

Developed in collaboration with the Wound Care Champions, Wound Care Specialists, Enterostomal Nurses, and South West Regional Wound Care Program (SWRWCP) members from Long Term Care Homes, Hospitals, and South West CCAC contracted Community Nursing Agencies in the South West Local Health Integration Network.



**Title**  
**Guideline and Procedures: Wound Debridement (excluding conservative sharp debridement)**

**Background**

- Necrotic tissue impairs wound healing as it is a physical barrier to granulation, contraction and re-epithelialization, and because it can harbor bacteria, potentially resulting in wound infection<sup>1</sup>
- The more non-viable tissue present in a wound bed, the more severe the damage to the underlying tissue and the longer it will take to close the wound<sup>1</sup>
- As tissue dies it changes in color, consistency, and adherence to the wound bed, and as such, fibrin, slough and eschar (non-viable tissue types) can be described using the following terms<sup>1</sup>:

Worsening Tissue Damage

Color	Consistency	Adherence
White/gray	Mucinous	Clumps
Yellow fibrinous	Soft, stringy	Loosely attached
Yellow/tan (slough)	Soft, soggy	Attached at the base only
Black/brown (eschar)	Hard	Firmly adherent to base and edges

- The solution to ridding non-viable tissue from a wound is debridement. The following chart defines the five different types of debridement and provides examples<sup>1</sup>:

Debridement Type	Definition	Examples
<b>Mechanical</b>	Use of an outside force to remove non-viable tissue	Wet-to-dry gauze, wound irrigation, whirlpool, pulsed lavage
<b>Enzymatic</b>	Application of a concentrated, commercially prepared enzyme to digest non-viable tissue	Collagenase
<b>Sharp</b>	Use of sharp instruments to remove non-viable tissue	Scalpel, scissor, curette use
<b>Autolytic</b>	Use of the body's own enzymes in wound fluid along with moisture retentive dressings to degrade non-viable tissue	Use of hydrocolloids, films, hydrogels, and/or hypertonic dressings
<b>Biologic*</b>	Application of medical grade maggots to remove non-viable tissue	Larval debridement therapy

\*As purposeful biologic therapy is not widely used in Ontario or in Canada for a number of reasons, this type of debridement will not be addressed in this guideline/procedure

- The choice of debridement depends on a number of factors, including:
  - The health care provider's capabilities and access to

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supplies/equipment

- The overall condition of the person with the wound and their 'healability'
- The characteristics of the wound and wound tissue
- The presence of wound related pain
- The required speed and tissue selectivity of debridement
- The costs associated with the debridement techniques available
- The presence of wound infection (i.e. do not debride in the presence of advancing cellulitis/sepsis that is not being treated and that is not responding to treatment), etc.
- The following chart outlines the advantages/disadvantages of each debridement type<sup>2</sup>:

	Best Methods of Debridement Based on Clinical Factors					
	Sharp Surgical	Conservative Sharp	Enzymatic	Autolytic	Biologic	Mechanical
Speed	1	3	3	5	2	4
Tissue Selectivity	3	3	1	4	2	5
Pain	5	4	2	1	3	4
Exudate	1	2	4	3	5	2
Infection	1	3	4	5	2	3
Cost	5	4	2	1	3	4

\*\* 1 = most desirable, 5 = least desirable method

- The type of non-viable tissue present can help identify the phase of wound healing that the wound is in, and as such, can help to direct treatment options. The Red/Yellow/Black (RYB) system exemplifies this<sup>2</sup>:

<b>Red</b>	<ul style="list-style-type: none"> <li>● Wound bed is clean and wound tissue is red/pink</li> <li>● Goal: maintain moist wound healing environment</li> </ul>
<b>Yellow*</b>	<ul style="list-style-type: none"> <li>● Wound bed has slough/fibrin present and tissue may be a combo of red/pink + ivory/canary yellow/green (depending if infection is present)</li> <li>● Not all yellow is bad – granulation grows through yellow fibrin. Healthy tendon may appear white/yellow</li> <li>● Goal: maintain moist wound healing environment whilst managing excessive exudates and removing slough via sharp, mechanical, enzymatic, and/or autolytic debridement</li> </ul>
<b>Black*</b>	<ul style="list-style-type: none"> <li>● Wound bed has non-viable tissue present. Tissue combo may be dark brown/ grey/ black +/- red/pink +/- ivory/canary yellow/green.</li> <li>● Goal (healable wound and eschar is not stable and on heel): remove non-viable tissue via sharp, mechanical, enzymatic and/or autolytic debridement</li> </ul>

