Pilonidal Sinus Wounds

Clinical Practice Guideline

EVIDENCE INFORMED PRACTICE TOOLS

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Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg
Caring for Health / À l'écoute de notre santé

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Purpose and Intent

The purpose of this guideline is to focus on assessment, and management of pilonidal sinus wounds using current evidence-informed best practice. Levels of Evidence were adapted from Registered Nurses Association of Ontario (2007) Levels of Evidence, November 2014.

Level	Source of Evidence
Ia	Evidence obtained from meta-analysis or systemic review of randomized controlled trials
Ib	Evidence obtained from at least one randomized control trial
IIa	Evidence obtained from at least one well-designed, controlled study without randomization
IIb	Evidence obtained from a least one other type of well-designed, quasi – experimental study, without randomization
III	Evidence obtained from well designed, non-experimental descriptive studies
IV	Evidence obtained from expert committee reports or opinions

The intent is to ensure that clinicians use a consistent framework assessment and treatment of pilonidal sinus wounds across sites and facilities within the Winnipeg Regional Health Authority (WRHA) and Shared Health.

1. Practice Outcomes

To provide a clear rationale for assessment and appropriate management of the pilonidal sinus wound, including systemic and local factors that may delay healing, and person-centered concerns along the continuum of optimal healing.

2. Background

A pilonidal (pilus – hair, nidus – nest) sinus wound, also known as pilonidal cyst or sacrococcygeal fistula, is a wound near the natal cleft or mid-sacrococcygeal area of the back that contains hair and skin debris (Harries, Alqallaf, Torkington, & Harding, 2019)

Pilonidal sinus disease is a chronic acquired inflammatory condition of the skin and subcutaneous tissue in the sacrococcygeal area caused by:

- Hormonal changes resulting in enlarged hair follicles, leading to blockage of sebaceous glands and subcutaneous abscess (Harries et al., 2019)
- The presence of hair covered in bacteria that penetrate the dermis in existing pits, or at the site of a previous pilonidal excision, causing a foreign body reaction and potential infection.

Pilonidal sinus disease is more common in men than women (4:1), with risk factors including young age, obesity, hairiness, deep natal cleft, and poor hygiene (Harries et al., 2019). The initial presentation may be pain, discomfort, swelling and erythema in the natal cleft along with acute abscess formation (Burney, 2018; Harries et al., 2018). A fistulous opening in the natal cleft is called a pit and represents a primary opening that communicates with a cavity (sinus) to varying depths in the subcutaneous tissue. (Kallis, Maloney, & Lipskar, 2018). Movement of the buttocks causes hair to burro into the pits resulting in bacterial overload, inflammation and infection along with chronic discharge. Antibiotics may temporize the episode but the presence of pits and risk factors often result in recurrence.

3. Surgical Management

Surgical treatment is often necessary in the management of pilonidal disease. The sinus may be lanced to drain or surgically excised. Some wounds are closed by primary intention, some are left to heal by secondary intention, and some are managed with a combination of both. The following procedures are examples:

- **Incision and drainage (I&D)** are effective for temporary treatment of the abscess but can have a recurrence rate of 10-79%. (Grabowski et al., 2019; Harries et al., 2019). Using local anesthetic, the area is lanced with a blade and the abscess drained. This may be managed by a health care professional in a clinic, Emergency Department, or operating room. A vessel loop may or may not be left in place for a period to allow for continued drainage.

- **Excision and primary closure** – Utilizing a general anesthetic in the operating room the surgeon excises the area of the natal cleft that contains the sinus tract(s) and cleans out the nest of hair and debris. The edges of the wound are closed using sutures that are removed after several days (Grabowski et al., 2019). Depending on surgical site healing the sutures may be left in situ for 2-4 weeks. Despite variations in surgical technique there are no differences in outcomes. The skin may be closed in a "Z" flap straight/linear line, or off to the side

- **Wide excision** – Utilizing a general anesthetic in the operating room the surgeon excises the entire area of the natal cleft that contains the sinus tract(s). The wound is not sutured but left open to heal by secondary intention. Depending on the extent of the excision wound healing may take several weeks to months. At three months up to 20% percent of wounds may still be unhealed (Doll et al., 2007). Daily dressing changes with packing are required to manage the wound until healed.

