slough, and nonviable eschar. Additional benefits that also support wound healing, include providing a moist wound environment, antimicrobial activity, wound deodorizing, and anti-inflammatory actions. Manuka honey supplies physiologically nontoxic hydrogen peroxide to the wound bed. Its low acidic pH (3.2–4.2) decreases the alkalinity of chronic wound fluid thereby reducing bacterial growth and supporting wound healing. Manuka honey contains active *Leptospermum* honey (ALH), derived from the pollen and nectar of the *Leptospermum* tea tree, a native to New Zealand and Australia. ALH products are sterilized to remove the bacteria *Clostridium botulinum* (common in food-grade honey) and the toxin from bee venom, eliminating the risk for potential allergic reactions. Transient stinging has been reported on application. It has also been shown to be safe for use for neonatal and pediatric patients.<sup>37,76,77</sup>

## Scope of Practice

Autolytic debridement is often considered the simplest method of debridement and is typically within the scope of practice for nurses to perform in any care setting dependent on patient and environmental indicators that autolytic debridement is safe and appropriate.<sup>78,79</sup> Although it is considered the simplest form, it can carry significant risk when unintentional debridement occurs due to the application of occlusive, or semi-occlusive dressings, or products that donate moisture and facilitate autolytic debridement in wounds without the ability to heal.

## Practice Tips

Practitioners should consider the following practice tips before initiating or performing autolytic debridement, including:

- select products for autolytic debridement according to the volume of exudate, provincial/territorial availability and organizational policies;
- inspect the periwound area and protect against irritation and maceration;
- follow the product manufacturer's IFU;
- replace the product according to the manufacturer's recommendations and the volume of exudate; and
- assess for sensitivity or reactions to autolytic dressing products.

## MECHANICAL DEBRIDEMENT

*The removal of nonviable tissue from a wound through the application of outside force.*

Mechanical debridement encompasses several methods that apply an external mechanical force to remove nonviable tissue. These include cleansing the wound using gauze and forceps, wet-to-dry dressings, wound irrigation, pulsatile lavage, whirlpool therapy, low-frequency ultrasound debridement (LFUD) and the use of monofilament pads and specialized cleansing cloths.

Methods of mechanical debridement are indicated for infected necrotic wounds. An advantage of mechanical debridement is that it can remove the nonviable tissue quickly.<sup>10</sup> Murphy et al. (2020) include mechanical debridement in their proposed modalities for the removal of biofilms in hard-to-heal wounds.<sup>53</sup> The size of the wound may be increased through the use of mechanical debridement as some methods are unselective also removing viable granulation tissue and traumatizing surrounding intact skin. Due to potential pain some methods of mechanical debridement may be better tolerated by patients with sensory neuropathy.

Applying pressure when using gauze to cleanse the wound will provide mechanical debridement of loose debris and slough, but may also be painful and damage fragile granulation tissues. Forceps may also be used to remove loose devitalized tissue.

Use of wet-to-dry gauze dressings to facilitate mechanical wound debridement involves applying wet nonwoven gauze to the surface of a wound, allowing it to dry and adhere to the wound tissues, and then forcefully removing the dry gauze and adherent tissues. Unfortunately, viable tissue (granulation and epithelial tissue) is often removed simultaneously using this non selective wound debridement method.<sup>80</sup> Other disadvantages include the increased risk of cross-contamination due to the release of airborne organisms during the procedure, cost (this procedure is to be repeated every eight hours), the risk of maceration, potential for foreign body to remain in the wound, and, most importantly, pain.<sup>81</sup> Because this method of mechanical wound debridement elicits so much pain from patients, it is often not implemented correctly and is therefore ineffective. Wound debridement using this approach is not recommended in a number of countries, including the UK.<sup>9</sup> In the United

States, the Centers for Medicare & Medicaid Services (CMS), cautions that there should be limited use of wet-to-dry dressings.<sup>37</sup>

Wound irrigation is a form of mechanical wound debridement that uses pressurized fluids (4-15 psi) to remove nonviable tissue (slough) from the surface of a wound. A more selective approach to mechanical wound debridement, wound irrigation, using a 30 cc syringe and an 18 gauge angiocath or wound irrigating tip, prefilled normal saline bottle with a specialized tip, or a commercial spray wound cleanser, not only is effective in removing nonviable tissue but when done correctly, can decrease surface bacteria and stimulate granulation tissue formation. Applied at a pressure greater than 15 psi, wound irrigation can traumatize tissue and could drive surface wound bacteria deeper into the wound tissues, and therefore must be applied properly. There is also a risk of cross-contamination, as applying solutions with pressure often results in splashback or spray. Ensure that the amount of solution used to irrigate is retrieved from the wound post instillation.

Pulsatile lavage with suction combines the benefits of wound irrigation using a high-pressure stream of fluid of 4 to 15 psi into the wound bed and with suction (negative pressure) to cleanse and debride wounds. Pulsed stimulation causes repeated compression and decompression of the tissues, which mechanically loosens debris. The suction (negative pressure) removes debris, bacteria, and the irrigant while improving blood flow and transcutaneous oxygen delivery to the tissues, simulating granulation and reepithelialization.<sup>82,83</sup> Care must be taken to ensure that bacteria are not forced deeper into healthy tissue, through pressures exceeding 15 psi. Precaution should be taken when treating insensate patients, those taking anticoagulant medications, and those with wounds with sinus tracts, tunnels,

and/or undermining. Extra attention is also required when treating wounds near major vessels or cavity lining, bypass graft sites, anastomoses, exposed vessels, nerves, tendons or bones, grafts, flaps, and facial wounds.<sup>84</sup> Although the equipment required to perform this form of mechanical wound debridement is highly portable, the treatment time minimal (15-20 minutes), and the risk for cross-contamination and maceration low, it is somewhat costly and requires advanced training. As such, pulsatile lavage is not as commonly used as other forms of mechanical wound debridement.

Whirlpool therapy, is a form of hydrotherapy that was previously used primarily in burn units to soften and mechanically remove nonviable tissue and wound exudate, reduce bioburden, increase tissue perfusion and stimulate regenerative cellular activities.<sup>85</sup> Currently this treatment is rarely used and no longer recommended due to the risk of maceration and infection.

LFUD involves the use of ultrasound coupled with a fluid system that is delivered through a handheld probe or applicator to the surface of a wound with the goal being to selectively remove nonviable tissue, exudate, and surface bacteria. Evidence suggests that LFUD may be an effective method of cleansing and debriding hard-to-heal wounds and to prepare the wound bed for dressings such as negative pressure wound therapy (NPWT) and/or grafting. Two main modes of action of low-frequency ultrasound are cavitation and microstreaming. Microstreaming is the flow of interstitial fluids and pulsation of tissue particles caused by the vibration of the ultrasound sonotrode probe. Cavitation occurs when the sonotrode oscillates in a fluid such as saline solution, creating low-pressure microbubbles that form and collapse due to mechanical forces. When the bubbles collapse, they have a mechanical debridement

effect that emulsify dead and nonviable tissues, disrupt biofilms, and stimulate cell membranes in healthy tissues.<sup>86</sup>

Patients who may benefit from LFUD are those where other debridement methods are not appropriate such as those who are not medically stable, on anticoagulants and at high risk of bleeding, those unable to visit a hospital for debridement, wounds with a poor vascular status, those located close to critical structures, and wounds that have deteriorated or failed to progress which may be infected with biofilm.<sup>86</sup>

LFUD is not recommended for the debridement of thick dry eschars, or debridement of tumours, abscesses, or gangrene. It also may be painful and may require the use of topical analgesia. Protection from potential aerosolization and cross-contamination is required during treatment for health care professionals, patients, and visitors.<sup>86</sup> Expertise and experience by the health care practitioner is required to perform this procedure.<sup>48</sup>

Recent product developments are currently becoming available which have proven to be less traumatic and painful.<sup>8,9,87</sup> The U.K. National Institute for Health and Care Excellence (NICE) has published several reports supporting the cost-effectiveness of a mechanical debriding monofilament pad that is moistened and wiped across the wound surface where it quickly attaches to nonviable tissue thereby promoting painless removal in a matter of minutes.<sup>49,52,88,89</sup> In addition, a sterile premoistened single-use debridement cloth containing a surfactant to absorb and gently remove devitalized tissue and bacteria from the wound surface and surrounding skin has recently become available in some countries. The cloth can cleanse the skin of hyperkeratotic scales and leaves a residue of surfactant which reduces the reformation of a biofilm.<sup>59,90</sup>

Several other methods of debridement are considered to apply a mechanical force. The physical movement of larvae is also described as imparting a mechanical force as well as a stimulatory effect on granulation tissue.<sup>13,48</sup> NPWT with instillation supports autolysis and imparts a mechanical force to assist with the removal of nonviable tissue.<sup>54</sup>

### **Scope of Practice**

Several methods of mechanical debridement are within the scope of practice for nurses to perform including wound cleansing using gauze and forceps, wet-to-dry dressings, wound irrigation, use of the monofilament pad and wound cleansing cloth. Additional training and expertise is required prior to performing pulsatile lavage and LFUD. Nurses must adhere to their provincial/territorial regulations and organizational policies regarding authorization to initiate and perform various methods of mechanical debridement.

### **Practice Tips**

Practitioners should consider the following practice tips before initiating or performing mechanical debridement, including:

- select a method of mechanical debridement to minimize pain, bleeding and trauma to healthy tissues;
- manage patient pain and bleeding and discontinue if problematic;
- discontinue mechanical debridement once granulation tissue is present.

### **ENZYMATIC DEBRIDEMENT**

*The introduction of proteolytic enzymes to the wound to selectively dissolve nonviable tissue.*

Enzymatic debridement is the application of a selective agent collagenase, to dissolve the collagen that attaches devitalized tissue to the wound bed, while having little impact on healthy tissue. It is considered safe, painless and effective.

Humans produce endogenous collagenase which helps the body manage collagen. Collagenase is an MMP that degrades collagen yet has no effect on keratin or fibrin. Exogenous collagenase derived from the *Clostridium histolyticum* bacterium breaks down collagen into smaller peptides.

Enzymatic agents are frequently used for initial debridement when anticoagulant therapy renders surgical or CSWD unfeasible. They may be used to debride a wound with significant bacterial bioburden (critically colonized or infected). Enzymatic agents can be used on yellow slough or nonviable tissue.<sup>70</sup> It is reported to work best in a moist wound environment and is not the ideal option for black, hard, dry eschar. It has been shown to work well in conjunction with CSWD such as in the diabetic foot.

In Canada, the only available product is collagenase, which is an ointment registered as a pharmaceutical agent. Consequently, a prescription is often required by a physician or NP in most provinces/territories. It has not been tested in children. It selectively digests denatured and undenatured collagen that binds nonviable tissue to the wound bed. Enzymatic debridement is easy and usually painless making it an appropriate choice for LTC and home care settings. These products should be applied with 2 to 3 mm thickness over the devitalized tissue once daily or more frequently if dressing becomes dislodged or soiled.<sup>48</sup> Use should be discontinued once the granulation tissue is visible, and the wound is free of nonviable tissue. Like other methods of debridement, the size of the wound may increase during enzymatic debridement as the true extent of the wound is revealed.

Collagenase may be effective in wounds with high levels of bacteria. However, the effectiveness of collagenase can be compromised by some cleansing solutions

and some types of dressings used to cover the wound.<sup>37</sup> Acidic solutions should be avoided due to their low pH and products containing metal ions such as silver, iodine or biguanide antimicrobial products as they will inactivate the collagenase.

Chemical debridement involving the use of chemical agents, such as Dakins or sodium hypochlorite, to remove necrotic tissue are used infrequently and are often not recommended as they are nonselective, harm healthy tissue and may damage periwound skin. Some newer products can also be considered as chemical wound cleansing/debridement agents due to their surfactant properties that assist with the debridement of biofilms. Examples include polyhexamethylene biguanide (PHMB) + betaine, or octenidine dihydrochloride, or chlorhexidine solution with cetrimide 0.015%, or some surfactant gels.