\*If more than one color of tissue is present in the wound bed, target treatment based on the tissue type that is present in the greatest amount

- Debridement strategies typically involve more than one form of debridement implemented at the same time, i.e. conservative sharp debridement and autolytic debridement, etc.
- Before initiating any form of debridement, the person and their

	<p>wound must be assessed for ‘healability’ (see the “Determining Healability Tool”):</p> <ul style="list-style-type: none"> <li>○ ‘Healable’ wounds must have non-viable, contaminated, or infected tissue debrided to allow for wound healing, <b>UNLESS the wound presents as dry, stable eschar on a heel – let this tissue desiccate and lift away on its own, i.e. treat it in a ‘maintenance’ fashion</b></li> <li>○ Appropriate debridement of a ‘maintenance’ wound may convert such a wound into the inflammatory phase of wound healing and allow for a more timely/orderly progression to wound closure</li> <li>○ ‘Non-healable’ wounds should have only non-viable tissue removed if necessary (by a skilled health care professional, i.e. a Wound Care Specialist, ET nurse, etc.) to manage bacterial burden, exudates, and/or odor; active debridement to bleeding tissue is contraindicated</li> <li>○ The following ‘non-healable’ wounds should NOT be debrided<sup>3</sup>: <ul style="list-style-type: none"> <li>▪ Arterial wounds in people with peripheral arterial disease (stable dry gangrene or dry ischemic wounds)</li> <li>▪ Wounds with hemorrhagic risk</li> <li>▪ Malignant or inflammatory wounds</li> <li>▪ Lower limb pressure ulcers in people with arterial insufficiency</li> <li>▪ Wounds on people who are acutely palliative</li> </ul> </li> <li>○ Debridement may be carried out with caution (and in collaboration with the person’s primary care provider) in those with evidence of moderate to severe arterial compromise [i.e. an Ankle Brachial Index (ABI) less than 0.6 or greater than 1.2]</li> <li>● To evaluate the effectiveness of debridement one must observe for the following<sup>1</sup>: <ul style="list-style-type: none"> <li>○ A reduction in the amount of non-viable tissue, measured by linear measurement, photography, and/or by determining the percentage of the wound bed covered, i.e.: <ul style="list-style-type: none"> <li>▪ None visible</li> <li>▪ &lt;25% of the wound bed covered with non-viable tissue</li> <li>▪ 25-50% of the wound bed covered</li> <li>▪ &gt;50% and &lt;75% of the wound bed covered</li> <li>▪ 75-100% of the wound bed covered</li> </ul> </li> <li>○ A change in the type of non-viable tissue, i.e. as non-viable tissue is rehydrated, the appearance will change from dry → soggy → soft → mucinous, and the color will change from black/brown → yellow/tan</li> <li>○ A change in the adherence of the non-viable tissue, i.e. as</li> </ul> </li> </ul>