- **Minimal excision and primary suture** – Utilizing a local anesthetic this technique may be administered in an out-patient setting or in the operating room with sedation. Separate small incisions or punctures are made to remove the pits. Each tract is cleaned out of hair and debris and sutured closed. An opening at the superior aspect of the natal cleft is made and left open to allow for drainage. A vessel loop may be left in situ for a period of time to facilitate longer term draining. This technique may also be much less painful as the dressing changes are less invasive.

- **Fibrin glue** – After cleaning the sinus of ingrown hairs and debris, the pits are excised, and fibrin glue injected into the wound to close it.

- **Phenol –** After cleaning the tract, phenol is injected into the pits and then suctioned or denatured. This requires repeated procedures to achieve success. Combining phenol with hair removal may have increased efficacy (Grabowski, et al., 2019).

- **Endoscopic treatment** – under direct visualization a cystoscope is used to irrigate and debride the pilonidal spaces. The small wounds are then allowed to heal by secondary intention.

4. Goals of Treatment

The goals of treatment for post-operative pilonidal sinus wounds are to reduce and manage the following (Chetter et al., 2019):

- Pain
- Time to heal
- Post-operative infections
- Recurrences/hospital re-admissions/ further surgical procedures

4.1 Pain (Level of Evidence IV)

Pain is a subjective experience and influenced by many factors such as past experience, stress, anxiety, and underlying disease process. Inadequate pain management can impair the process of wound healing through the release of hormones (Solowiej & Upton, 2012; Vuolo, 2009). Interventions to mitigate this should include:

- Adequate pain management:

    - Development and evaluation of an individual pain management plan considering both non- pharmacological and pharmacological approaches (Level of Evidence III)
    - Education on the importance of adequate pain management for optimal wound care and healing

- Identification of the impact of pain on activities of daily living (ADLs) and quality of life (QOL) (Level of Evidence IV)
- Coordination of dressing changes and administration of analgesia (taken 1 one hour prior to the dressing change)
- Consideration of infection or hypergranulation tissue with complaints of new pain

Refer to WRHA Pain Assessment and Management Clinical Practice Guidelines: http://www.virtualhospice.ca/Assets/Pain%20Assessment%20and%20Management%20CPG%20(FINAL%20-%20JUNE%202012)_20121015164008.pdf

4.2 Time to heal (Level of Evidence IV)

Healing rates of pilonidal sinus wounds closing by secondary intention vary from 2 to 6 months but may take 1 to 2 years or even longer. The potential for chronicity of these wounds is high thus clinicians must be diligent in reassessing and revising the care plan as the wound changes. Kantor & Margolis, 2000 determined that a reduction in venous wound size in 2-4 weeks was a reliable predictor of an effective healing plan. This concept has been adapted to flag wounds which fail to reduce in size by 20-40% in 2-4 weeks prompting the need for assessment and evaluation of causative factors. The following wound issues and personal factors impact healing times:

- Wound issues. (Bianchi et al, 2018; Ekici, Kanlıöz, Ferhatoğlu & Kartal, 2018; Harries et al., 2019; Harris, Laforet & Sibbald, 2012).

  - Wound dehiscence
  - Flap necrosis
  - Bacterial burden: superficial and/or deep wound infections
  - Hypergranulation tissue
  - Dressing not effectively managing moisture balance: Wound is too wet or too dry
  - Dressing not meeting contours of the natal cleft resulting in hairs, debris from clothing and feces to contaminate the wound
  - Inadequate skin cleansing of the area
  - Inadequate hair removal around the area
  - Client positioning that inhibits adequate visualization

- Personal Factors (Harris, et al., 2012)

  - Physical activity causing repeated trauma through friction/shear to the area
  - Impact of the wound on activities of daily living
  - Psycho-social factors
  - Poor nutrition
  - Weight challenges

- Poor understanding on the impact of wound care and the healing trajectory

4.3 Post-operative infection rates

Surgical site infections (SSI) were reviewed in a systematic data analysis by Porrett, Porrett, Ho, & Rozen in 2019 reporting rates of 5.5% to 16.3% (depending on the surgical approach and procedure). Clinicians must continually assess for SSIs and contact the patient's surgeon or primary care provider immediately.