Some authors also consider honey products to be a form of chemical debridement due to its physiologically nontoxic hydrogen peroxide property however, we have included honey as an autolytic debridement agent.<sup>24</sup>

### **Scope of Practice**

Enzymatic debridement often requires a physician or NP order prior to initiation of the procedure as most products are only available as prescription to be obtained through pharmacy. Nurses must adhere to their provincial/territorial regulations and organizational policies regarding authorization to perform enzymatic debridement.

### **Practice Tips**

Practitioners should consider the following practice tips before initiating or performing enzymatic debridement, including:

- monitored for signs of systemic bacterial infections as the debriding enzymes may increase risk of bacteremia;
- confirm suitability of other dressings and

cleansing agents. Normal saline is a compatible cleansing solution;

- avoid use of acidic solutions or products containing metallic ions;
- apply with 2 to 3 mm thickness over the devitalized tissue daily or if dressing becomes dislodged or soiled;
- discontinue use when granulation tissue develops and the wound is free of nonviable tissue;
- confine application to within the wound edges;
- protect periwound skin. Avoid use of products containing zinc;
- discontinue use if periwound area becomes inflamed or painful. Enzymes can be inactivated by washing the area with povidone-iodine.

## **BIOLOGICAL DEBRIDEMENT**

*The application of sterile, medical-grade larvae into the wound to digest soft nonviable tissue and bacteria and promote wound healing.*

Biological debridement includes the terms biotherapy, biosurgery, larvae or maggot debridement therapy (MDT) and involves the use of the larvae of *Lucilia sericata* (greenbottle fly). Bred in sterile conditions, these medical-grade larvae debride nonviable tissue by secreting proteolytic, digestive enzymes that function in a similar mode to enzymatic debriding agents. Larvae secretions contain collagenases that break down the nonviable tissue into a semi-liquid form that is subsequently digested by the larvae.<sup>10</sup> In addition, larvae also ingest pathogenic organisms that may be present in the wound bed.<sup>9</sup> They kill bacteria in the wound by secreting antimicrobial molecules, ingesting and killing microbes within their gut, and dissolving biofilms.<sup>13</sup> They can be used concurrently with antibiotics; however, MDT is ineffective for patients with osteomyelitis. King notes that MDT may be valuable for use in wounds infected with antibiotic-resistant bacteria.<sup>91</sup>

The larvae's physical movement is thought to have a stimulatory effect on the growth of new tissue.<sup>13</sup> Larvae can stimulate the production of fibroblast growth factors, which leads to granulation tissue growth promoting healing in wounds. Their effect on the inflammatory response warrants further research.<sup>92</sup> In this way, they work to address not just the **T** of T.I.M.E., nonviable tissue, but also the **I** by removing pathogenic organisms and **E** through the stimulating effect on the wound margins.

Some wound management organizations consider larvae therapy as a form of mechanical debridement due to the movement of the larvae, which creates a mechanical force enhancing the debridement effect.<sup>48</sup>

Biological debridement can be used for various types of wounds with extensive necrotic tissue and should be evaluated against other methods of wound debridement by an interprofessional team. It may be the best option when autolytic, enzymatic or sharp debridement are not suitable or available. Several studies have examined the use of MDT in DFUs and consider it a cost-effective option given the speed of action and ability to be used in a home care setting prior to surgical intervention. Larger studies are required to provide higher levels of evidence.<sup>51,93,94</sup>

Larvae must be used with caution on wounds that tend to bleed or in wounds close to exposed major blood vessels. They are not recommended for patients on anticoagulants when clotting markers have not been optimized. Slight bleeding can result from damage to small capillaries, which is considered to be a normal expectation. Caution is also advised when used on wounds over adjacent exposed organs or areas leading to a body cavity or sinus tract.<sup>95</sup> In addition, patients with chronic limb ischemia, the elderly, and those with septic arthritis may also not be suitable candidates for MDT.<sup>95</sup>

Larvae are available in a *free-range* or a *bagged* format. To gain acceptance of the therapy, it should be explained carefully and sensitively to the patient, significant others and health care providers caring for the patient. Five-eight maggots/cm<sup>2</sup> of wound surface area are applied within 24-48-hours after delivery. Refrigeration is required to maintain larvae viability. They can be left on the wound site for up to 48-72 hours depending on the amount of exudate.<sup>95</sup> Larvae require oxygen to maintain viability therefore thick, or occlusive dressings must be avoided as well as pressure over the area. The patient must be in agreement to avoid laying, sitting or standing on area where maggots have been applied.

Careful periwound preparation is vital to contain the larvae within the wound bed. The larvae secretions and resulting increased exudate production can irritate the periwound area; therefore, protecting the periwound skin is essential. Increased replacement of outer dressings may be required depending on the volume of exudate. Dressing changes are more time consuming due to the need to contain the larvae within the wound.<sup>65</sup> MDT should not be used in wounds located near the eyes, with exposed vasculature, upper gastrointestinal and respiratory tracts, or in those with known allergy to fly larvae, brewer's yeast or soybean.<sup>48</sup> Access and requirements to obtain MDT vary greatly across Canada.

*"MDT satisfies nearly all expectations for optimal wound care: fighting infection, debridement, provoking wound healing, and neoangiogenesis. Its low-cost, noninvasive nature, and absence of systemic effects make this method a good option. MDT is not an exact wound treatment method, but can be an important part of a multidisciplinary approach to treat chronic wounds."<sup>96</sup>*

### **Scope of Practice Considerations**

In most areas in Canada, it does not fall within the scope of practice for RNs to order larvae/MDT. An order is often required from a physician or NP.<sup>25,97</sup> In most provinces/territories nurses must successfully complete suitable training as recognized by their provincial/territorial and organizational policies/procedures. Refer to Recommendation 1, page 10.

### **Practice Tips**

Practitioners should consider the following practice tips before initiating or performing biological debridement, including:

- ensure that the use of MDT falls within your scope of practice and that you have suitable knowledge, skills, judgment, and authority to use MDT according to local organizational policies/procedures;
- assess for osteomyelitis, wound location close to major vessels or cavities;
- assess for risk of bleeding and if MDT is appropriate;
- carefully discuss the use of MDT with the patient and significant other;
- identify the goals of care inclusive of patient goals; patient must be agreeable not to lay, sit or stand on area where larvae have been applied;
- avoid use of thick, or occlusive dressings as larvae require oxygen to maintain viability;
- monitor for excessive bleeding; and
- ensure the proper disposal of the larvae upon removal from the wound.

### **CONSERVATIVE SHARP WOUND DEBRIDEMENT**

*The removal of clearly identifiable, devitalized tissue above the level of viable tissue using sharp instruments. It can also remove demarcated nonviable tissue including senescent cells and bacteria.<sup>11</sup>*

CSWD is an appropriate method of debridement when there is nonviable tissue

such as slough or eschar, periwound callus or hyperkeratosis that can be separated from viable tissue.<sup>26</sup> It includes the removal of loose nonviable tissue or removal of foreign material from a wound bed above the level of viable tissue.<sup>98</sup> Debridement of firm eschar or soft slough is recommended for wounds that are healable.<sup>6,22,31</sup> CSWD is contraindicated if the junction between viable and nonviable tissue is not clearly identifiable.<sup>13</sup> Dry eschar on heels, digits/toes and ischemic limbs should be kept dry, free from moisture and debridement avoided unless the eschar becomes unstable or there is evidence of infection.<sup>10-12,26</sup> Although CSWD may be considered a form of surgical debridement, this document defines surgical as extending into viable tissue rather than above the level of viable tissue and is considered separately.

CSWD debridement has been defined as a minor bedside procedure involving cutting away tissue with a scalpel, scissors or curette, resulting in minimal pain or bleeding.<sup>11,48</sup>

CSWD helps address the **T** (nonviable tissue) and **I** (infection/inflammation) components of the WBP paradigm. Nonviable tissue harbours pathogens. The modality is considered selective and rapid, allowing a better view of the wound bed and the extent of the wound.<sup>50</sup> It may involve serial/maintenance debridement where successive nonviable tissue is removed on a repeated basis. Maintenance CSWD may be considered an effective method to control biofilms.<sup>31</sup> CSWD can also be used in combination with other methods of debridement, such as autolytic or enzymatic.

A comprehensive patient history and assessment is essential to determine patient goals and suitability prior to the initiation of CSWD. Not all patients or wounds are appropriate for CSWD, such as those with a risk of bleeding or with poor vascular supply, measured by ABPI, TBPI, or angiogram.<sup>99</sup>

Caution is also advised for those who are paraplegic and considered to be at risk for autonomic dysreflexia, persons with mental illness and those with complex wounds such as calciphylaxis, inflammatory conditions such as vasculitis, or pyoderma gangrenosum due to the risk for pathergy. CSWD should not be performed on the hands, face, ischemic digits or near major vessels and used with caution near the Achilles tendon.<sup>100</sup> Collaboration with the interprofessional team is beneficial to confirm decisions to perform CSWD. CSWD should only be performed as authorized by provincial/territorial regulations and organizational policies/procedures.

Prior to the initiation and performance of CSWD completion of a competency-based debridement education and preceptorship training program is strongly recommended to ensure nurses have the necessary knowledge, skills, and critical-thinking abilities to differentiate between viable and nonviable tissue, recognize underlying structures and tissue types such as subcutaneous tissue, tendons, muscles, bone, and to identify precautions and contraindications for CSWD.

*“If conservative sharp debridement is properly structured and supported, it will provide a valuable treatment adjunct at a minimal risk to patients who are suffering from slow-to-heal wounds.”<sup>58</sup>*

CSWD may also be considered for quality of life where the removal of nonviable tissue may help reduce odour in malignant wounds and palliative care patients.<sup>26</sup>

Consideration must also be given to the suitability of the setting prior to CSWD to ensure resources such as pain management and personnel are readily available to manage potential adverse events that may occur with performing the procedure.<sup>101</sup> Informed patient consent is also required.<sup>98</sup>

The British Columbia Provincial Nursing Skin and Wound Committee *Guideline & Procedure: Conservative Sharp Wound Debridement (CSWD) in Adults & Children* provides step-by-step guidance on CSWD.<sup>102</sup> It advocates for patient/family education including the indications for CSWD and monitoring for potential complications.<sup>102</sup>

In plantar DFUs, where periwound callus or hyperkeratotic tissue prevents wound contraction and reepithelialization, studies have demonstrated that debridement of plantar periwound callous can reduce pressure by up to 30%.<sup>20</sup> Additional findings of the 3 year study demonstrated that patients receiving CSWD in conjunction with a total contact cast healed faster than similar patients where CSWD was not performed.<sup>26</sup>

The economic benefits of CSWD are described as reducing health care costs by decreasing length of stay, dressing costs, nursing care time, infection, and promoting quality of life.<sup>17</sup> A study by Rodd-Nielsen (2013) found that patients who had access to more frequent CSWD required an average of 45 fewer days to achieve 100% healing compared to those having less access.<sup>6</sup>

### **Scope of Practice Considerations**

Scope of practice for CSWD varies across the country for nurses to initiate and perform this method. Successful completion of an additional debridement education and preceptorship program to support a competent demonstration of the knowledge, skills, and judgment is strongly recommended to initiate or perform CSWD safely. A nurse must adhere to regulations established by their provincial/territorial regulatory bodies and follow organizational policies/procedures regarding CSWD. See Table 6 in Section 3, page 52, for an overview of regulations across Canada.