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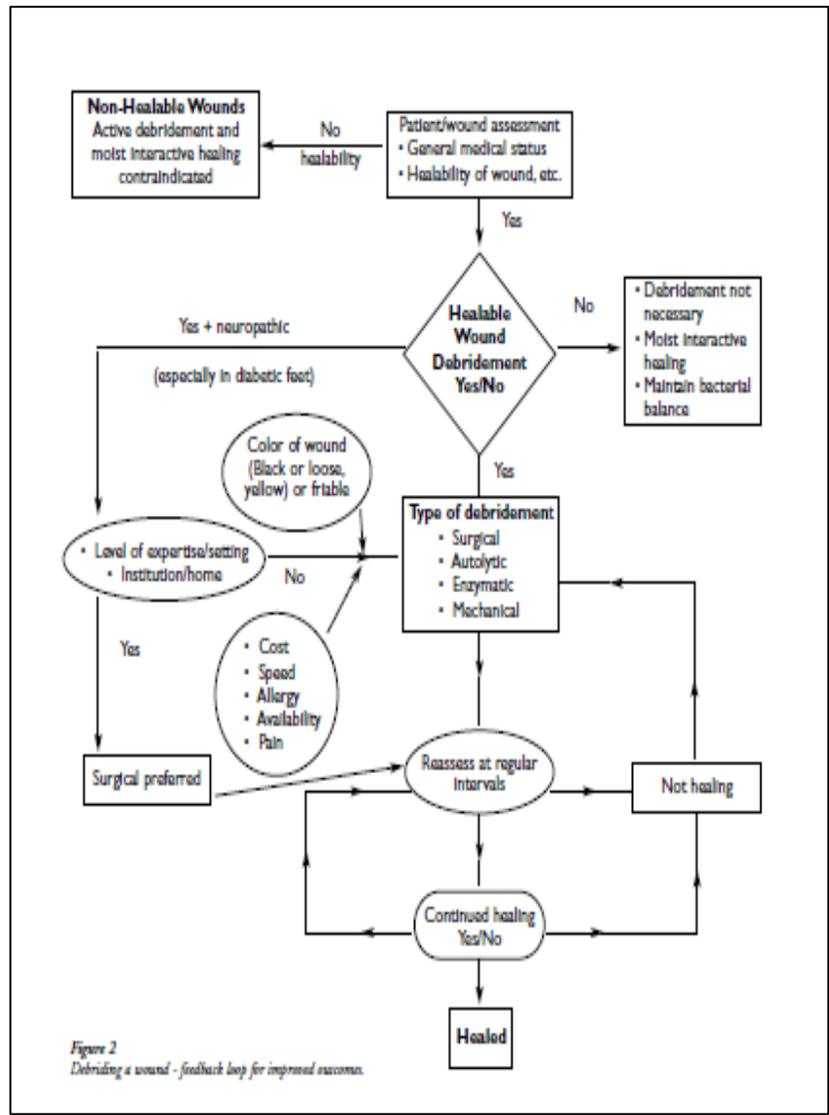
	debridement proceeds, the adherence of the non-viable tissue should decrease
<b>Indications</b>	This guideline/procedure is intended to be used by front line registered health care providers to assist with their assessment and management of individuals admitted with or presenting with wounds containing non-viable tissue.
<b>Procedure</b>	<p><b>NOTE: Debridement is but one part of the holistic management of individuals admitted with or presenting with a wound containing non-viable tissue.</b></p> <p><b>Assessment</b></p> <ol style="list-style-type: none"> <li>1. Review the person’s medical records for the following information, as it will help you to determine if the person and their wound are appropriate for debridement, and will help you anticipate supplies needed for the assessment/debridement/dressing change: <ol style="list-style-type: none"> <li>a. ‘Healability’ status (see the “Determining Healability Tool”)</li> <li>b. Presence of debridement precautions, contraindications, and indications (see above ‘Background’ information)</li> <li>c. Information re the size, location and characteristics of the wound to be assessed/debrided/dressed</li> <li>d. Wound pain history</li> <li>e. Current wound infection, treatment, and response</li> </ol> </li> <li>2. Review the person’s medical records for current wound care orders</li> </ol> <p><b>Planning</b></p> <ol style="list-style-type: none"> <li>1. Expected outcomes: <ol style="list-style-type: none"> <li>a. Information from the person’s chart, the person and/or their substitute decision maker (SDM)/power of attorney for personal care (POA C), and your assessment allows for the selection and implementation of the most appropriate form of wound debridement, if debridement is indicated, and wound dressing</li> <li>b. Information obtained will allow for the determination of whether or not the wound is positively responding to debridement measures, i.e. the amount of non-viable tissue is diminishing, the type of non-viable tissue is changing, and the adherence of the non-viable tissue is decreasing</li> <li>c. Registered nursing staff, in collaboration with the individual with the wound and/or their SDM/POA C, and other involved health care disciplines, are able to use the assessment information to initiate/modify and implement an appropriate, person-centered, interdisciplinary plan of care which contains clear directions to staff and others who are providing the person with direct care</li> </ol> </li> <li>2. Explain the procedure and its purpose to the person and/or their SDM/POA C, and obtain informed implied/verbal consent</li> </ol>