"Pilonidal sinus wounds infected with hemolytic streptococci and anaerobic bacteria have a statistically significant correlation between pocketing in the base with friable granulation tissue, bridging of the epithelium, and infection. Small pinhole openings in the bluish, newly epithelialized tissue may be present distally and proximally. The openings may probe to the main wound or may be isolated and contain friable granulation tissue. Pockets of infection may form with minor tension, leading to breakdown of newly epithelized tissue" (Harris, Laforet, Sibbald, & Bishop, 2012; Marks, Harding & Hughes, 1987)

4.4 Recurrences / hospital readmission/further surgical procedures

Despite surgical intervention pilonidal disease can be complicated by wound issues and a significant recurrence rate. This may contribute to increased resource utilization through repeated clinic and hospital visits or the need for surgical repair. Patients with recurrent pilonidal disease often develop chronic wounds and draining sinuses that incur long-term morbidity, disability, and decreased quality of life. Harries et al., (2019) and Harris, Laforet, & Sibbald, cite recurrence rates with the following surgical techniques:

- Incision and drainage – 10-79%.
- Surgical excision with primary closure – 2-37%
- Surgical excision with healing by secondary intention – 8-43%

5. Pilonidal Sinus Wound Management

5.1 Patient positioning

Figure 1
Modified "jack-knife" position

Effective wound assessment,
cleansing and dressing application, is optimized with the patient in a modified "jack-knife"

position, see Figure 1. Have the patient lay prone with one or two pillows under the anterior hips. This will improve the ability to separate the buttocks, facilitate visualization of the wound bed, and application of the dressing. If the patient is unable to tolerate this position they may lean over a table or bed or lay on one side with knees bent toward the chest.

5.2 Wound and Peri-wound Cleansing

- Wound cleansing is a process that removes inflammatory contaminants from the wound surface rendering the wound less conducive to microbial growth and promoting effective healing (Joanna Briggs Institute, 2008).
- Effective wound cleansing requires selecting methods that minimize chemical and mechanical trauma to the wound bed.
- Showering may provide comfort to the patient and be a feasible alternative if it will not increase the risk of infection (clean water supply) or impair wound healing. (Level of evidence IV). The shower may be applied directly over the wound to assist in cleansing.
- Sitz baths may be used to provide comfort for the patient but do not optimize wound cleansing.

5.3 Wound cleansing by a health care professional

1. Choose an appropriate method to cleanse the wound with each dressing change that avoids trauma to the wound bed but cleanses the area effectively and supports patient preference.

2. Use cleansing fluid that is at least at room temperature. The wound bed must be at body temperature for cellular growth. Colder solutions may be uncomfortable to the patient and slow down cellular repair as the body takes time to reach optimal temperature thus extending the time the heal.

3. Irrigate wounds for cleansing when the wound has moderate/copious exudate; and contains slough or eschar (Level of Evidence 1b)

    - Eye protection and other appropriate personal protective equipment should be used because of the potential of splash back of body fluids.
    - Tuck a towel between the upper thighs and lower buttocks to absorb the cleansing fluid and protect the patient's clothing.

- Use enough irrigation pressure for effective wound cleansing without causing trauma to the wound bed. Pressures of approximately 13 PSI are effective in reducing infection and inflammation (Joanna Briggs Institute, 2008). Irrigation with higher pressures risk trauma to the wound bed and impair healing.

- The 30-20-10 method provides effective wound irrigation. Utilize a **30 cc** syringe with an 18 gauge IV catheter, filled with **20 cc** of fluid, placed **10cm** from the wound bed to produce pressures of 8-12 psi.