Provincial/territorial nursing regulatory bodies must include CSWD within their scope of practice statements for nurses. These colleges define the education, limitations and conditions to which nurses must adhere to initiate and perform CSWD. All employers must have policies and procedures, with decision support resources, in place for nurses to perform CSWD. Nurses should verify within their health care institution or agency that CSWD is within their scope of practice and that there is a policy indicating who may initiate and perform CSWD.<sup>24</sup>

### **Practice Tips**

Practitioners should consider the following practice tips before initiating or performing CSWD, including:

- start with a detailed history and assessment of the patient to identify and understand comorbidities, such as diabetes, PAD, and others that may impact wound healing;
- assess for use of anticoagulants and risk for bleeding;
- assess the environment to safely perform the procedure;
- ensure you have the necessary knowledge, skills, judgment, and authority to perform the procedure according to provincial/territorial regulations and organizational policies regarding the performance of CSWD;
- develop a care plan in collaboration with the interprofessional team;
- obtain informed patient consent for CSWD;
- assemble the appropriate resources (tools and personnel) to perform CSWD safely and manage any complications, including pain and bleeding;<sup>6</sup>
- maintain sterility throughout procedure; and
- based on the assessment findings, consider whether CSWD or serial debridement would be appropriate and beneficial for the patient.<sup>6</sup>

## **SURGICAL DEBRIDEMENT**

*Surgical debridement involves extensive debridement that may include both viable and nonviable tissue and may result in bleeding and pain. It is often performed by a surgeon, under sterile conditions in an operating room with anesthesia.*

Surgical debridement can turn a hard-to-heal wound into an acute wound by stimulating the phases of wound healing. The invasive excision or wider resection of nonviable and viable tissue through surgical debridement removes unhealthy stalled tissue from the wound margins and base until a healthy bleeding wound bed is achieved. It is considered when rapid intervention is required for the removal of deep infection, where there is damage to the structures beneath the dermis, or where limb salvage is necessary.<sup>48</sup>

Instrumental or surgical debridement consists of removing necrosis using a scalpel, scissors, or other cutting instruments such as hydrosurgery tools. Hydrosurgery is a fast and precise method of sharp debridement that uses a high-pressure jet of sterile saline to selectively cut and remove tissue, thereby reducing the bacterial load within the wound. The disadvantages include the high cost of the equipment, availability of an operating room (OR) and surgeon with specialized training, and pain related to the procedure.<sup>103</sup> There is also a risk of aerosolization of bacteria and microorganisms during the procedure, increasing the risk for contamination and infection within the setting and for health care professionals and patients.<sup>48,72</sup> It is only recommended for use in a hospital or similar type of setting. It may be cost-effective as it only needs one application and can reduce length of hospitalization.<sup>48</sup>

Not all patients are suitable for surgical debridement. Some contraindications include patients who are medically unstable,

palliative or near end-of-life and areas with poor vascular supply. Patients with a risk of bleeding or who have risks associated with anesthesia also may not be candidates. Wounds that are considered to be nonhealable are also unlikely candidates for surgical debridement.<sup>104</sup> The management of bleeding and pain are crucial considerations for surgical debridement, Informed written consent is required prior to surgical debridement.

Conservative sharp wound debridement is considered separately above.

### **Scope of Practice Considerations**

Surgical debridement is generally considered outside of the scope of practice for all nurses in Canada and requires a referral to a surgeon, surgical podiatrist or chiroprapist. Nevertheless, knowledge of surgical debridement is beneficial for nurses to understand when a consultation for surgical debridement may be beneficial. Nurses encountering patients that may benefit from surgical debridement should work with the primary care physician or NP to arrange a referral to a physician with surgical training such as a general surgeon, vascular surgeon, plastic surgeon, orthopedic surgeon, surgical podiatrist (for areas on the forefoot), or chiroprapist for areas below the knee.

### **Practice Tips**

Practitioners should consider the following practice tips that apply to surgical debridement, including:

- based on a comprehensive history and assessment of the patient, consider whether a surgical consult would be warranted, including ABPI and or TBPI to confirm adequate vascular supply;
- ensure surgical debridement aligns with the goals of care including the patient's goals (e.g., consider age, comorbidities, palliative or end of life as those with a do not resuscitate (DNR)/do not intubate (DNI) directive—may not be appropriate

- for aggressive surgical debridement);
- explain to the patient why a referral to a surgeon for debridement is being considered;
- follow organizational policy/procedures to advocate for an appropriate referral through the medically responsible physician (MRP);
- liaise with MRP or NP as required to arrange for necessary diagnostic imaging and laboratory evaluations. This ensures surgical teams have essential information readily available to guide clinical decisions regarding the potential for surgical intervention;
- liaise with the MRP as needed to ensure adequate pain control. Adequate pain control is often an issue pre-surgery for many due to infection; and
- ensure written informed patient consent has been obtained by the surgeon, chiropodist or podiatrist prior to the procedure.

### **COST-EFFECTIVENESS**

The cost to the health care system of any intervention cannot be ignored. The appropriate method of debridement is a balance between multiple factors including speed, selectivity and cost. The reviewed literature identifies little about the cost-effectiveness of debridement in various settings in Canada. The authors emphasize that clinical need should be at the forefront of any decision made with regard to delivery of care, including the cost of certain procedures.

The cost of materials required for certain methods of debridement may be low, yet they take longer to effectively debride the wound than other methods. Costs associated

with increased duration of treatment and length of time that care is required will increase treatment costs. As more advanced wound care products intended to facilitate debridement become available, health technology assessments are showing them to be more cost-effective than traditional gauze because of the decrease in nursing resources.<sup>48</sup> Surgical debridement is costly considering it requires a surgeon and OR, however, it is the fastest way to remove all nonviable tissue and can lead to better healing rates thereby reducing overall costs to the health care system. Risk of infection associated with the type of debridement is an important consideration as there are significant costs associated with certain antibiotics and their methods of administration. The use of a higher cost product or therapy is only beneficial if it improves clinical outcomes or decreases costs associated with the delivery of care such as nursing time.

Regardless of the method of debridement it is important to remember what may be cost-effective for one patient may not be for another as each wound and patient scenario is different.<sup>48</sup> Similarly, one product considered to be cost-effective in one setting may not be in another setting. Cost is crucial from a community perspective. Increased access to nurses with the ability to perform more advanced methods of debridement can reduce overall costs associated with prolonged length of stay, providing better overall resource allocation and increased patient satisfaction.

**Table 5**

Concise summary of the indications, contraindications, advantages, disadvantage and special considerations of the principal debridement modalities

	AUTOLYTIC	MECHANICAL	ENZYMATIC	BIOLOGICAL	CSWD	SURGICAL
Indications	<p>Uncomplicated acute and chronic wounds with minimal amounts of nonviable tissue. Selective destruction of nonviable tissue Activates enzymes naturally present in wound fluid.</p>	<p>Acute and chronic wounds containing large amounts of slough. Infected necrotic wounds.</p>	<p>Acute and chronic wounds containing moist nonviable tissue. Partial thickness wounds.</p>	<p>Acute and chronic wounds containing moist devitalised tissue. Larvae soften and liquefy devitalized tissue. Suitable when surgical debridement not an option. Infected necrotic wounds.</p>	<p>Acute and chronic wounds containing nonviable tissue, including callus. Quick and effective method to remove demarcated dry or soft devitalised tissue from healthy tissue using a sterile scalpel, curette, scissors and forceps. Selective debridement of only nonviable tissue. Does not extend into viable bleeding tissue. Wounds with limited undermining/ tunnelling. Maintenance debridement.</p>	<p>Wounds with extensive nonviable tissue. Extends into viable tissue. Urgent debridement for life or limb-threatening cellulitis, or sepsis. Deep wound infection, including undermining and osteomyelitis.</p>
Contraindications	<p>Product sensitivity. Caution for patients with peripheral vascular disease, ischemic wounds, DFU. Contraindicated in palliative or end of life situations. Slow process. Contraindicated in acute infection or sepsis.</p>	<p>Painful wounds, bleeding disorders, peripheral vascular disease, ischemic wounds, diabetes. Contraindicated for palliative or end of life.</p>	<p>Sensitivity to collagenase (rare). Dry necrotic eschar. Slow process. Contraindicated in acute infection or sepsis.</p>	<p>Patient with allergies to eggs, soybeans, and fly larvae. Lack of patient consent Contraindicated in facial, upper GI wounds, open vessels, close to major vessels, deep wounds, cavities or sinus tracts. Patients on anticoagulants. Where the position of the wound affects survival of larvae.</p>	<p>Lack of patient consent. Inadequate pain control. Impaired perfusion. Caution for patients who are immunocompromised, on anticoagulant therapy or with bleeding disorders. Exposed bone, ligaments, tendons, or in temporal areas, neck, axilla, groin and areas close to major blood vessels, nerves and tendons. Advanced age, multiple comorbidities, palliative. Lack of competent and skilled clinician with advanced training. Lack of sterile equipment.</p>	<p>Lack of patient consent. Lack of surgeon availability. Advanced age, multiple comorbidities, poor general health, palliative or end of life. Persons on anticoagulants or bleeding disorders. Inadequate tissue perfusion.</p>

	AUTOLYTIC	MECHANICAL	ENZYMATIC	BIOLOGICAL	CSWD	SURGICAL
Advantages	<p>Selective form of debridement.</p> <p>Activates the body's natural processes.</p> <p>Readily available and inexpensive.</p> <p>Relatively simple application.</p> <p>Minimal training and skill required. Within the scope of practice for all categories of nurses.</p> <p>Suitable for all care settings.</p> <p>Nontraumatic.</p> <p>Usually not painful.</p> <p>Alternative to other debridement modalities.</p>	<p>Rapid process for the removal of large amount of slough.</p> <p>May disrupt biofilms.</p> <p>Some methods are readily available.</p> <p>Suitable for most care settings.</p> <p>Most methods are within the scope of practice for all categories of nurses.</p>	<p>Selective debridement.</p> <p>Suitable for all care settings.</p> <p>Minimal training and expertise required.</p> <p>Fast application.</p> <p>Suitable for use in adults.</p> <p>Within the scope of practice for all categories of nurses.</p> <p>Nontraumatic.</p> <p>Usually not painful.</p>	<p>Selective form of debridement.</p> <p>Rapid debridement.</p> <p>Assists with the removal of biofilm.</p> <p>All ages of patients, and during pregnancy.</p> <p>Considered inexpensive due to short length of use.</p> <p>Larvae contained in bags are easy to apply and can remain in place for 4–5 days.</p>	<p>Selective form of debridement.</p> <p>May be used in conjunction with other debridement methods.</p> <p>Fast and effective removal of nonviable tissue, bioburden and biofilm.</p> <p>Supports rapid healing.</p> <p>Within the scope of practice for NSWOCs with advanced training in CSWD and NPs.</p> <p>Procedures must be supported by provincial regulations and organizational policies.</p> <p>Repeated debridement may be required.</p> <p>Cost-effective. Low cost compared to surgical debridement.</p> <p>Performed at the bedside by a trained practitioner.</p>	<p>Selective form of debridement.</p> <p>Speed of action.</p> <p>Stimulates the healing process.</p> <p>Removes biofilm and infected tissue.</p> <p>Can reduce peak plantar pressure caused by callous.</p>
Disadvantages	<p>Slowest form of debridement. Repeated application required.</p> <p>Avoid use in infected wounds.</p> <p>Risk of infection &amp; malodour due to anaerobic bacteria.</p> <p>Risk for maceration and irritation of peri-wound skin.</p> <p>Costs related to increased product usage, nursing time.</p>	<p>Some methods nonselective.</p> <p>Damage to healthy tissue.</p> <p>Bleeding and pain</p> <p>Ineffective with dry eschar.</p> <p>Time consuming.</p> <p>Cost related to frequent dressing replacement.</p> <p>Potential maceration.</p> <p>Not for superficial wounds, or those with small amounts of nonviable tissue.</p>	<p>Pharmaceutical agent requiring an order &amp; prescription.</p> <p>Daily application.</p> <p>Slower than CSWD.</p> <p>Risk for maceration and irritation of periwound skin.</p> <p>Protection of periwound skin required.</p> <p>Product costly.</p>	<p>Costs higher than autolytic.</p> <p>Patient acceptance.</p> <p>Order required from physician or NP.</p> <p>Availability of medical-grade larvae.</p> <p>Short viability of larvae.</p> <p>Increased exudate.</p> <p>Periwound skin protection required.</p> <p>Application may be time consuming.</p>	<p>Risk of complications may necessitate discontinuation.</p> <p>Environmental assessment required prior to use in patients' home.</p> <p>Risk of complications: infection, bleeding, pain.</p> <p>Sterile equipment required.</p>	<p>Physician, or podiatrist, or chiropodist with surgical skills for areas below the knee.</p> <p>High cost due to surgeon, OR, and anaesthesia.</p> <p>Anaesthesia risk for some patients.</p> <p>Not in scope of practice of nurses.</p> <p>Risk for surgical complications and hospital admission.</p>

	AUTOLYTIC	MECHANICAL	ENZYMATIC	BIOLOGICAL	CSWD	SURGICAL
Other Considerations	<p>Volume of exudate determines dressing frequency.</p> <p>Periwound skin protection required.</p> <p>Regular reassessment required to ensure the most effective method of debridement is available.</p> <p>Moisture donating, or moisture retentive products support the autolytic process.</p>	<p>Monofilament pad painless alternative to wet-to-dry method.</p> <p>Ultrasonic assisted debridement selective mechanical debridement.</p> <p>Fast removal of superficial devitalised tissue.</p> <p>Immediate results.</p> <p>Bactericidal.</p> <p>Various settings.</p> <p>Training required.</p> <p>Sterilization of hand pieces required.</p>	<p>Risk of periwound irritation.</p> <p>Avoid use in infected wounds.</p> <p>Inactivated by metallic ions.</p>	<p>Potential pain in ischemic wounds.</p> <p>Bleeding may occur.</p> <p>Avoid occlusive dressings to ensure viability of larvae.</p> <p>Bagged larvae reduce level of skill and training.</p> <p>Scope of practice and organizational policies required.</p>	<p>Consent required.</p> <p>Manage potential complications.</p> <p>Sterility required.</p> <p>Competent practitioner with specialist training in CSWD essential.</p> <p>Ensure timely and appropriate referrals. Interprofessional collaboration required, especially for DFUs.</p> <p>Costs related to resources, instruments and staff time.</p>	<p>Consent required. General or local anesthetic required.</p> <p>Risk of bleeding. Sterility essential. Written consent required. Hydrosurgical requires surgeon with additional training in device.</p> <p>Painful.</p> <p>Short treatment time. Fast removal of devitalised tissue.</p>

# SECTION 3

## SCOPE OF PRACTICE

Section 2 of this BPR set the context by describing the role of debridement as the mechanism to remove nonviable tissue as part of the wound management frameworks. Each of the principal modalities for debridement was also discussed. With that background, here we now consider the scope of practice for nurses across Canada.

