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.

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<thead>
<tr>
<th>Title</th>
<th>Guideline: The Management of People with Open or Closed Surgical Wounds</th>
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<tr>
<td>Background</td>
<td>• See “Guideline: The Assessment of People with Open or Closed Surgical Wounds”</td>
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<tr>
<td>Indications</td>
<td>This guideline is intended to be used by front line registered health care providers, to guide their management of individuals admitted/presenting with a surgical wound.</td>
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**Guideline**

**NOTE:** The management of a person with a surgical wound follows the “SWRWCP’s Closed Surgical Wound Assessment and Management Algorithm” or the “SWRWCP’s Open Surgical Wound Assessment and Management Algorithm”.

**Healable Wounds – Closed Surgical Incisions**

1. Upon completion of a thorough, holistic person and wound assessment as per the SWRWCP’s “Guideline, The Assessment of People with Open or Closed Surgical Wounds”, and upon determination that the wound in question is ‘healable’, treat a closed surgical wound in the following manner, unless otherwise ordered:
   a. Leave the post-op surgical dressing in place for 48 hours, reinforcing it as needed if breakthrough drainage occurs. As there is no robust evidence to support the use of one surgical dressing over another, the dressing in place will vary depending on the surgeon’s preference. However, most often the first surgical dressing applied consists of a semi-permeable film membrane with or without an absorbent layer (i.e. hydrofiber). A non-stick island dressing is preferable. Gauze should be avoided as the primary dressing as it is associated with pain and disruption of healing tissue at the time of dressing change. Monitor for dehiscence and notify the surgeon IMMEDIATELY should it occur. **NOTE:** *Use of Montgomery straps, skin sealants, or hydrocolloid frames around the wound and underneath the tape can eliminate skin stripping from frequent dressing changes*
   b. 48 hours post-op, remove the initial surgical dressing and, using **sterile** technique, cleanse the incision line from the proximal to distal aspect (or clean to dirty) to remove any drainage. Air dry or gently pat dry with sterile gauze. Assess the incision as per the SWRWCP “Guideline: The Assessment of People with Open or Closed Surgical Wounds”
   c. Depending on the type of surgery, comfort of the person
with the wound, and organizational policy, you may need to reapply a sterile dry dressing (most likely a non-stick island dressing). If there is no policy in place and the incision is approximated, dry, and free of signs of infection/complications, the incision may be left open to air, unless otherwise ordered by the surgeon.

d. If you re-apply a sterile surgical dressing, choose an appropriate dressing change frequency based on:
   i. Your wound assessment, including the person’s risk for infection
   ii. Dressing products used and their ability to manage the drainage anticipated

2. Remove sutures/staples as ordered or direct the person to the appropriate health care professional for the removal of their sutures/staples as per the surgeon’s orders (some surgeon’s prefer to remove their own staples/sutures, some prefer that the person’s family physician do the procedure, etc.). If you are to remove the sutures (usually anywhere from 5-10 days post-op):
   i. Using sterile technique cleanse the incision using an antiseptic swab from proximal to distal or clean to dirty aspect
   ii. Remove sutures or staples using aseptic technique with sterile tools. **NOTE: you may choose to remove every other suture/staple initially and then observe the incision line to determine whether or not the incision line will remain intact. If you anticipate that the incision line may dehisce with the removal of the remaining sutures/staples, STOP removing staples/sutures and let the surgeon know**
   iii. Gently cleanse the incision line once again with an antiseptic swab, from proximal to distal or clean to dirty aspect. Air dry
   iv. Apply steri-strips across the incision line to reinforce wound edges, and teach the person to leave the steri-strips intact until they fall off on their own
   v. Apply a sterile non-stick island dressing if needed, otherwise leave the incision open to air