Note: Contraindications to wound irrigation

- Cavities, sinuses, tunnels or other areas where the base of the wound is not clearly visible should not be irrigated because it is unclear where the fluid is going and may not be retrievable (Sibbald et al. 2011). Consultation to a wound care specialist should be done if these concerns are present.

5.4 Other considerations:

- Prefilled saline bottles

This method provides approximately 4 psi of pressure and is used for wounds that are shallow, have minimal exudate, have little to no slough or eschar; and are not infected. Irrigate the wound with a single-use 100 ml squeeze bottle of saline or sterile water.

- Scrubbing of the wound with saline soaked gauze

This is not recommended (Level of evidence IV) as it could lead to tissue trauma and impair or delay wound healing. The gentlest application possible should be utilized. If cleansing the wound with a saline soaked gauze or other wound cleansing product does not lead to proper cleansing of the wound then an alternate strategy such as irrigation should be implemented (Joanna Briggs Institute, 2008).

- Adherent dressings

Dressings that adhere should be soaked or covered with a moist saline gauze and gently removed. This is intended to soften the dressings and wound debris without injury to the wound bed (Joanna Briggs Institute, 2008). (Level of evidence IV)

5.4 Wound assessment and measurement

Wound assessment should be completed using a validated assessment tools and best practice guidelines (Level of Evidence IIa) such as:

- Wound assessment/wound care flow sheet
- MEASURE: **Refer to Appendix A**
- Nutritional Screen: Refer to Canadian Nutrition Screening Tool https://nutritioncareincanada.ca/sites/default/uploads/files/CNST.pdf
- WRHA Wound Bed Preparation Clinical Practice Guidelines https://professionals.wrha.mb.ca/old/extranet/eipt/files/EIPT-013-015.pdf
- WRHA Skin & Wound Photography Clinical Practice Guidelines
- https://professionals.wrha.mb.ca/old/extranet/eipt/files/EIPT-042.pdf

5.5 **Determine wound healing trajectory: healable or maintenance** (Level of Evidence IV)

Classifying the wound according to its ability to heal will guide wound management and dressing options. Education about factors which impact wound healing should be discussed with the patient and family, and methods explored to optimize these factors. The trajectory of wound healing can be delayed or interrupted by systemic disease, nutrition, medications, and activity. Conduct a detailed review of cofactors and comorbidities which can delay or inhibit healing using systems-based approach including:

- Systemic diseases such as diabetes, cancer, auto-immune, cardiovascular
- Low protein intake and history of inadequate nutrition
- Medication reconciliation to determine pharmacological impacts (e.g., immunosuppression, long-term steroid therapy)

Table 1 illustrates factors which influence the wound healing trajectory

Table 1: Wound Healing Trajectory

Healable	**Maintenance (non-healing)**
Adequate vascular supply Cause of the wound issue can be identified and corrected Person factors can be managed Medical co-morbidities can be managed Treatments can be accessed	Adequate vascular supply Person unable or unwilling to follow wound treatment plan Co-morbid medical conditions not optimized for healing Resources not available to treat the wound

5.6. Local wound care using TIME (Woo, Ayello, & Sibbald, 2008)

T- <u>Tissue-Debridement</u>: Several types of tissue can be identified over the course of wound healing, some of which are healthy and some that may impede healing. The types of tissue present within a wound should be described in percentages based on the surface area of the wound e.g. 50% slough, 25% eschar, 25% granulation tissue. Tissue that impedes healing may require debridement.

- Epithelium: this is healthy tissue that appears lighter in color and indicates that the epidermis is regenerating over the surface of the wound from the wound edges. It is very vulnerable to damage from friction, shear and pressure.

- Granulation tissue is healthy tissue comprised of new connective tissue and tiny blood vessels that form on the surfaces of a wound during the healing process and is shiny, red and granular in appearance.

- Hypergranulation tissue is abnormal tissue and is also known as over granulation tissue or proud flesh. It presents as friable (bloody), red, or shiny, and can be raised above the level of the surrounding skin.