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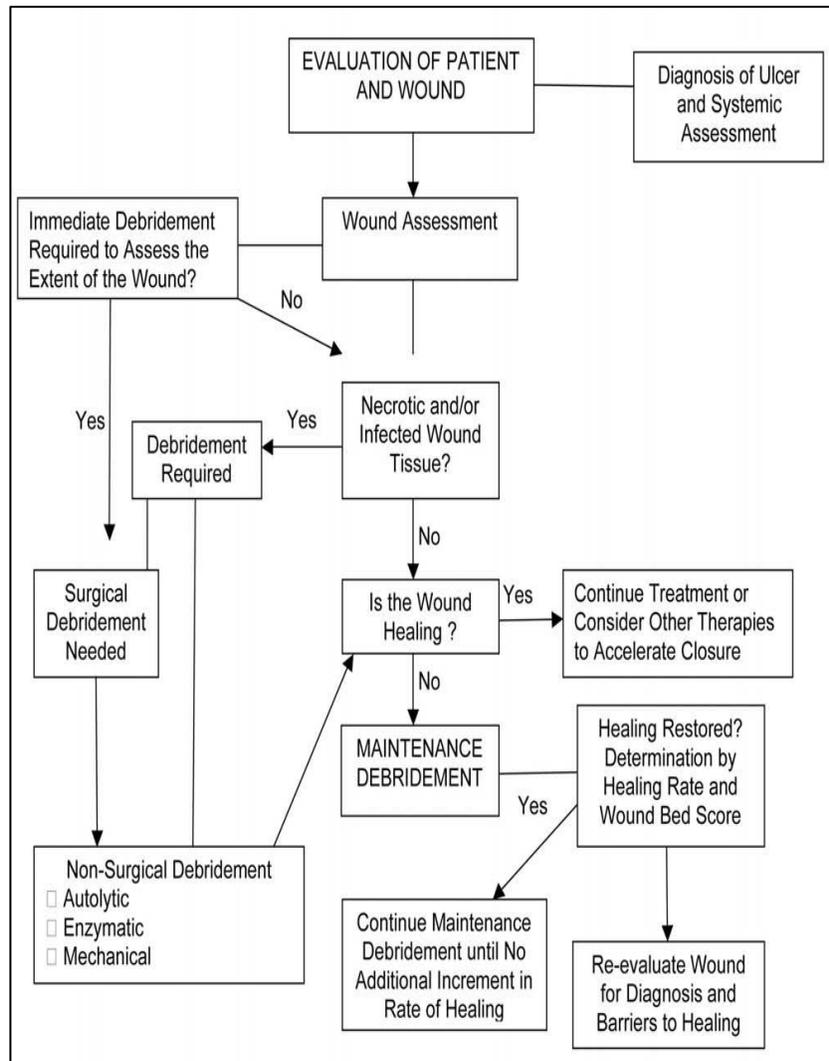
3. Assess the need for pre-procedure pain medication – removal of dressings, the dressing change procedure itself, and/or debridement may be painful. If required, the person **must** be allotted enough time to achieve the drug’s peak effect BEFORE initiating the dressing change/debridement procedure

**Implementation**

1. Provide for privacy and ensure the person is in a comfortable position to facilitate assessment of the wound and wound debridement/dressing procedure
2. Wash your hands and attend the person with your assessment tools and anticipated debridement and wound dressing supplies
3. If the person is in bed, raise the bed (if you are so able to) to an appropriate ergonomic position to allow for the wound assessment and treatment while preventing self-injury
4. Ensure adequate lighting
5. Don clean disposable gloves and additional personal protective equipment (PPE), i.e. gown, goggles, and/or a mask, as required if risk for splash back or spray exists
6. Remove the existing wound dressing as per the manufacturer’s instructions. Observe the dressing for the appearance of the drainage on the dressing. Assess for odor
7. Dispose of the soiled dressings in the proper receptacle and remove and dispose of your soiled gloves
8. Apply new clean disposable gloves and irrigate the wound with normal saline using a 30cc syringe and an 18 gauge angiocath or wound irrigating tip. Hold the angiocath/catheter tip 1-2 inches from the wound bed and irrigate forcefully to remove loose, non-viable tissue mechanically
9. Attach a 14Fr straight catheter to irrigate tunnels and large undermined areas
10. Gently pat the wound bed dry (if required) and dry the surrounding skin with gauze
11. Assess the wound using the “NPUAP PUSH Tool 3.0” (see “Procedure: NPUAP PUSH Tool 3.0”)
12. Based on your wound assessment, review of the person’s medical chart, and discussions with the person with the wound and/or their SDM/POA C, determine if debridement is appropriate, and select the most appropriate type(s) of debridement to implement [see the above information in the ‘Background’ section to help with your choice of debridement type(s)]. You may wish to utilize the following algorithm to guide your choice of debridement and debridement type (the algorithm is used with permission):