### Healable Wounds – Open Surgical Wound or a Closed Surgical Wound that has Dehisced or Eviscerated

1. Upon completion of a thorough, holistic person and wound assessment as per the SWRWCP’s “Guideline: The Assessment of People with Open or Closed Surgical Wounds”, and upon determination that the wound in question is ‘healable’, cleanse the wound as per the “SWRWCP’s Dressing Selection and Cleansing”
Enabler – HEALABLE”. **NOTE: The choice of sterile versus clean technique for dressing changes is dependent on the length of time the wound has been open, i.e. if the wound has been open for greater than four weeks, clean technique is appropriate. However, if the wound is less than four weeks old, adhere to sterile technique with dressing changes**

2. As you have previously determined that the wound is healable:
   b. Cleanse the wound again post debridement using the “SWRWCP’s Dressing Selection and Cleansing Enabler – HEALABLE”. Gently pat the wound dry with gauze
   c. Choose an appropriate conventional moist wound dressing or combination of dressings as per the “Guideline: The Assessment and Management of Moisture in Acute and Chronic Wounds”, using the “SWRWCP’s Dressing Selection and Cleansing Enabler – HEALABLE”, unless otherwise directed by a physician, surgeon or nurse practitioner. This may involve the use of topical antimicrobials if identified as a need (see “Guideline: The Assessment and Management of Bacterial Burden in Acute and Chronic Wounds”). Consider choosing a dressing that will:
      i. Promote an ideal moist wound healing environment. **NOTE: only use a packing or cavity filler dressing that can be removed in one piece, i.e. a product with adequate tensile strength so that it does not fall apart in the wound leaving fragments behind, and do NOT pack tightly. **NOTE: if underlying mesh, implants, or exposed underlying structures are evident in the wound bed, apply a non-adherent dressing over the areas to prevent the primary dressing from sticking
      ii. Minimize contamination
      iii. Prevent strike through of exudates while wicking moisture away from the wound surface
      iv. Be cost effective, i.e. do **NOT** use conventional dressing products for daily dressing changes!
      v. Be comfortable to wear, not causing increased pain during wear time or on removal
   d. Choose an appropriate dressing change frequency based on:
      i. Your wound assessment, including the person’s
Maintenance/Non-Healable Wounds – Open Surgical Wound

1. Upon completion of a thorough, holistic patient and wound assessment as per the SWRWCP’s “Guideline: The Assessment of People with Open or Closed Surgical Wounds”, and upon determination that the wound in question is ‘maintenance’ or ‘non-healable’, cleanse the wound as per the “SWRWCP’s Dressing Selection and Cleansing Enabler – MAINTENANCE/NON-HEALABLE”.

2. As you have determined that the wound is maintenance/non-healable:
   a. **DO NOT DEBRIDE**
   b. Paint and/or cleanse the wound with antiseptics as indicated on the “SWRWCP’s Dressing Selection and Cleansing Enabler – MAINTENANCE/NON-HEALABLE”, and allow the antiseptic to air dry.
   c. Choose an appropriate dry gauze based non-adherent dressing or combination of dressings as per the “Guideline: Assessment and Management of Moisture in Acute and Chronic Wounds”, using the “SWRWCP’s Dressing Selection and Cleansing Enabler – MAINTENANCE/NON-HEALABLE”, unless otherwise directed by a physician or nurse practitioner. This may involve the use of topical antimicrobials if identified as a need (see “Guideline” The Assessment and Management of Bacterial Burden in Acute and Chronic Wounds”.

Choose a dressing that will:
   i. Promote a dry wound environment and that will minimize bacterial contamination
   ii. Prevent strike through of exudates while wicking moisture away from the wound surface
   iii. Be cost effective, i.e. do NOT use conventional dressing products for daily dressing changes!
   iv. Be comfortable to wear, not causing increased pain during wear tie or on removal
   d. Choose an appropriate dressing change frequency based on:
      i. Your wound assessment, including the person’s risk for infection
      ii. Dressing products used and their ability to manage the drainage anticipated
      iii. The person’s comfort and acceptability
Management Guidelines for ALL Surgical Wounds, Regardless of Healability