  Pilonidal sinus wounds are prone to develop hypergranulation tissue from excess moisture, repeated trauma to the area, chronic inflammation, and low grade persistent wound infection (Harris et al., 2016). This can prolong a stage of healing by overstimulation of the formation of tissue (fibroplasia) and growth of blood vessels (angiogenesis). Although the evidence available for managing hypergranulation tissue is sparse it has been recommended to use either silver nitrate sticks or topical steroids.

  Hypergranulation tissue can be treated with topical corticosteroid twice daily for two weeks (e.g. Triamcinolone 0.1 or 0.5%), (McShane & Bellet, 2012). Where exudate is high, Fluticasone MDI 250 mcg per puff could be considered twice daily and applied only to the beefy hypergranulation tissue until resolution or two weeks when reassessment should occur (Dunitz, 2003). If skin bridging is present the tissue should be cauterized with silver nitrate sticks to shrink and resolve it every time the tissue is visualized (South West Regional Wound Care Program, 2015). Only a clinician trained in the administration of silver nitrate may cauterize hypergranulation with silver nitrate sticks. **Refer to Appendix D.**

- Slough is necrotic tissue that may or may not be firmly attached to surrounding tissue. It can be stringy and range in color from white, yellow, green, or brown. This must be removed to better visualize the wound bed and allow healing.

- Eschar is dead granulation tissue, muscle, fat, tendon, or skin also which should be removed to promote healing

  Slough and eschar need to be debrided to remove bioburden and stimulate the healing process. Optimizing the debridement process promotes effective and rapid healing of chronic wounds and can significantly reduce the cost of treatment (Coutts, 2012). **Refer to Appendix B for methods for wound debridement.**

I- Infection/Inflammation

Table 2: Comparison of Indicators of Infection (Sibbald et al., 2011)

NERDS (Superficial Infection)	STONEES (Deep Infection)
N Non healing E Exudate Increasing R Red/bleeding granulation tissue D Debris (slough or eschar) S Smell or odour from wound	S Size is bigger T Temperature is increased (wound and periwound) O Os-probes to bone or bone visible N New areas of breakdown E Exudate increasing E Erythema/Edema S Smell
If any 3 or more present treat the wound with topical antimicrobial	If any 3 or more criteria present, use topical and systemic antibiotic treatment

M-Moisture Balance

A balanced moist wound environment is critical for optimal healing. It facilitates cell growth and the proliferation of collagen which contributes to the repair and structure of the dermis. Exposing the wound to air can result in desiccation, necrosis, and eschar formation. Excessive moisture can result in hypergranulation tissue or maceration. Any of these will delay and inhibit the healing process.

E-Edge of Wound

A healthy wound edge allows wound contraction with movement of epithelial tissue (cells in the top-most layer of the epidermis), toward the center of the wound (contraction). These epithelial cells arise from the wound margins within the bed and migrate over the surface to close the wound. An ideal wound edge is attached to the wound bed and is flush with the top of the wound. There will be a moist thin epithelial rim and the tissue will be pale pink to translucent in color.

An unhealthy wound edge may be rolled and occur when the upper epidermal cells grow down over the lower epidermal cells. The cells migrate down the sides of the wound instead of across the surface with the inability to close the wound. There is confusion when the cells of the wound bed come in contact with epithelial cells on the sides of the wound. The body thinks the wound is healed ceasing further epithelial migration and stalling of wound healing.

6. Dressing Selection

Dressing selection is based on the findings from the wound assessment, patient assessment, and decisions made using TIME. **Refer to Appendix C for dressing selections for absorbency, anti-microbial action, non-adherent, packing and gauze as well as products available on the current formulary.**

Effective wound management requires collaboration and participation of the patient, family, and health care team. Education should be provided at each stage of the healing trajectory as the wound changes.