13. To help determine whether or not 'maintenance' debridement is indicated, and if so what type(s) of debridement would be most appropriate, you may wish to consider the following algorithm<sup>5</sup> (the algorithm is used with permission):



### Implementation – Mechanical Debridement, Wet-to-Dry Gauze Dressings

1. Loosely apply gauze moistened with saline or sterile water into the wound. Be sure to place some of the dressing in undermined or tunneled areas (do not fill/pack tightly)
2. Cover the wound with an appropriate gauze based cover dressing, i.e. additional layers of dry gauze, abdominal pads or other such gauze based cost effective, absorbent dry dressings and affix in place with paper tape or cling (as appropriate). **NOTE: Wet-to-dry dressings must be changed every 8 hours to be effective, therefore the use of more advanced secondary wound dressings, i.e. foam dressings, is NOT appropriate**
3. **NOTE:** for the purpose of mechanical debridement, when removed, the primary dressing must NOT be soaked off, rather the gauze that

has stuck to the underlying tissue as it dried out must be ripped away in order to remove the non-viable tissue (unfortunately as it is non-selective, it healthy tissue will also be ripped away)

**Implementation – Enzymatic Debridement**

1. Confirm a physician order for the use of the enzymatic preparation (required)
2. NOTE: hard black eschar (if present) must be cross-hatched using a scalpel prior to the application of the enzyme preparation
3. Apply the enzymatic ointment with cotton tipped applicator to the non-viable tissue. As an alternative, the enzymatic ointment may be applied directly to the gauze dressing to be applied to the wound surface. **NOTE: you may have to moisten the gauze in direct contact with the wound bed as enzymatic preparations require a moist environment to properly work**
4. Cover the wound with an appropriate gauze based cover dressing, i.e. additional dry gauze, abdominal pads or other such gauze based cost effective, absorbent dry dressings and affix in place with paper tape or cling (as appropriate). **NOTE: Use of an enzymatic debriding agent typically requires dressing changes 1-3 times per day (as per manufacturer instructions), and as such, the use of more advanced secondary wound dressings, i.e. foam dressings, is NOT appropriate**

**Implementation – Autolytic Debridement, Transparent Film Dressing**

1. Apply a skin sealant/barrier to the intact skin surrounding the wound and allow it to air dry, in order to protect the peri-wound tissue from exudates. NOTE: you may also wish to window the wound edges with transparent film or thin hydrocolloid in addition to/in lieu of the skin sealant/barrier to accomplish the same purpose
2. You may wish to apply a non-adherent dressing layer directly to the wound surface, prior to covering the wound with transparent film to prevent the transparent film from sticking to the wound surface, should this be a concern
3. Cover the wound with the transparent film dressing according to manufacturer’s instructions
4. Dressing change frequency depends on the amount of wound drainage, i.e. you want the wound surface to be wet, yet you don’t want the dressing to be leaking or falling off

**Implementation – Autolytic Debridement, Hydrocolloid or Hydrogel Wafer Dressings**

1. Apply a skin sealant/barrier to the intact skin surrounding the wound and allow it to air dry, in order to protect the peri-wound tissue from exudates. NOTE: you may also wish to window the wound edges with transparent film or thin hydrocolloid in addition to/in lieu of the skin sealant/barrier to accomplish the same purpose

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2. Peel backing off the hydrocolloid or hydrogel wafer dressing and apply according to manufacturer's instructions. NOTE: if the wound is low draining, you may wish to place a hydrogel or hypertonic gel on the wound bed first to increase/encourage an increase in moisture content. If the wound is moderately draining, you may wish to place a hypertonic dressing on the wound bed first to encourage an increase in moisture content (NOTE: hypertonic dressings and gels can result in a painful sensation, and if so, must be discontinued)
3. You may wish to window the hydrocolloid dressing with transparent film to prevent the hydrocolloid dressing from lifting, or you may wish to completely cover the hydrocolloid with a transparent film dressing to make the dressing even more occlusive (this will trap more moisture)
4. Dressing change frequency depends on the amount of wound drainage, i.e. you want the wound surface to be wet, yet you don't want the dressing to be leaking or falling off