1. Treat the cause:
   a. Modify any identified intrinsic, extrinsic, and iatrogenic factors affecting wound healing to promote the healing of the surgical wound and to prevent infection/complications
   b. Provide or encourage the purchase and faithful use of an offloading device if the person has a surgical wound on the plantar aspect of their foot and has diabetes and/or has loss of protective sensation, to reduce pressure forces over the wound site. The device selected **MUST** be worn **EVERY TIME THEIR FOOT TOUCHES THE GROUND**. Selection of the appropriate offloading device should be done by the interdisciplinary team, taking into consideration infection, vascular status, person characteristics, environmental factors, and resources (see “Guideline: The Management of Diabetic/Neuropathic Foot Ulcers”)
   c. In the presence of a surgical wound on the leg of a person with venous or mixed leg disease, initiate appropriate compression therapy in collaboration with an Enterostomal Therapy (ET) Nurse or Wound Care Specialist (WCS), based on your holistic assessment of the person, their wound, and their lower leg circulation (see “Guideline: The Management of People with Leg Ulcers”)

2. Person centered concerns:
   a. Manage pain using the SWRWCP’s “WHO Pain Ladder with Pain Management Guidelines”. Consider:
      i. Coordinated pre-dressing change analgesia
      ii. Regular dosing of pain medications
      iii. Use of appropriate medications to manage neuropathic pain
      iv. Use of topical analgesics (i.e. morphine) or anesthetic (i.e. EMLA or lidocaine) if pain during dressing changes
   b. Consider non-pharmacological methods of pain management, i.e. appropriate dressing choice, distraction, guided imagery, pressure redistribution, music, time-outs during dressing changes, less frequent dressing changes, etc.
   c. Consider surgical management of pain, i.e. revascularization of legs with arterial insufficiency
   d. Ensure the plan of care is created with input of the person with the wound and/or their caregiver, including their concerns, motivations, abilities and preferences for treatment
### 3. Debridement:

- a. Determine if debridement is appropriate for the person and the wound
- b. Prior to debriding wounds on lower extremities, ensure a complete vascular assessment has been conducted to rule out vascular compromise
- c. If debridement is appropriate, select the appropriate method of debridement considering:
  - i. The goals of treatment, i.e. healability
  - ii. The person’s overall health condition
  - iii. Type, quantity and location of necrotic tissue
  - iv. Wound depth and amount of drainage
  - v. Availability of resources
- d. Consider referrals to an ET or WCS for conservative sharp debridement of non-viable tissue, using sterile instruments
- e. Consider requesting a referral to a general surgeon for surgical sharp debridement in the presence of necrotic tissue in a wound that requires debridement secondary to the presence of advancing cellulitis/sepsis, increased pain, exudates and odor, or for debridement that is beyond the scope of practice/competency of primary care providers
- f. Ensure adequate pain management with wound debridement

### 4. Infection control:

- a. Teach that new onset or worsening pain is a sign of infection and requires immediate medical attention
- b. Treat bacterial burden as per the “Guideline: The Assessment and Management of Bacterial Burden in Acute and Chronic Wounds”, using the “Bacterial Burden in Chronic Wounds” tool. **NOTE: Topical antimicrobials can be used to reduce bacterial burden in the presence of superficial wound infection, but never take the place of systemic antibiotics when those are needed for deeper infections**
- c. If you are not sure of the nature of the infection, choose a non-occlusive dressing as the secondary dressing. Dressing frequency for infected surgical wounds should be increased until the symptoms of the infection are progressively improving
- d. Implement strategies to prevent infection, i.e. proper hand washing and infection control measures
- e. Consider a referral to an Infectious Disease Specialist in the presence of a wound complicated by bacteremia, sepsis, advancing cellulitis or osteomyelitis