Interior Health (2014) states the “scope of practice of a profession is defined as the activities that healthcare professionals are educated and authorized to perform. Scope of practice is established by government legislation and complemented by standards, limits, and conditions set by the profession’s regulatory body.”<sup>4,25,97</sup>

*“All healthcare providers caring for clients shall practice within their professional scope, their regulatory body’s limits and conditions, and their level of competence. All healthcare providers are responsible for ensuring that they have the competence required to apply and meet clinical practice standards, so that safe, ethical and appropriate care is delivered.”<sup>97</sup>*

**Table 6**

Summary of provincial/territorial scope of practice requirements for nurses to initiate and perform debridement

PROVINCE/TERRITORY AND GOVERNING ORGANIZATIONS	WHO CAN INITIATE AND/OR ORDER DEBRIDEMENT	WHO CAN PERFORM DEBRIDEMENT (WITH ORDER)	REQUIREMENTS AND/OR RESTRICTIONS
<b>Alberta</b>  <i>Health Professions Act; College of Licensed Practical Nurses of Alberta; College &amp; Association of Registered Nurses of Alberta</i>		RN, NP, LPN	<ul style="list-style-type: none"> <li>Care below the dermis is a restricted activity.</li> <li>RNs and NPs who are deemed competent† may perform invasive procedures on body and below the dermis or mucous membrane.</li> <li>LPNs who have completed advanced training approved by the council and been authorized by the registrar may perform CSWD only for the purpose of removing a corn or callous as part of the provision of foot care.</li> </ul> <p>† Competence is defined as the integrated knowledge, skills, judgment, and attributes required of a nurse to practise safely and ethically in a designated role and setting.<sup>105</sup></p>
<b>British Columbia</b>  <i>British Columbia College of Nursing Professionals</i>	RN, NP	RN, NP, LPN	<ul style="list-style-type: none"> <li>RN, NP can initiate autolytic, mechanical, and enzymatic debridement without an order, but not CSWD or biological/MDT.</li> <li>RN, NP with successful completion of mandatory provincial debridement education module and post graduate wound management course, including NSWOC WOC–Institute Education Program (WOC-Institute-EP; International Interprofessional Wound Care Course [IIWCC]; University of Toronto Master of Science in Community Health: Wound Prevention and Care; Master of Advanced Health Care Practice – Wound Healing Program at Western University; Wound, Ostomy and Continence Nursing Program (USA).</li> <li>LPN can perform autolytic debridement.</li> </ul>
<b>Manitoba</b>  <i>College of Registered Nurses of Manitoba; College of Licensed Practical Nurses of Manitoba (CLPNM)</i>	RN, NP	RN, NP, LPN	<ul style="list-style-type: none"> <li>RNs and NPs do not require an order to perform a procedure below the dermis, including CSWD.</li> <li>RNs and NPs must complete additional education to competently and safely perform a procedure below the dermis.</li> <li>LPNs who have completed the CLPNM-approved post-basic nursing foot care program are able to reduce corns and callous only.</li> <li>WRHA has additional requirements for CSWD.</li> <li>Level 1: Tweezers, forceps, scissors and above dermis.</li> <li>Level 2: Scalpel, curette, scissors to the level of but not into viable tissue.</li> <li>Level 3: Surgical and performed by a surgeon and goes below the level of nonviable tissue.</li> <li>An order is not required for CSWD.</li> <li>All nurses performing CSWD will have successfully completed education and received certification through provincially led programs.</li> </ul>

PROVINCE/TERRITORY AND GOVERNING ORGANIZATIONS	WHO CAN INITIATE AND/OR ORDER DEBRIDEMENT	WHO CAN PERFORM DEBRIDEMENT (WITH ORDER)	REQUIREMENTS AND/OR RESTRICTIONS
<b>New Brunswick</b>  <i>Nurses Association of New Brunswick;</i> <i>Association of New Brunswick Licensed Practical Nurses</i>			<ul style="list-style-type: none"> <li>Not specified in any documents.</li> <li>Nurses must demonstrate knowledge and ability to perform wound care.</li> </ul>
<b>Newfoundland and Labrador</b>  <i>Association of Registered Nurses of Newfoundland and Labrador</i>			<ul style="list-style-type: none"> <li>Not specified in any documents.</li> <li>NSWOC, CNS and NP may be trained to provide CSWD.</li> </ul>
<b>Nova Scotia</b>  <i>Nova Scotia College of Nurses</i>	NP	RN, NP, LPN	<ul style="list-style-type: none"> <li>Ordering medication or treatments including dressings that are not over the counter is outside of the scope of practice of RNs and LPNs.</li> <li>Authorization requires a patient specific order, a preprinted order, or a care directive.</li> <li>NSWOCs are not permitted to initiate debridement.</li> </ul>
<b>Ontario</b>  <i>College of Nurses of Ontario</i>	RN, NP	RN, NP, RPN	<ul style="list-style-type: none"> <li>Debridement is not defined according to types; includes all methods with appropriate knowledge, skills, and judgment.</li> <li>All nurses can perform care below the dermis including debridement; however only RN and NP can initiate and provide an order for debridement including irrigation.</li> <li>RPN can only initiate cleansing, soaking and dressing of wounds.</li> </ul>
<b>Prince Edward Island</b>  <i>Prince Edward Island Provincial Standards for Nurses</i>	NP	RN, NP, LPN	<ul style="list-style-type: none"> <li>Care below the dermis is a reserved activity.</li> <li>LPN and RN may perform care below the dermis with an order from a physician, NP or dentist.</li> <li>CSWD is a restricted act and can only be performed by a clinician who has graduated from an appropriate educational course with preceptorship and achieved certification with CNA.</li> <li>Referral to an NSWOC by a physician or NP implies care and treatment may include CSWD.</li> </ul>
<b>Quebec</b>  <i>Ordre des infirmières et infirmiers du Québec (OIIQ)</i>	RN, NP	RN, NP, LPN	<ul style="list-style-type: none"> <li>RN, NP can prescribe the enzymatic debriding agent collagenase.</li> <li>LPN with the required knowledge, skill and judgment is restricted to only performing the following methods of debridement with an order: autolytic, mechanical or enzymatic.</li> </ul>

PROVINCE/TERRITORY AND GOVERNING ORGANIZATIONS	WHO CAN INITIATE AND/OR ORDER DEBRIDEMENT	WHO CAN PERFORM DEBRIDEMENT (WITH ORDER)	REQUIREMENTS AND/OR RESTRICTIONS
<b>Saskatchewan</b>  <i>Saskatchewan Registered Nurses Association; Health Quality Council; Saskatchewan Association of Health Organizations</i>		RN, NP	<ul style="list-style-type: none"> <li>Only RN and NP certified in RN Specialty Practice can perform CSWD (considered advanced RN intervention).</li> </ul>
<b>Northwest Territories, Yukon and Nunavut</b>			<ul style="list-style-type: none"> <li>Legislation around care below the dermis is not discussed in any legislative documents.</li> </ul>

Although various other advanced practice roles exist within the nursing profession, core licensure designation are used in this table. Additional roles such as CNS, NSWOC or APN are identified in the requirements column. Further discussion around provincial/territorial scope of practice can be found in **Appendix 7**.

The NSWOC Standards of Practice 3<sup>rd</sup> edition introduces a new standard reflecting the importance of recognizing Indigenous cultural safety.<sup>23</sup> The research did not identify education or preceptorship requirements for CSWD in Indigenous people.

Physicians, NPs and NSWOCs provide wound care support for those in rural and remote areas. In remote areas it is often necessary to transfer a patient with a wound requiring CSWD or surgical intervention to an urban centre for treatment.

### COMPETENCY VERSES PRESCRIPTIVE POLICIES

The authors recognize the controversy between prescriptive policies and procedures that guide nurses with step-by-step instructions versus competency-based critical

thinking. In some settings across Canada there is a tendency towards more prescriptive procedures reflecting a more generalized level of wound care knowledge and practice. In other areas, practice has evolved from prescriptive policies and procedures towards the use of operational resources and tools related to clinical care topics and guidelines for practice such as debridement. The expectation is the nurse will utilize their knowledge and critical-thinking abilities to practice as independent competency-based practitioners rather than following prescriptive procedures. Competency reflects attainment of the knowledge, skills, and judgment to perform a task safely through appropriate education and preceptorship.

### CATEGORIES OF NURSES ACROSS CANADA

Nursing categories in Canada are differentiated by the level of education required as follows:

- NP—master’s degree, plus completion of a NP certificate program and examination;
- CNS—master’s degree or PhD in nursing;
- NSWOC—post bachelor’s degree in nursing graduate educational program in wound,

- ostomy & continence;
- RN–bachelor’s degree in nursing; and
- RPN/LPN–diploma in practical nursing.

*“Advanced nursing practice (APN) is an umbrella term describing an advanced level of clinical nursing practice that maximizes graduate educational preparation, in-depth nursing knowledge and expertise in meeting the health needs of individuals, families, groups, communities and populations.”<sup>106</sup>*

At the time of writing, the term APN is not a protected title; however, the current APN roles in Canada are the CNS or NP in Canada. Both the CNS and the NP practice in specialized areas of clinical practice according to their expertise. As the current minimum entry into the NSWOC education program is an undergraduate degree in nursing, not all NSWOCs are considered APNs at this time.<sup>107</sup>

“A CNS is a registered nurse with advanced nursing knowledge and skills in making complex decisions who holds a master’s or doctoral degree in nursing with expertise in a clinical nursing specialty.”<sup>106</sup> The practice of the CNS is guided by provincial/territorial regulations and organizational policies. Additional education and training is recommended prior to initiating and performing CSWD.

An NP is a master’s prepared registered nurse with additional educational preparation and experience required to obtain a nurse practitioner certificate. “NPs have competencies to autonomously diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals and perform specific procedures within their legislated scope of practice” as determined by their provincial/territorial nursing college.<sup>106</sup> With additional debridement education and training NPs across Canada are authorized to order, initiate and perform noninvasive debridement modalities, including CSWD.

The remaining professional nursing roles are associated with clinical skills that enable performance of debridement modalities according to their scope of practice authorized by their provincial/territorial regulatory college licence.<sup>4,97</sup> It is essential to recognize the combination of provincial/territorial college licensing, local organizations and institutional policies that determine the degree to which a debridement modality may be performed.<sup>4,97</sup>

In most provinces/territories and settings an NSWOC, or RN with a master’s degree in a wound healing program, is authorized to perform the various debridement modalities; however, prior to performing CSWD, additional education and clinical preceptorship is often required to build on foundational knowledge, skills, and critical-thinking abilities.<sup>25</sup> Similarly, an NSWOC (or RN with their master’s in a wound healing program) has limitations in performing surgical or hydrosurgical debridement.