6.1 Choose a dressing that will:

- Promote an ideal moist wound environment
- Adequately manage the drainage
- Manage superficial wound infection
- Limit wound bed cooling and disruption or trauma
- Minimize wound bed contamination by fecal matter and hair
- Match the contours of the natal cleft sealing all edges and leaving the anus exposed but that is still comfortable to wear
- Reduce interface friction and shear

7.2 Dressing change frequency

- Dressings are changed daily in the immediate post-operative period due to the high amount of drainage typically seen
- Ongoing frequency may be reduced as drainage decreases
- Should align with patient comfort and acceptability
- **Consider Negative Pressure Wound Therapy (NPWT**) for heavily exudating or difficult to dress wounds as long as it can be debrided and infection is being treated Refer to EIPT https://www.wrha.mb.ca/extranet/eipt/files/EIPT-013-008_002.pdf.. Contact a wound care specialist for consideration of NPWT.

Incision and drainage: This temporizing procedure drains the abscess but does not resolve the disease. There is a small wound where the scalpel lances and drains the area. There will be two small wounds if a vessel loop is in place. An absorbent dressing such as an alginate is required as the wound may continue to drain until healed particularly if a vessel loop is left in place. Gauze or foam bordered sacral dressing may be necessary as a second absorbent layer. Gauze dressings alone and tape may be adequate when twice daily or daily dressing are adequate. As the drainage decreases foam border dressings could be considered once dressing changes are extended to every other day.

Excision and closure: The pilonidal sinus is removed surgically and the wound closed with sutures. A non-adherent dressing should be used to prevent snagging of the sutures on clothing. A second absorbent layer such as gauze or adhesive bordered foam should be placed if there is drainage. Off-loading, or sitting off to one side of the buttock, will reduce tension on the sutures and promote healing. Excessive stress on the suture line may result in tearing of the sutures and the wound opening. Sutures are typically removed upon the discretion of the surgeon when the wound appears well healed.

Surgical excision: When the sinus is surgically excised and left open to heal by secondary intention, daily dressing changes are typically required as the wound may have significant drainage. The size of the wound will vary based on the number of pits and the size of the sinus beneath the skin. There is packing with an alginate, hydrofiber ribbon or nu-gauze, then a secondary layer such as foam bordered sacral dressing to protect from bacterial translocation to the wound. The clinician should be mindful that these dressing changes can be painful and create a plan with the patient and family that is acceptable.

Although difficult wounds or wounds with extensive care needs are generally managed by a health care professional, some patients and their families or significant others may be able to take over wound care independently. The health care professional should work collaboratively with the family in developing a transition of care plan. Clear instructions regarding who to contact with questions, and a plan for follow up should be communicated. Assistance may also be required to ensure adequate access to dressing supplies.

7. Personal Care

7.1 Hair removal

Rationale

Shaving and good hygiene may be first line in pilonidal disease management, but it has a high recurrence rate (57%) when used alone. Laser epilation may be considered but there

is conflicting research whether post-operative laser reduces the risk of recurrence and it also has a significant failure rate when used alone (Grabowski et al., 2019). The medical team may consider consultation to a community Plastic Surgeon or Dermatologist who has experience with pilonidal disease and laser epilation considering it is covered by Manitoba Health. Laser epilation requires the wound bed to be completely healed and should be considered in the timing of the referral.

Method

Shave the natal cleft once or twice a week to keep the area hair-free. Shave a 5-centimeter-wide strip from the wound edge extending from the anal verge to the top of the natal cleft. The area should be cleansed after to remove all pieces of hair. Razors designed for the upper legs/inner thigh area (bikini zone) are helpful to reach smaller areas. The individual should keep the natal cleft free of hair up to the age of 40 to prevent recurrence of the pilonidal sinus. Failure to do so greatly increases the risk of recurrence.

Additional considerations:

Some patients will not be able to shave the area independently and will require assistance which may cause significant embarrassment. Extensive psychosocial support, education, and reinforcement of the importance of keeping the area free of hair should be provided to patients and families. Health care professionals may assist by providing this service to the patient as needed.