### 5. Drain management:
a. Identify the presence, number, and location of closed wound drainage systems, and inspect to ensure proper functioning (teach the person to inspect regularly for function if they are assuming the responsibility of managing their drain)
b. Using aseptic technique, empty the contents of the drain at least daily and measure the contents, recording the amount (teach the person with the drain to do so if they are assuming responsibility for managing their drain)
c. Change drain dressings as needed/ordered using aseptic technique and gauze based products
d. Remove the drain as ordered by the surgeon (usually when the drain is draining less than 30cc of fluid in a 24 hour period)

6. Consider referrals to (see “Criteria for Interdisciplinary Referrals”):
   a. Registered Dietician (diet, nutrition, supplementation, weight control). **NOTE: To be most efficient, the following blood work could be ordered on the results obtained before making a dietician referral: serum albumin, CBC (if anemic, proceed to checking Serum Iron, Total Iron Binding, Ferritin, Transferrin, B12 and Red Blood Cell Folate Level), BUN, Creatinine, and Potassium**
   b. Speech Language Pathologist (presence or risk of developing a swallowing impairments)
   c. Physician/Primary Care Nurse Practitioner (poorly controlled co-morbid health conditions, smoking cessation, medication adjustments)
   d. Physiotherapy (mobility/exercise plan, mobility/gait/range of motion assessment, adjunctive therapies for wound healing and/or neuropathic pain management)
   e. Occupational Therapist (assistive devices, modifications to activities of daily living, fall risk assessment and recommendations)
   f. Orthotist/Pedorthist/Podiatrist (appropriate footwear/offloading device, professional foot care)
   g. Social Work (psychosocial and economic/community supports)
   h. Vascular surgeon (vascular assessment +/- surgical correction)
   i. Infectious Diseases (for wounds complicated by bacteremia, sepsis, advancing cellulitis or osteomyelitis)
   j. ET or WCS for wounds that have one or more of the following **FUN** criteria:
      i. F (Frequency) – frequency of dressing changes has not decreased to three times per week or...
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<td>7</td>
<td>Teach the person and/or their caregiver, using adult education principles, the importance of the following (you may need to consider interdisciplinary referrals):</td>
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<td>a</td>
<td>Controlling their blood sugars thru exercise, diet, and medication, i.e. HgbA1c less than 7%, and teach about the relationship between high glycemic levels and complications (if they have diabetes)</td>
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<tr>
<td>b</td>
<td>The effects of acute illness and infection on their blood glucose (if they have diabetes)</td>
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<tr>
<td>c</td>
<td>Quitting smoking</td>
</tr>
<tr>
<td>d</td>
<td>Exercising regularly and eating a well-balanced diabetic diet</td>
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<tr>
<td>e</td>
<td>Signs and symptoms of infection/complications and when to seek IMMEDIATE help</td>
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<tr>
<td>f</td>
<td>Dressing change instructions, if the person or their caregiver will be changing the dressings</td>
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<td>g</td>
<td>Supporting their incision when changing position, coughing or sneezing, and to avoid heavy lifting for six weeks post-operatively</td>
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<tr>
<td>h</td>
<td>Monitoring and recognizing signs of dehiscence, including bruising at the wound site, localized pain, wound inflammation and exudate, skin breakdown around the wound, and nausea/vomiting</td>
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<tr>
<td>i</td>
<td>Not to bathe for 48 hours post-operatively, and after 48 hours to shower rather than bathe until the sutures or staples are removed, or as otherwise directed by their surgeon</td>
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| 8 | Provide the person with the SWRWCPs “My Surgical Wound”, “The Importance of Nutrition in Wound Healing”, “My Jackson Pratt (FP) Drain”, and/or “My Hemovac Drain” pamphlets, as indicated, and review the pamphlet contents with them |

| 9 | Re-evaluate (see “Guideline: Wound Re-Assessment and Consideration of the Use of Adjunctive/Advanced Therapy”): |
| a | Regularly and consistently measure the wound, weekly at a minimum, using the same method |
| b | Conduct a comprehensive reassessment to determine wound progress and the effectiveness of the treatment |
plan, i.e. Using the NPUAP PUSH Tool 3.0", weekly at a minimum (see “Procedure: NPUAP PUSH Tool 3.0”)