**Implementation – Conservative Sharp Debridement [see “Guideline and Procedure: Conservative Sharp Wound Debridement (CSWD)”]**

1. Remove gloves and other personal protective equipment and dispose of them and of soiled supplies in the appropriate receptacle
2. Dispose of any used sharps in a sharps container
3. Clean reusable equipment/surfaces touched during the procedure with soap and water or detergent wipes and dry thoroughly to prevent cross infection, returning reusable equipment to the appropriate places
4. Wash your hands
5. Assist the person to a comfortable position if required, and assess for any concerns
6. Educate re the importance of monitoring/reporting any unintended outcomes
7. Lower the person's bed to an appropriate height (if applicable), and ensure the person's safety, i.e. apply side rails, personal alarms, restraints, etc. as per the person's care plan/medical orders
8. Discuss your findings of the assessment and your thoughts re the debridement procedure with the person and/or their SDM/POA C and implement referrals and further interventions as indicated
9. Share your wound assessment and debridement results/outcomes with the interdisciplinary members of the person's wound care team. Immediately contact the person's primary care provider if:
  - a. The wound has not been reducing in surface area as expected
  - b. There are signs of cellulitis or gross purulence/infection
  - c. There is impending bone or tendon exposure
  - d. An abscessed area is anticipated or exposed

	<p>e. An extensively undermined area is observed</p> <p>10. Complete/update and initiate an appropriate, person-centered, interdisciplinary plan of care, based on your holistic assessment and interventions, and as per your organization’s policy</p> <p><b>Evaluation</b></p> <ol style="list-style-type: none"> <li>1. Unexpected outcomes: <ol style="list-style-type: none"> <li>a. The wound bleeds uncontrollably</li> <li>b. The person reports poorly managed pain associated with the procedure</li> <li>c. There is an increase in non-viable tissue present in the wound base and/or the type or adherence of the non-viable tissue present does not change as expected</li> </ol> </li> <li>2. Re-assess the wound using the “NPUAP PUSH Tool 3.0” at a minimum of weekly to ensure debridement was effective, and that subsequent debridement was effective, and to determine whether repeated debridement or consideration of other/additional forms of debridement is necessary, i.e.: <ol style="list-style-type: none"> <li>a. There should be a reduction in the amount of necrotic tissue</li> <li>b. Necrotic tissue should becoming less adherent</li> <li>c. Necrotic tissue should be changing in type and color</li> </ol> </li> </ol>
<p><b>References</b></p>	<ol style="list-style-type: none"> <li>1. Bates-Jensen BM, Apeles NCR. Management of necrotic tissue. In: Sussman C, Bates-Jensen B., eds. Wound Care: A collaborative practice manual for health professionals. Third Ed. Baltimore: Lippincott Williams &amp; Wilkins, 1997:197-214.</li> <li>2. Krasner D. Wound care: how to use the red-yellow-black system. Am J Nurs. 1995;95(5):44–47.</li> <li>3. Signe-Picard C, Cerdan, MI, Naggara C, et al. Flammacérium in the formation and stabilization of eschar in chronic wounds. Journal of Wound Care. 210;19(9):369-378.</li> <li>4. Sibbald RG, Williamson D, Orsted H, et al. Preparing the wound bed – debridement, bacterial balance, and moisture balance. Ostomy Wound Management. 2000;46(11):14-35.</li> <li>5. Falanga, V, et al. Maintenance debridement in the treatment of difficult-to-heal chronic wounds. Recommendations of an expert panel. OWM Supplement. June 2008:1-15.</li> </ol>
<p><b>Related Tools</b>  <b>(NOTE: these tools and their instructions can be found on the SWRWCP’s website: <a href="http://swrwoundcareprogram.ca">swrwoundcareprogram.ca</a>)</b></p>	<ul style="list-style-type: none"> <li>• Determining Healability Tool</li> <li>• NPUAP PUSH Tool 3.0</li> <li>• Procedure: NPUAP PUSH Tool 3.0</li> <li>• Guideline and Procedure: Conservative Sharp Wound Debridement (CSWD)</li> </ul>