## **INITIATION AND PERFORMING DEBRIDEMENT**

Policies vary substantially across Canada regarding the requirements to initiate debridement without an order from a physician or NP and the requirements to continue debridement once an order and care plan have been established. Many provincial/territorial regulatory colleges differentiate between the scope of practice knowledge, skills, and judgment required to order and initiate a debridement procedure versus requirements to perform ongoing debridement. While scope of practice is determined by the provincial/territorial regulatory colleges, other provincial/territorial legislation may impede the nurse’s ability to perform and act within their scope of practice.

For tools to aid in the optimization of scope of practice refer to the *Staff Mix Decision-making Framework for Quality Nursing Care* in **Appendix 8**, reproduced with permission.<sup>3</sup>

## INTERPROFESSIONAL TEAM ROLES IN DEBRIDEMENT

These recommendations are intended for all nurses in Canada. Knowledge about other health care practitioners who may practice debridement may provide a valuable resource for nurses. Examples of other health care professionals that may provide debridement include physicians, chiropodists, podiatrists, physiotherapists (PTs) and some occupational therapists (OTs). Debridement practices according to profession vary across Canada.

Generally speaking, debridement falls within the scope of practice of all physicians across Canada. They must still meet their college and institutional requirements and must also have the necessary knowledge, skills, and judgment to perform the different modalities of debridement.

Other health care practitioners may be involved in specific aspects of debridement, for example chiropodists and podiatrists, where CSWD is considered within their scope of practice as the gold standard in the management of DFU.

The scope of practice for chiropodists' and podiatrists' are governed by their provincial/territorial college(s) and by the policies of any institutions or organizations where they practice or have privileges. Chiropodists/podiatrists are trained in soft tissue surgery and in invasive surgical debridement as distinct from CSWD. While all can perform soft tissue debridement, only a podiatrist recognized as a surgical podiatrist is licensed to debride bone. Debridement for chiropodists/podiatrists is restricted to the lower extremity. In the clinical setting, debridement of other areas can become a delegated act if physicians request it from a chiropodist/podiatrist and is subject to delegation guidelines as outlined by their regulatory body.

PTs are integral members of wound care teams. PTs are consulted not only to perform debridement, but also to provide their expertise in assessment of wound causative factors, the ability of a wound to heal and whether or not debridement is indicated to support the healing process. PTs also provide education and support regarding the use of adjunctive therapies such as ultrasonic debridement to promote wound healing.

The controlled act of *care below the dermis* is within the scope of practice for PTs, which includes CSWD. As with nursing, physiotherapy regulatory bodies are governed by provincial/territorial regulations that are dependent on the area of practice. Physiotherapy core competencies are a foundation for wound care practices, which includes advanced cadaver lab anatomy to identify the structure and function of the body, including bone, muscle, ligament, nerve innervation and vasculature. Physiotherapy entry-level practice experience provides an advantage to gain the knowledge, skills, and judgment required to perform CSWD. Individual PTs must restrict themselves to performing any restricted activities that they are competent to perform which are appropriate to their area of practice. CSWD by PTs must be in accordance with the organization or departmental policies, standards and/or expectations of employees by their employer, approved by their colleges' council, and in accordance with their colleges' standards of practice in the province/territory in which they practice.

Developing and maintaining competence in CSWD is a significant factor when determining which PT will provide debridement in wound care. It is important that the PT work in an environment that requires the PT to practice the skill of debridement on a regular basis in order to develop, be mentored and then maintain proficiencies with these advanced

skills. There is minimal debridement done in the home environment as safety, cleanliness, lighting, and presence of animals need to be considered. Home care patients can attend a home care wound clinic to have debridement done to optimize safety. PTs and OTs in acute care may be involved in wound care, including burn care.

Other professional specialties that perform debridement practices are excluded from this literature review, such as OTs and dentistry.

### **DEBRIDEMENT MODALITIES**

The principal categories of debridement have been discussed in-depth in Section 2, page 32, of this document. Each category included a brief description of the scope of practice considerations as well as offering practice tips for the Canadian nurse. The new international guidelines (2019) describe practice considerations related to debridement modalities.<sup>11</sup>

Some general principles apply to each method of debridement such as beginning with a detailed patient history and assessment, a wound assessment and obtaining informed patient consent. For each method of debridement, it is essential to follow the manufacturer's IFU. Additional practice tips specific to each modality are located in Section 2. For example, biological debridement may require completion of training to meet provincial/territorial college requirements.

Surgical debridement is largely considered outside of the scope of practice of all nurses in Canada and so the practice tips concern in which instances to advocate for a referral to an appropriate physician. An understanding of surgical debridement is beneficial for the nurse to have in order to recognize when a surgical consult is warranted for potential debridement. Nurses encountering patients that may require surgical debridement should consider

consulting with the MRP regarding a referral to a physician or physician assistant with surgical training such as a general surgeon, vascular, plastic, orthopedic, surgical podiatrist (on forefoot) or chiropodist (areas below the knee).

### **CONSERVATIVE SHARP WOUND DEBRIDEMENT**

CSWD may be within the scope of practice for nurses who have completed a rigorous curriculum-based wound management program and an additional competency-based debridement educational and preceptorship program to support the competent demonstration of the knowledge, skills, and critical-thinking abilities required to initiate and perform CSWD safely. CSWD may be within the scope of practice for the NSWOC upon successful completion of an additional debridement education and preceptorship program. All nurses including the NSWOC must adhere to regulations established by their provincial/territorial regulatory bodies and follow organizational policies/procedures regarding CSWD.

Provincial/territorial nursing regulatory bodies must include CSWD within their scope of practice statements for nurses. These colleges define the education, limitations and conditions to which nurses must adhere to perform CSWD. All employers must have policies and procedures, with decision support resources, in place for nurses to perform CSWD. Prior to performing nurses should verify within their health care institution or agency that CSWD debridement is within their scope of practice and that there is a policy indicating who may perform it.<sup>24</sup>

### **CSWD IN COMMUNITY SETTING**

CSWD presents the greatest deliberation and attention. Here we have included a specific discussion on considerations for CSWD in the community setting. Refer back to Section 2, page 43, for a more detailed explanation of CSWD. Pain and bleeding are always

risk factors and unplanned complications of CSWD. Infection prevention, control and access to resources play a critical role in the choice of the debridement method.

“CSWD is considered the most aggressive form of debridement that can be done within the scope of practice of nursing.”<sup>20</sup> It can increase the risk of adverse effects and harm to the patient. The unpredictable nature of some community settings should be assessed. If conditions are not suitable for safe CSWD, it should be performed in a stable environment such as a community clinic.

A community setting is defined as outside of an acute care hospital. It can be a person’s home, group home, shelter, supportive living facility, hospice, or LTC facility.<sup>108</sup> The health care professional’s competency is crucial to perform debridement in the community setting. This includes assessment skills, the availability of equipment, optimal environmental considerations, partnering with the patient and significant others, and working collaboratively with an interprofessional team specialized in wound management.<sup>39</sup>

In the community, evaluation of the patients’ home environment for adequate lighting, cleanliness, availability of potable water and an uncluttered area to allow the clinician sufficient space to optimize control of CSWD instruments, and the allotment of adequate time to perform the procedure safely are important considerations to facilitate safe CSWD in the community.

Additional practice tips for consideration:

- have access to an interprofessional team that specializes in wound care;
- assess the patient for appropriateness of debridement, including safety, indications for debridement, availability of skilled resources, patient goals, risks and potential benefits, desired outcome

- of debridement and referral options;
- cognitive, behavioural and mental health status are also important to enable the patient to provide informed consent and for safety considerations for the nurse and the patient;
- CSWD should be performed in a safe, stable environment with resources and personnel available to manage potential complications such as bleeding, pain, anxiety, damage to underlying tissues or loss of consciousness;
- assess the ability to position the patient to ensure visibility of the wound, patient comfort, and to facilitate good body mechanics to avoid clinician strain;
- assess for infection control measures to prevent cross-contamination of the patient, family and clinician and the safe disposal of contaminated materials; and
- ensure access to sterile equipment and an effective method of sterilization for reusable equipment as required by Health Canada. Refer to Recommendation 7 in Section 1, page 24.

## **DEBRIDEMENT INTERNATIONALLY**

Debridement is a universal component of wound management around the world. There is some variability regarding the types of debridement used. While the categories of debridement are similar some modalities are more common in one country than another. Furthermore, there are differences in the pharmaceutical agents or medical devices in different countries. Papain urea is an enzymatic agent used in the US, however, not available in Canada. The use of honey, wet-to-dry mechanical debridement or the use of larvae/MDT varies country to country. Finally, the manufacturer’s IFU may vary from one country to another.

Professional titles are often country specific, for example tissue viability nurse is a designated wound care specialist nurse role in

the UK.<sup>36</sup> In addition to the tools used for debridement, the makeup of the health care team is not always consistent. In some countries, nurses or physicians may play a more or less significant role in the treatment of patients.

The secondary literature review was not a comprehensive overview although it did identify a number of papers that discussed debridement modalities in different parts of the world. It also provided pertinent insight into the way in which different countries have evolved their legislative framework, education and preceptorship requirements to ensure specific debridement methods are within the knowledge, skills, and judgment of health care practitioners.

Many of the papers screened concerned debridement modalities in countries including Australia, China, Ireland, Turkey, UK, and USA. In the USA, the scope of practice to debride varies from state to state, with a clear delineation between invasive and noninvasive techniques.<sup>91</sup> Several papers from the UK emphasize that CSWD requires a higher level of skill and competence for which an RN should refer to a nurse specialized in the procedure.<sup>12</sup> The effectiveness of biological debridement is one noted as requiring the skill of a specialist nurse.<sup>49</sup>

# SECTION 4

## **NEXT STEPS BEYOND THESE DEBRIDEMENT BEST PRACTICE RECOMMENDATIONS**

The principal findings from these *Debridement: Canadian Best Practice Recommendations for Nurses* highlighted the need for consistent and standardized nursing debridement practices to facilitate optimal clinical outcomes and safety for patients and nurses in Canada.

Specialized knowledge, skills, critical-thinking abilities, and competencies were deemed to be essential for the provision of safe and effective debridement to eliminate the potential risk of patient harm and complications when performed by untrained nurses.<sup>17,18,20,21</sup>

The development of this debridement BPR identified several variations in the requirements for nurses to initiate and perform the debridement modalities in various provinces/territories and health care settings. The need for a competency-based debridement educational and preceptorship program was described as a foundational requirement to increase access to nurses with the ability to perform more advanced methods of debridement to enable reduced overall costs associated with prolonged wound healing, and to minimize adverse events, patient risks and potential harm related to debridement.

The task force confirmed the following requirements to support nurses to obtain the knowledge, skills, and judgment required to become competent to initiate and perform wound debridement safely.

- Establish national core competencies and uniform requirements for nurses to initiate and perform the various debridement modalities.
- Develop a consistent competency-based debridement educational and preceptorship program model for nurses, including prerequisite education in wound management from a recognized curriculum-based program prior to enrollment.
- Develop a competency-based examination for nurses post the successful completion of a debridement educational and preceptorship program.
- Advocate for the development of debridement refresher courses and skills workshops to assist nurses to maintain their knowledge and practical debridement skills throughout their careers.

- Develop consistent requirements for the reexamination of knowledge and clinical skills for nurses to confirm their competency to perform CSWD.
- Encourage nurses to monitor their competency in debridement utilizing a competency skills checklist and log of procedures performed.
- Advocate for the development of organizational policies to define the educational and scope of practice requirements for various categories of nurses to initiate and perform the various methods of debridement.
- Urge provincial/territorial nursing regulatory bodies to identify debridement as an advanced nursing skill, which warrants competency and continuous education.
- Advocate for standardization of the Health Professions Act across the provinces/territories to identify CSWD as a controlled or restricted activity to be initiated and/or performed by an RN, NSWOC or NP with confirmed competency in debridement, or physician, physiotherapist, chiroprapist, or podiatrist.