b. Calculate the % reduction in wound surface area to ensure that the wound is closing at an expected rate, i.e. 20-30% over three-four weeks treatment is predictive of timely wound closure

c. If the wound is not healing at an expected rate despite the implementation of best practice interventions, you may need to consider:
   i. A referral to a WCS or ET nurse for assessment
   ii. Diagnostic testing to rule out the presence of underlying infection/osteomyelitis +/- a referral to an Infectious Diseases Specialist
   iii. Adjunctive therapies, i.e. electrical stimulation therapy, negative pressure wound therapy, hyperbaric oxygen therapy or biologically active dressings
   iv. Barriers to concordance

e. Reassess pain at **EVERY** dressing change and more frequently as reported by the person, using the same pain tool/scale each time. Report pain management issues to the person’s primary care physician or primary care nurse practitioner, using the SWRWCP’s “Comprehensive Assessment of Chronic Pain in Wounds” form (see “Procedure: Comprehensive Assessment of Chronic Pain in Wounds” tool)

f. Reassess the person’s quality of life using the “Cardiff Wound Impact (Quality of Life) Questionnaire” if the person reports alterations in their quality of life or if their caregiver verbalizes that they suspect as much [see “Procedure: Cardiff Wound Impact (Quality of Life) Questionnaire”]

10. Notify the primary care physician or primary care nurse practitioner immediately if the following occur:
   a. Acute onset of pain or increasing pain
   b. Wound probes to bone if this is a new finding
   c. Gangrene develops
   d. Rest pain develops in the foot
   e. Previously palpable peripheral pulses are diminished or absent
   f. Signs/symptoms of localized and/or systemic infection develop
   g. The person hemorrhages
   h. The wound dehisces or eviscerates. If the wound eviscerates:
      i. Place the person in a low Fowler’s position with knees bent
ii. Cover any exposed tissues with dressings moistened with warm, sterile normal saline

iii. Do not attempt to push exposed viscera back into the abdomen

iv. Depending on the health care setting, call 911 or notify a physician **IMMEDIATELY**

v. Remain with the person to monitor for shock and vital signs until seen by a physician or until the ambulance arrives

11. Documentation:
   a. Document initial and ongoing assessments as per your organizations guidelines
   b. Document care plans, implementation strategies, and outcome measurements as per your organizations guidelines

12. Discharge Planning:
   a. Discharge planning (if it is anticipated) should be initiated during the initial encounter with the person. Timely discharge should be supported along with optimal person independence
   b. If the care of the person is being transferred across sectors, ensure that the receiving site/facility/service is provided with a care plan that outlines the current care and wound management strategies, and copies of:
      i. Initial Wound Assessment Form
      ii. Interdisciplinary Diabetic/Neuropathic Foot Ulcer Assessment Form and/or the Interdisciplinary Leg Ulcer Assessment Form, if used

**Outcomes**

1. Intended:
   a. Closed surgical wounds:
      i. Visible inflammatory response post-op x 4 days
      ii. Well aligned incisional edges with no tension
      iii. Reduction in wound exudate and change in appearance of exudate, i.e. should be sero-sang and scant by day four post-op
      iv. Epithelial resurfacing should be completed by day 4 post-op
      v. Healing ridge should be palpable days 5-9 along the entire length of the incision
      vi. Complete removal of all external suture materials between days 10-14
      vii. Flattening, softening and lightening of the incisional scar days 15 through 1-2 years
   b. Open surgical wound fills with granulation tissue, re-epithelializes, and drainage ceases, in a timely manner, if the wound is deemed ‘healable’, i.e. 20-30% surface area reduction in three-four weeks treatment. OACCAC Surgical
Wound Outcome-Based Pathway (OBP) outcome intervals (September 2013 release):
   i. Interval 2 (28 days) – 20-30% reduction in wound size
   ii. Interval 3 (60 days) – wound closed
   c. The wound is maintained and infection free if the wound is deemed ‘maintenance or non-healing’
   d. The person indicates that pain is resolved or manageable (less than 3/10) with appropriate use of analgesics/adjunctive/alternative methods
   e. The person does not develop a surgical site infection
   f. The incision does not hemorrhage or dehisce
   g. The person and/or their caregiver understands their role in wound healing and participates in supporting wound healing
   h. The person can identify signs and symptoms of infection/complications, and can describe who, how, and when to seek help
   i. The person becomes independent in self-management of their wound

2. Unintended:
   a. Closed surgical wounds:
      i. Prolonged state of inflammation, i.e. greater than day 4 post-op
      ii. Absence of a palpable healing ridge days 5-9
      iii. Increase in exudate or new drainage from a previously ‘healed’ incision
      iv. Incisional hematoma formation
      v. SSI
      vi. Wound dehiscence/evisceration
      vii. Retained sutures/staples
      viii. Re-injury of the incision line, i.e. herniation
      ix. Keloid or hypertrophic scarring
   b. Open surgical wound does not close in a timely manner, if the wound is deemed ‘healable’, i.e. 20-30% reduction in wound surface area in three-four weeks of treatment
   c. The wound becomes infected
   d. The person develops gangrene
   e. The person expresses concerns about poorly managed pain
   f. The person requires an amputation where one was not anticipated
   g. The person does not understand their role or participate in supporting wound healing
   h. The person does not understand the signs and symptoms of infection/complications, and when, how, and whom to seek help from
   i. The person does not become independent in self-management of their wound

References
| Related Tools | • The SWRWP’s Open Surgical Wound Assessment and Management Algorithm  
• The SWRWCP’s Closed Surgical Wound Assessment and Management Algorithm  
• Guideline: The Assessment of People with Open or Closed Surgical Wounds  
• SWRWCP’s Dressing Selection and Cleansing Enabler – HEALABLE  
• Guideline: Wound Debridement (excluding conservative sharp debridement)  
• Guideline: Conservative Sharp Wound Debridement  
• Guideline: The Assessment and Management of Moisture in Acute and Chronic Wounds  
• Guideline: The Assessment and Management of Bacterial Burden in Acute and Chronic Wounds  
• Guideline: The Management of Diabetic/Neuropathic Foot Ulcers  
• Guideline: The Management of People with Leg Ulcers  
• SWRWCP’s Dressing Selection and Cleansing Enabler – MAINTENANCE/NON-HEALABLE  
• Criteria for Interdisciplinary Referrals  
• WHO Pain Ladder with Pain Management Guidelines  
• Bacterial Burden in Chronic Wounds Tool  
• Procedure: Bacterial Burden in Chronic Wounds Tool  
• My Surgical Wound pamphlet  
• The Importance of Nutrition in Wound Healing pamphlet  
• My Jackson-Pratt (JP) Drain pamphlet  
• My Hemovac Drain pamphlet  
• My Venous Leg Ulcer pamphlet  
• My Arterial Leg Ulcer pamphlet  
• The Importance of Nutrition in Wound Healing pamphlet  
• Guideline: Wound Re-Assessment and Consideration of the Use of Adjunctive/Advanced Therapy  
• NPUAP PUSH Tool 3.0  
• Procedure: NPUAP PUSH Tool 3.0  
• Comprehensive Assessment of Chronic Pain in Wounds  
• Procedure: Comprehensive Assessment of Chronic Pain in Wounds  
• Cardiff Wound Impact (Quality of Life) Questionnaire  
• Procedure: Cardiff Wound Impact (Quality of Life) Questionnaire  
• Interdisciplinary Lower Leg Assessment Form  
• Interdisciplinary Diabetic/Neuropathic Foot Ulcer Assessment Form | manual for health professionals. USA:Lippincott Williams & Wilkins;2007. |