Our intention is for this BPR to positively influence patient safety related to all methods of debridement across the continuum of care and to be circulated and implemented widely by nurses at all professional levels. We also recommend this BPR be reviewed by health care administrators in a variety of health care settings, and by both federal and provincial/territorial Canadian government health agencies, to further define debridement and support safe and effective high quality patient care.

# APPENDICES

<b>APPENDIX 1</b>	
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# APPENDIX 1

## ***INTERPRETATION OF EVIDENCE: RNO LEVELS OF EVIDENCE.***

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<b>Ia</b>	Evidence obtained from meta-analysis or systematic review of randomized controlled trials and/or synthesis of multiple studies primarily of quantitative research.
<b>Ib</b>	Evidence obtained from at least one randomized controlled trial.
<b>IIa</b>	Evidence obtained from at least one well-designed controlled study without randomization.
<b>IIb</b>	Evidence obtained from at least one other type of well-designed quasi-experimental study without randomization.
<b>III</b>	Synthesis of multiple studies primarily by <i>qualitative</i> research.
<b>IV</b>	Evidence obtained from well-designed non-experimental observational studies, such as analytical studies, or descriptive studies and/or qualitative studies.
<b>V</b>	Evidence obtained from expert opinion or committee reports, and/or clinical experiences of respected authorities.

# APPENDIX 2

## ***ABRIDGED SUMMARY OF 12 BEST PRACTICE RECOMMENDATIONS***

### **1 – SCOPE OF PRACTICE**

All classes of nurses must work within the controls of federal and provincial/territorial legislation, regulatory bodies, organizational policies and individual competency. For debridement of wounds, this includes having the knowledge, skills, judgment, and authority to perform all methods of debridement. Nurses are accountable for knowing their national code of ethics and expectations, respective provincial/territorial practice standards and guidelines, their employer's policies, procedures, and operational guidelines, and their competence and limitations for all methods of debridement. *Level of Evidence IV-V*

### **2 – ORGANIZATIONAL RECOMMENDATIONS**

Employers/ organizations should ensure all policies and procedures, or operational resources related to debridement including the type/method of debridement each class of nurse is authorized to initiate and /or perform, including the specific level of education, training (including mentorship), and experience required to perform the method of debridement. *Level of Evidence IV-V*

### **3 – PRIOR TO INITIATION OF DEBRIDEMENT**

Prior to initiating any method of debridement, the nurse must:

- a. be knowledgeable about the different types of debridement and the level of skill and training required to perform each method;
- b. be aware of their own attitudes, limitations, skills and competency;
- c. recognize the indications, precautions, and contraindications for the various debridement methods;
- d. evaluate the patient's health status and wound goals, wound assessment findings and wound healing potential to determine if a consultation with the interprofessional team would be beneficial to confirm decisions regarding debridement;<sup>7,8,9</sup> and
- e. be able to identify, manage and mitigate potential complications and adverse events, including anxiety, pain and bleeding. *Level of Evidence IV-V*

#### **4 – EDUCATION & PRECEPTORSHIP**

Prior to initiation or performing debridement, successful completion of a recognized wound management program and an additional competency-based debridement module is highly recommended. In addition, mandatory clinical preceptorship is strongly advised prior to independently performing CSWD. Other forms of debridement equally require education and preceptorship, however, the need for a preceptor would depend on the level of risk associated with the method.<sup>6,18</sup> *Level of Evidence IIb, IV-V*

#### **5 – PATIENT ASSESSMENT**

Prior to the initiation of debridement the nurse must conduct a comprehensive patient assessment. *Level of Evidence III-V*

#### **6 – WOUND ASSESSMENT**

In addition to the comprehensive patient assessment, a comprehensive wound and periwound skin assessment, using a validated assessment tool is recommended to assist the nurse to identify the wound etiology, stage/ categorize/grade the wound, and identify barriers to healing. Debridement of any kind is contraindicated for stable dry eschar on heels, ischemic limbs, toes, and digits. An urgent referral for surgical debridement is recommended when acute infection or sepsis is suspected and when aligned with goals of care.<sup>10-12,26</sup> *Level of Evidence IIb, IV-V*

#### **7 – ENVIRONMENTAL ASSESSMENT**

Assess the patient's environment to ensure the setting is safe to perform the debridement modality. Prior to the initiation of CSWD resources and personnel must be available to manage potential adverse events. *Level of Evidence IV-V*

#### **8 – WOUND HEALING GOALS**

Prior to the initiation of any method of debridement it is essential to establish realistic goals that align with the patient's goals including concerns and cultural traditions and the goals for wound healing (healing, nonhealing, nonhealable). *Level of Evidence IV-V*

#### **9 – INFORMED CONSENT**

Informed consent should include legal and ethical considerations, organizational requirements, and should be obtained for all forms of debridement. While written consent may not be required in all instances, the method used to obtain informed consent and the patient's response must be documented in the patient's record. *Level of Evidence V*

#### **10 – PRODUCT KNOWLEDGE**

Nurses must be knowledgeable about wound care products and therapies used both above and below the dermis before using them in practice. Product usage that does not adhere to the approved guidelines for use is considered to be off-label use which may expose the patient to unknown risks and is therefore not recommended. *Level of Evidence V*

#### **11 – REASSESSMENT**

Regular reassessment of the patient and the wound is imperative. *Level of Evidence IV-V*

#### **12 – COST-EFFECTIVENESS**

Ensure all associated costs are considered before selecting the method of debridement. This includes costs for the health care system, the employer or organization, the nurse, the patient and significant other. *Level of Evidence IV-V*

# APPENDIX 3

## ***CHECKLIST FOR DEBRIDEMENT DECISION***

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### **BOX 7: Checklist for debridement decisions**

#### **The aim/goal for the wound**

- Is debridement appropriate for this wound? NO ➤ KEEP DRY
- Should I take a conservative approach (stabilise the wound)? YES ➤ AUTOLYTICALLY DEBRIDE
  - Do I need to change method of debridement? YES ➤ CONSIDER OTHER METHODS
- Should I actively try to accelerate the wound healing process? YES ➤ ACCELERATE DEBRIDEMENT
  - Is non-viable tissue delaying healing?
  - Does the wound edge/periwound skin or wound bed require accelerated debridement?
  - Is acceleration of debridement going to help the management of infection in this wound?
  - Is acceleration of debridement in the best interests of the patient at the moment?
- Am I certain what to do? NO ➤ CONSULT MULTIDISCIPLINARY TEAM, DO NOT DEBRIDE



#### **Accelerate healing through debridement**

- Have I discussed the debridement options with the patient/family members?
- Do I have the skills to perform the chosen method of debridement myself?
  - Am I confident in what I am doing? NO ➤ REFER
  - Can I make things worse/do harm? YES ➤ REFER
  - Is the current environment safe to undertake debridement? YES ➤ DEBRIDE
  - Have I got the resources/equipment necessary? YES ➤ DEBRIDE



NO ➤ REFER or PLAN RESOURCES

#### **Expected outcomes of debridement**

- Will the intervention remove non-viable tissue in one go?
- Will it be a gradual/staged process?
- Will the debrided wound be ready for another therapy, eg negative pressure wound therapy, skin grafting? YES ➤ SET DATE FOR REVIEW

#### **Options at every stage**

- Check clinical guidelines/policies
- Seek advice from a specialist or colleagues in the multidisciplinary team (as simple as making a call)
- Refer to another practitioner for debridement
- Debride wound, selecting the most appropriate method based on: wound and patient need, speed with which debridement is necessary and patient preference

# APPENDIX 4

## ***THEORETICAL COMPONENT OF THE DEBRIDEMENT EDUCATION PROGRAM***

The components of a theoretical debridement education program will enable the learner to acquire knowledge and understanding of the following:

- wound healing process.<sup>24,25,37</sup>
- principles of wound management;<sup>18,24,37</sup>
- wound bed preparation;<sup>37</sup>
- components of a comprehensive patient assessment;<sup>14,37,102</sup>
- components of a focused wound assessment;<sup>14</sup>
- strategies to differentiate wound etiologies and identify contributing factors;
- goals for wound care including patient goals, goals for wound healing verses nonhealing, or nonhealable;<sup>24,37</sup>
- pain assessment, including prevention and management strategies;<sup>10,16,24,37</sup>
- anatomy and physiology of the integumentary system and underlying structures of common wound locations such as those on the lower limb and in close proximity to tendons, nerves and blood vessels;<sup>10,16,18</sup>
- tissue types, including granulation tissue, devitalized tissues, tendons, muscles, bones, fascia, hematoma, seroma, and others;<sup>10</sup>
- strategies to prevent infection and cross-contamination and the ability to differentiate between the clinical signs and symptoms of inflammation, localized, spreading and systemic infection;<sup>10,24,37,41</sup>
- environmental and safety considerations;<sup>14,20</sup>
- indications, contraindications, precautions, advantages and disadvantages, risks and benefits associated with each debridement method (Refer to Section 2, page 32, for detailed information about debridement modalities);
- roles of interprofessional team members and criteria regarding when to seek assistance;<sup>16,18,37,102</sup>
- legal aspects associated with informed consent for debridement;<sup>9,18,20,25,48</sup>
- strategies to facilitate patient education;<sup>10</sup>
- awareness of own values and attitudes to avoid the potential negative impact on patient care delivery especially when the patient's values do not align with those of the nurse;
- components of a holistic patient plan of care inclusive of patient goals, values and cultural considerations, treatment objectives, plans for ongoing assessments and interventions;<sup>46</sup>

- documentation requirements including patient and wound assessment findings, consent for treatment, method of debridement and rationale, area debrided, type of tissue debrided, type and sterility of equipment used to perform debridement, adverse events such as bleeding or pain, appearance and measurement of wound pre- /post- debridement, products used and outcome of debridement;<sup>16,18,20,24</sup>
- professional authorization to perform debridement including provincial/territorial standards, scope of practice, regulations, and organizational policies and guidelines that describe the educational and skill requirements for nurses to perform CSWD;<sup>10,16,17,20,25</sup> and
- legal considerations related to professional liability and risk insurance coverage associated with debridement.<sup>20</sup>

# APPENDIX 5

## ***NURSING SKILLS CHECKLIST***

British Columbia Provincial Nurses Skin and Wound Committee Education Module: Conservative Sharp Wound Debridement.<sup>102</sup> Reproduced with permission of CLWK project. Check the <https://www.clwk.ca/> website for the up to date version.

<b>Conservative Sharp Wound Debridement: Skills Checklist for RNs</b>						
Name _____		Date _____				
CSWD Education Attendance: Date _____						
Place a <input type="checkbox"/> or an X in the appropriate square.						
Competency	Mentored Sessions				Follow-up (if needed)	
	1	2	3	4	1	2
1. Discusses the debridement with the wound clinician or physician / NP and receives a directive or order to continue with debridement.						
2. Is aware of the precautions and contraindications for CSWD.						
3. Provides rationale for use of CSWD based on client assessment.						
4. Accesses adequate lighting, equipment and assistance, if needed and positions the client appropriately						
5. Explains required information to the client and obtains informed consent.						
6. Positions the client so that they are comfortable and the wound is easily accessible						
7. Demonstrates understanding of relevant anatomy and underlying tissue.						
8. Identifies viable and non viable tissue.						
9. Performs a complete wound assessment prior to debriding						
10. Uses sterile or no touch technique correctly.						
11. Manages pain and discomfort prior to, during and following the procedure.						
12. Demonstrates acceptable skills and techniques when carrying out CSWD: <ul style="list-style-type: none"> <li>▪ Gathers appropriate instruments to debride the specific wound</li> <li>▪ The instruments are handled appropriately with respect to safety &amp; the most appropriate tool is selected for the tissue type to be removed</li> <li>▪ The tissue to be removed is grasped securely with care for the underlying viable tissues.</li> <li>▪ The non-viable tissue is removed one layer at a time.</li> <li>▪ Viable tissue is not compromised.</li> </ul>						
13. Identifies when to stop the procedure at the appropriate level of tissue.						
14. Applies an appropriate wound dressing once the procedure is completed.						
15. Assembles what is needed to address bleeding during the procedure and identifies the process for addressing bleeding for those not on anticoagulants and for those on anticoagulants.						

*Education Module: Use of Conservative Sharp Wound Debridement*

16. Recognizes skill limitations and the need to involve others if necessary.						
17. Utilizes secondary debridement techniques if needed.						
18. Documents CSWD according to agency standards. 19. Outlines a comprehensive plan of care for reassessment, ongoing debridement and wound healing.						

Within the 4 mentoring sessions, wounds with eschar, slough and callus should be debrided. In addition, the learner should use a variety of debriding instruments.

Signature / Status of Mentor for Session #1 \_\_\_\_\_

Signature / Status of Mentor for Session #2 \_\_\_\_\_

Signature / Status of Mentor for Session #3 \_\_\_\_\_

Signature / Status of Mentor for Session #4 \_\_\_\_\_

Signature / Status of Mentor for Follow-Up #1 \_\_\_\_\_

Signature / Status of Mentor for Follow-Up #2 \_\_\_\_\_

**Comments**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Achievement of Competency**

I / We have mentored this nurse for \_\_\_\_ client visits and think that she / he demonstrates sufficient competency to perform CSWD independently.

Signature / status of mentor \_\_\_\_\_

Signature / status of practitioner \_\_\_\_\_

# APPENDIX 6

## **CSWD MENTORSHIP SKILLS CHECKLIST**

Reproduced with permission of WRHA.<sup>7</sup>



Winnipeg Regional Health Authority    Office régional de la santé de Winnipeg

Name: _____		
Date CSWD Self-Study Completed: _____		
Date Skills Laboratory Completed: _____		
Date (ABPI & TP) Training Completed: _____		
RHA Approved Mentor(s): _____		
Competency	Achieved	Follow up (if needed)
	Date	Date
1. Demonstrates understanding of relevant anatomy, underlying tissue and structures.		
2. Identifies viable and nonviable tissue.		
3. Conducts a complete wound assessment to determine need for debridement.		
4. States precautions and contraindications for CSWD.		
5. Provides rationale for use of CSWD based on client assessment.		
6. Conducts an environmental scan that determines: safety to debride, adequate lighting, equipment and assistance to hold/stabilize limb or position client.		
7. Explains procedure to the client and obtains informed consent.		
8. Positions the client so that they are comfortable and the wound is easily accessible.		
9. Assembles what is needed to address bleeding during the procedure and identifies the process for addressing bleeding.		
10. Uses sterile or no touch technique correctly.		
Competency	Achieved	Follow up (if needed)
	Date	Date
11. Demonstrates acceptable skills and techniques: i. Gathers appropriate instruments to debride the specific wound ii. Selects the appropriate tool for the tissue type to be removed		

iii. Handles instruments appropriately with respect to safety iv. Grasps the tissue to be removed securely with care for the underlying viable tissues v. Removes nonviable tissue one layer at a time vi. Does not compromise viable tissue		
12. Manages pain and discomfort prior to, during and following the procedure.		
13. Identifies when to stop the procedure at the appropriate level of tissue.		
14. Applies an appropriate wound dressing once the procedure is completed.		
15. Recognizes skill limitations and the need to involve others if necessary.		
16. Utilizes secondary debridement techniques if needed.		
17. Documents wound assessment and procedure.		
18. Outlines a comprehensive plan of care for reassessment, ongoing debridement and wound healing.		

<b>Mentoring Objectives Achieved by Wound Type</b>	<b>Date</b>
Burns	
Foot Hyperkeratosis (Calluses)	
Diabetic Foot Ulcers	
Pressure Injuries	
Stalled Wounds (Biofilm)	
Venous Leg Ulcers	
Others (as determined by clinical setting)	
<b>Final Mentoring Objectives Achieved</b> <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Additional Action Plan (if needed)</b>	
<b>Mentor Signature</b>	
<b>Mentee Signature</b>	

# APPENDIX 7

## ***SCOPE OF PRACTICE FOR NURSES ACROSS CANADA***

**British Columbia**—An LPN requires the successful completion of additional educational training to perform wound management, including debridement modalities, probing, irrigating, packing or dressing a tunneled wound. LPNs do not perform any form of sharp debridement including CSWD and cannot perform ABPI testing. LPNs perform wound care following decision support tools and only when a wound treatment plan is in place.<sup>25,109</sup>

Further, when a clinical professional writes an order, LPNs can perform wound care below the dermis or below the mucous membrane. This includes NPWT, MDT, or the application of compression, which can only be performed when additional educational training has been completed, a decision support tool is being followed and when a wound care treatment plan is in place. Orders also must be patient specific.<sup>25,109</sup>

An order is not required for RNs to perform a procedure below the dermis; however, the ability to initiate and order conservative sharp and maggot wound debridement can only be done by a physician, NP or RN who has successfully completed the mandatory provincial/territorial debridement educational modules and post graduate wound management courses as well NPs need to have CSWD included in their non-core privileging dictionary.<sup>13,25,109</sup>

**Alberta**—RNs are governed by the Health Professions Act in Alberta, which has stipulated that RNs are able to perform authorized restricted activities, provided that they “are competent and appropriate to their area of practice and the procedures being performed.”<sup>105</sup> Restricted activities comprise a wide range of activities, such as CSWD.<sup>105</sup> However, it does not seem to apply to other forms of debridement and does not include surgical debridement. In acute care settings in Alberta, use of an enzymatic debridement agent requires a physician prescription prior to being applied by an RN.

RNs are authorized to perform restricted activities including procedures below the dermis provided they successfully complete requirements set out by their employer and demonstrate they have maintained competency necessary to perform the act. Professional regulations allow LPNs to cut tissue for the purpose of removing a corn or callous as part of advanced foot care training only. Any LPN performing wound care must ensure they have additional education and training in wound care prior to performing wound care.<sup>105,110</sup>

In order to determine if a restricted activity can be performed, an RN needs to adhere to the standards for restricted activities described below.<sup>105</sup>

### **Professional Responsibility and Accountability**

- being accountable for the practice by providing safe and competent care;
- practice in the appropriate clinical practice areas;
- perform within their own limits;
- complete additional education required by employer; and
- complying to organization policy.

### **Knowledge-Based Practice**

- RN must adopt the following processes while performing debridement—assessment, critical inquiry, planning, problem solving, decision making, monitoring of the patient’s response and evaluation;
- restricted activity must be warranted—risk versus benefits; and benefits must outweigh risks; outcome is predictable; and
- able to establish and perform course of actions if outcome is intended or unanticipated; and maintaining competencies.

**Saskatchewan**—According to the Saskatoon Health Region (SHR) policy regarding CSWD, only RNs certified in RN Specialty Practice can perform the advanced RN intervention: CSWD.<sup>14</sup> CSWD is defined as the removal of foreign material or nonviable tissue from the wound to the point of reaching healthy tissue and involves the use of a sharp instrument such as scissors, scalpel, forceps or curette.<sup>14</sup>

**Manitoba**—RN’s may perform a procedure on tissue below the dermis including CSWD without an order provided they successfully complete additional education.<sup>4</sup> WRHA defines the CSWD debridement using three levels.

- Level 1 involves using tweezers, forceps or scissors and no tissue is removed from below the dermis. This level requires the clinician to have additional education.

- Level 2 includes the use of a scalpel, curette, or scissors to remove nonviable tissue to the level of viable tissue, but not below. This requires additional education and an appropriate setting.
- Level 3 is considered surgical debridement and is only done by a surgeon in the OR.

An order from a prescriber is not required for CSWD as only health care practitioners with certification through WRHA CSWD course including the preceptorship component or a course that is equivalent to the WRHA CSWD course can initiate, order and perform the act.<sup>4</sup> Each health care practitioner must keep an active log of each procedure completed and recertify every 3 years.

**Ontario**—All categories of nurses are authorized to perform debridement; however, only nurses with RN and NP designations can initiate or order debridement.<sup>111</sup> The term debridement is nonspecific and therefore should be considered to include all forms of debridement. RPNs may initiate cleansing, soaking and dressing of wounds below the dermis.<sup>111</sup> It is recommended nurses know the mechanism of action of the types of dressings as some are designed to facilitate autolytic debridement.

**Quebec**—For wound care, a nurse is authorized to develop a treatment plan, initiate and perform an intervention according to assessment findings. Debridement is included in one of 17 restricted acts reserved for RNs.<sup>112</sup> There is no mandated requirement for education, training or certification, however, the absence of this legal requirement does not exempt nurses from acquiring the necessary training for the activities they are called upon to practice as part of their professional practice, in accordance with their ethical obligation to act competently. In Quebec an RN, who have a prescriber number, can prescribe the enzymatic debriding agent collagenase covered by provincial health insurance.

An LPN may administer an order for a treatment plan determined by a nurse. LPNs may perform procedures including autolytic, mechanical, and enzymatic debridement of wounds or cauterizing a wound using silver nitrate provided there is an existing order or an established nursing care plan.<sup>112</sup>

Educational content is not standardized across the province. Each education centre, health care organization and community setting independently determines the content of what is taught about wound care. The requirements to practice any debridement method is dependent on individual organizational policies. There is no official mandatory update of foundational nursing education and competencies, beyond the requirements to maintain professional nursing designation. This presents a weakness in that the theoretical training is not supported by skill level achievement and preceptorship. However, the nurse must base their practice on evidence-informed knowledge and best practices. The RN must also refer to guides and standards of practice, including those published by the OIIQ or applicable to their field of practice.<sup>112</sup>

In Quebec PTs can perform wound cleansing and irrigation; debridement of the wound (autolytic, mechanical, enzymatic, biological or CSWD). They can crosshatch dry eschar with a scalpel and cauterize using silver nitrate with an order. An OT can cleanse and replace a wound dressing.<sup>113</sup>

**Prince Edward Island**—CSWD is a restricted act under the Prince Edward Island Provincial Standards for Nurses. Updated provincial policy (2021) states that, CSWD “must be performed by a clinician who has graduated from an appropriate educational course with preceptorship (i.e., WOC–EP) and achieved certification with the CNA.”<sup>114</sup> CSWD is considered to be “advanced wound care and must be performed using aseptic technique

and with informed consent.”<sup>114</sup> Referral to an NSWOC by a physician or NP implies that care and treatment of a wound may include CSWD.

**Nova Scotia**—Nursing interventions are driven by the care plan. Prescribing medication or treatment including dressings that are not over the counter is outside of the scope of practice of RNs and LPNs in Nova Scotia and requires authorization from an authorized prescriber (physician or NP). This includes, but is not limited to, CSWD, NPWT, and compression therapy. This authorization requires a patient specific order, a preprinted order or a care directive. An NSWOC in Nova Scotia is not permitted to initiate debridement.<sup>115</sup>

**New Brunswick**—No policy or position statement is currently available for CSWD. Nurses use a decision-making tool for nursing practice guidelines.<sup>17</sup> The Association of New Brunswick Licensed Practical Nurses Competency Profile states that LPNs must demonstrate their knowledge and ability to perform wound care such as wound compresses, irrigation, wounds with drains, and basic wound packing without tunneling.<sup>116</sup> Also, LPNs must understand the purpose of wound debridement and demonstrate knowledge and ability to perform wound debridement.

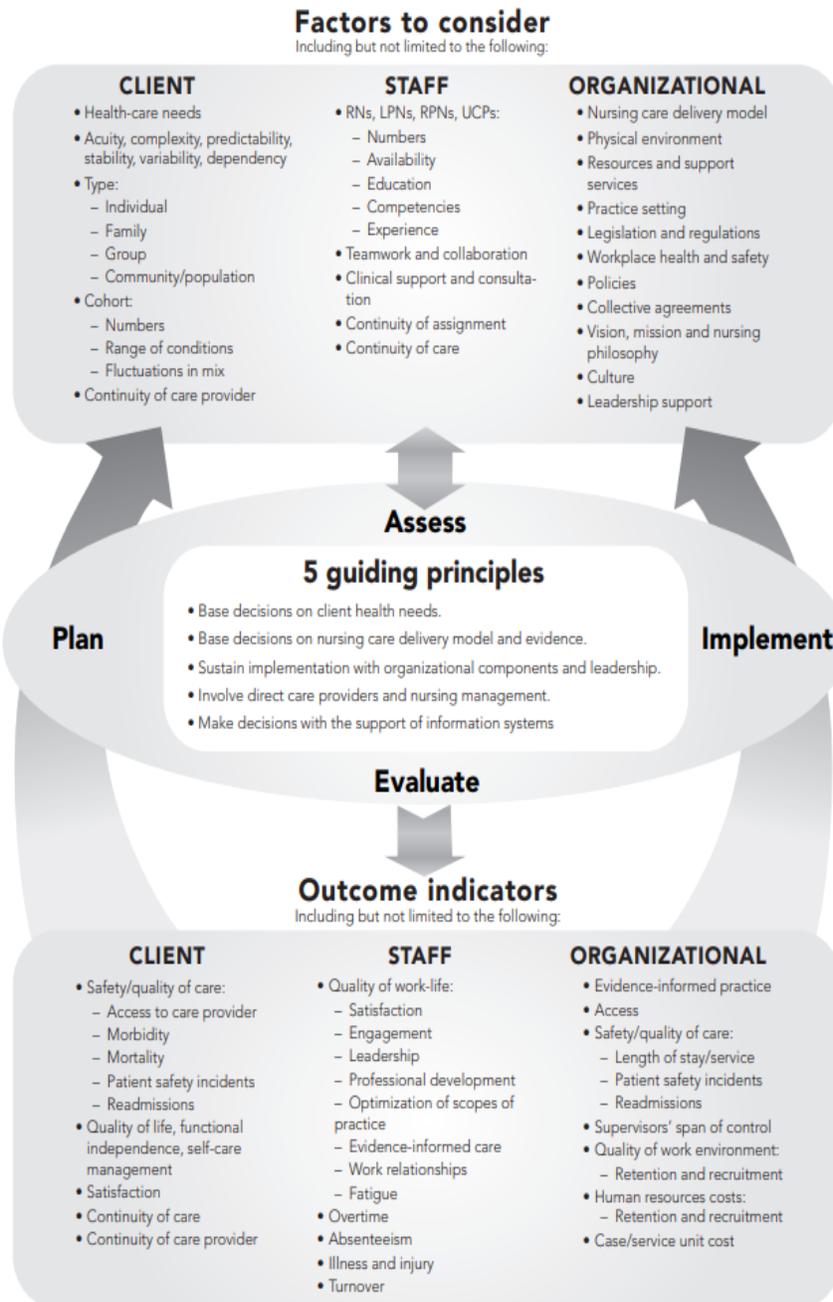
**Newfoundland & Labrador**—There is a limited number of nurses (some NSWOCs, CNSs and NPs) trained to provide CSWD in Newfoundland. In the development of this document, policies or legislation in place for debridement has not been viewed.

**Yukon, Northwest Territories & Nunavut**—Policies or legislation for debridement were not identified during the search to write this document.

# APPENDIX 8

## STAFF MIX DECISION-MAKING FRAMEWORK

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# TABLES

## ***LIST OF FIGURE & TABLES***

### **Figure 1**

*The Wound Prevention and Management Cycle*

### **Table 1**

*Summary of key considerations for the patient assessment*

### **Table 2**

*Signs and symptoms associated with stages of the wound infection continuum*

### **Table 3**

*Factors affecting the ability of wounds to heal*

### **Table 4**

*The comparative desirability of factors across the six modalities of debridement for a healable wound*

### **Table 5**

*Concise summary of the indications, contraindications, advantages, disadvantage and special considerations of the principal debridement modalities*

### **Table 6**

*Summary of provincial/territorial scope of practice requirements for nurses to initiate and perform debridement*

# GLOSSARY

## ***DEFINITION OF TERMS***

These terms appear underlined on first use in the BPR.

- **angiogenesis**—the development of new blood vessels from pre-existing vessels. Angiogenesis plays a fundamental role in new tissue development during wound repair.
- **autolytic debridement**—a natural and highly selective process involving the use of moisture-donating products or a moisture retentive cover dressing to support the activation of the body’s enzymes present in wound fluid to promote the destruction of nonviable tissue.
- **best practice guidelines**—systematically examine the best available evidence and integrate the evidence with patient preferences and practitioner expertise to reduce inappropriate variations in practice and to promote evidence-based practice decisions and guide high quality program and policy development for safe and ethical health care delivery.
- **best practice recommendations**—statements of best practice directed at the health care providers that are ideally evidence-based.<sup>1</sup> Recommendations represent systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. In the absence of data, best practice may simply be a matter of authority or expert opinion.
- **biofilm**—a complex microbial community of bacteria and fungi, which synthesize and secrete a protective matrix that attaches the biofilm firmly to the living or nonliving surface. Highly resistant to and poorly penetrated by antimicrobials. Must be physically removed by debridement. Reformation occurs quickly but can be prevented with antimicrobials and repeated maintenance debridement.
- **biological debridement**—the application of sterile, medical-grade larvae into the wound to digest soft nonviable tissue and bacteria and promote wound healing.
- **biopsychosocial**—the biopsychosocial model is an interdisciplinary model that looks at the interconnection between biology, psychology, and socio-environmental factors that influence a person’s health and well-being.
- **chemical debridement**—the application of external agents that remove devitalized tissue through the degradation of collagen.
- **chiropodist**—a college certified practitioner who conducts assessment of the foot and the treatment and prevention of diseases, disorders or dysfunctions of the foot by therapeutic, orthotic or palliative means.

- **chronic wound**—a wound with slow progression through the healing phase; or delayed, interrupted or stalled healing due to intrinsic and extrinsic factors.<sup>41</sup>
- **cleansing**—the process to remove surface contaminants, bacteria and remnants of previous dressings from the wound surface and its surrounding skin.
- **competence**—the combination of knowledge, skills, attitudes and judgment including critical-thinking skills and experience required to provide safe and effective care.
- **conservative sharp wound debridement**—“The removal of clearly identifiable, devitalized tissue above the level of viable tissue using sharp instruments. It can also remove demarcated nonviable tissue including senescent cells and bacteria.”<sup>11</sup>
- **cost-effectiveness**—achieving optimal results compared to the expenditure.
- **debridement**—the removal of nonviable tissue or any other type of bioburden from a wound bed with the objective to promote wound healing.
- **demarcation**—line of separation between viable and nonviable tissue.
- **enzymatic debridement**—the introduction of proteolytic enzymes to the wound to selectively dissolve nonviable tissue.
- **epibole**—edges of epidermis have rolled down under so that the epithelial cells cannot migrate from the wound edges to close the wound.
- **eschar**—black or brown necrotic, devitalized tissue. The tissue can be loose or firmly adherent and hard, soft, or somewhat soggy.<sup>54</sup>
- **hydrotherapy**—the use of a bath in which warmed swirling water softens and removes devitalized tissue from the patient.
- **hydrosurgical debridement**—removal of dead tissue using a high energy saline beam as a cutting implement.
- **hyperkeratotic tissue**—hyperkeratosis results in the thickening of the stratum corneum with increased amounts of keratin resulting in a dense horny layer, such as a corn or callous. This is a protective response to local pressure, or repetitive trauma such as friction.
- **initiation**—regulations under the Nursing Act give RNs and RPNs who meet certain conditions the authority to initiate specific controlled acts. These nurses may independently decide that a specified procedure is required and initiate that procedure in the absence of a direct order or directive.<sup>5</sup>
- **interprofessional team**—a team of individuals from different professions working together to reach a common goal and who share decision making to achieve that goal. The goal in health care is to work in collaboration with persons and their families to provide treatment that reflects their goals and values.<sup>117</sup>
- **mechanical debridement**—the removal of nonviable tissue from a wound through the application of outside force.
- **Manuka honey**—contains active *Leptospermum* honey (ALH), derived from the pollen and nectar of the *Leptospermum* tea tree, a native to New Zealand and Australia.
- **mentorship**—involves a voluntary, mutually beneficial and usually long-term professional relationship. In this relationship, one person is an experienced and knowledgeable leader (mentor) who supports the maturation of a less-experienced person (mentee) with leadership potential.
- **necrotic tissue**—devitalized tissue that forms a physical barrier to the movement of epithelial cells striving to form a new epidermis over the wound bed.

- **pathergy**—a skin condition in which a minor trauma such as a bump or needlestick injury, or surgical incision sites leads to the development of difficult to heal skin ulcerations. Pathergy may occur with conditions such as pyoderma gangrenosum.
- **perform**—both RNs and RPNs have the authority to initiate certain controlled act procedures. RNs can initiate and perform certain procedures, and provide an order for an RPN to perform the controlled act. RPNs can initiate and perform certain procedures, but cannot provide an order for another nurse to perform the controlled act (CNO).
- **photoplethysmography**—a simple noninvasive and low cost test using infrared light to detect skin blood volume and changes in the microvascular tissue.
- **podiatrist**—a specialist certified doctor caring for the structure of the foot.
- **preceptorship**—a one-on-one relationship between two individuals with a predetermined length of time. A preceptor facilitates a preceptee’s learning goals to assist with their adjustment to the performance of a new role.
- **pulsatile lavage**—pulsatile lavage is defined as the delivery of an irrigating solution under pressure that is produced by a powered device. Irrigation under pressure may be delivered concurrently with suction, removing the irrigating solution from the target area.
- **scope of practice**—the limits of practice, as defined by legislation. Includes the activities and acts that can be legitimately engaged in by a profession or by the individual practitioner.
- **scoping review**—scoping reviews can be used to map the key concepts that underpin a field of research, as well as to clarify working definitions, or the conceptual boundaries of a topic.
- **senescent cells**—decrease in the proliferation potential of dermal fibroblasts. Occurs in chronic wounds in fibroblasts have impaired responsiveness growth hormones.
- **slough**—slough is made up of white blood cells, bacteria and debris, as well as dead tissue. Slough is moist necrotic tissue.
- **surgical debridement**—surgical debridement involves extensive debridement that may include viable and nonviable tissue and may result in bleeding and pain. It is best performed under sterile conditions in an OR with anesthesia.
- **wound bed preparation**—“Wound bed preparation is the management of the wound to accelerate endogenous healing or to facilitate the effectiveness of other therapeutic measures.”<sup>66</sup>
- **Wound Prevention and Management Cycle**—the Wound Prevention and Management Cycle guides the clinician through a logical and systematic method for developing a customized plan for the prevention and management of wounds from the initial assessment to a sustainable plan targeting patient self-management.

# ABBREVIATIONS

ABPI	ankle brachial pressure index, sometimes also referred to as ABI
ALH	Active <i>Leptospermum</i> honey
APN	advanced practice nurse
BCCNP	now British Columbia College of Nurses and Midwives (BCCNM)
BPR	best practice recommendation
CMS	Center for Medicare & Medicaid Services [USA]
CNS	clinical nurse specialist
CNA	Canadian Nurses Association
CNO	College of Nurses of Ontario
COPD	chronic obstructive pulmonary disease
CRNM	College of Registered Nurses of Manitoba
CSWD	conservative sharp wound debridement
DFU	diabetic foot ulcer
IFU	instructions for use
IWCC	International Interprofessional Wound Care Course
LTC	long-term care
LFUD	low-frequency ultrasonic debridement
LLA	lower limb assessment
LOPS	loss of protective sensation
LPN	licenced practical nurse
MDT	maggot debridement therapy
MMP	matrix metalloproteinase
NICE	National Institute for Health and Care Excellence [UK]
NP	nurse practitioner
NPWT	negative pressure wound therapy
NSWOC	Nurse Specialized in Wound, Ostomy and Continence
NSWOCC	Nurse Specialized in Wound, Ostomy and Continence Canada
OIIQ	Ordre des infirmières et infirmiers du Québec
OR	operating room
OT	occupational therapist
PPG	photoplethysmography
PT	physiotherapist
RN	registered nurse
RNAO	Registered Nurses' Association of Ontario
RPN	Registered Practical Nurse or Registered Psychiatric Nurse in BC
TBPI	toe brachial pressure index
T.I.M.E.	Tissue, Infection/Inflammation, Moisture Balance, Wound Edge
WBP	wound bed preparation
WOC-Institute	Wound, Ostomy & Continence Institute
WOC-EP	WOC-Institute Education Program
WOCN	Society Wound, Ostomy and Continence Nurses Society
WRHA	Winnipeg Regional Health Authority

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**ALL TRADEMARKS ACKNOWLEDGED.  
EDITED AND PRODUCED BY JOHN GREGORY IIVCC, OPENCITY INC.**

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