7.2 Hygiene

Patients should be encouraged to shower daily just prior to the dressing change. If the wound care is extensive and packing is used the patient should remove only the outer dressing and leave any packing. If the wound care does not involve packing, the entire dressing should be removed. An antibacterial soap may be used to wash the peri-wound skin but not in the wound bed. The area should be dried well with gentle patting and not rubbed harshly with a towel. The nurse or a caregiver who is experienced in dressing changes may then remove the packing, cleanse the wound, re-pack and dress the wound.

At any point if fecal contamination occurs to the dressing it should be removed, the wound cleansed, and redressed as soon as possible. Fecal contamination may delay healing and increase the risk of wound infection (Al-Naami, 2005).

8. Patient Education

8.1 Physical activity

Physical activity is very important to overall health. Restriction of activities required for optimal wound healing may affect the patient's quality of life. This should be balanced with the patient's preference to participate in certain activities but knowing it could cause physical trauma to the area and delayed healing. It takes several months for wounds to remodel where moderation of activities may be required to prevent the wound from opening. The health care professional should discuss any concerns the patient may have regarding restrictions on activities.

- **During healing:** Limit physical activities that cause increased friction, pressure, and moisture between the buttocks, such as walking and sitting for long periods, and sports such as bike riding/recreational vehicle riding. Patients should shower or bathe after such activities to clean the perspiration and excess moisture. They should refrain from all activities that cause pain at the natal cleft. Extreme care should be taken when sutures are in place as excessive movement can tear the sutures.
- **Post-healing:** Provide education regarding the possible risks of breakdown of the healed wound caused by friction and shear when participating in sports for the first few weeks after the pilonidal sinus wound has healed. Patients may attempt to resume their activities as tolerated and monitor the healing wound for signs of new trauma. Although the wound may appear healed, the area is fragile and can be easily opened due to certain activities.

8.2 Nutrition

Patients with a pilonidal wound should optimize their healing with a healthy balanced diet. If their intake is suboptimal or there are challenges meeting nutritional needs a Registered Dietitian should be consulted.

8.3 Information for patient, family and caregivers

An education pamphlet entitled: Managing your Pilonidal Sinus Disease is available at:

https://professionals.wrha.mb.ca/old/extranet/eipt/files/EIPT-076-pamphlet.pdf

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Appendix A: MEASURE

(Keast, Bowering, Evans, Mackean, Burrows, & D'Souza, 2004)

M	Measure: Length, width, and depth, in centimeters. Measure the longest length in a head to toe method, measure the widest width at right angles to the length. Measure depth using a sterile probe at the deepest area.
E	Exudate amount: Remove dressing to assess the quantity (none, scant, moderate, heavy) and characteristics (serous, sanguineous, purulent or combinations) and odour.
A	Appearance of the wound bed: Evaluate the tissue: Necrotic (black), fibrin (firm yellow), slough (soft yellow), granulation (pink and healthy vs. red and friable = unhealthy)
S	Suffering: Assess for pain, other symptoms or an impact to activities of daily living or quality of life.
U	Undermining; Measure in centimeters and use hands of clock to document location. Measure tunneling to help determine appropriate dressing selection, and determine process of healing/non-healing.
R	Re-evaluate: Assess the wound to determine the effectiveness of the wound treatment every week.
E	Edge: Assess the edge of the wound and the area 2-4 cm from the edge of the wound which is the peri-wound skin.

Appendix B: Debridement Methods

Table 1 Debridement methods without sharp instruments

Method	Mechanism of Action	Advantages	Disadvantages
Autolytic	Moisture retentive dressings support the body's naturally occurring process in which enzymes and moisture in the wound rehydrate, soften and liquefy eschar and slough. Suggested dressings: alginates, cadexomer iodine (Iodosorb), hydrocolloids, hydrofiber, hydrogels and hydrophilic paste (Triad)	Selective, preserves viable tissue. Pain free; suggested for very painful wounds. Can be used with infected wounds if infection being treated. Easy to use, safe, readily available Softens tissues in preparation for other debridement methods, e.g. prior to CSWD	Slow and may macerate wound edges Monitor closely for wound infection. Iodine can sting on initial application Caution with a compromised immune system. Produces debris
Mechanical	Includes different strategies to apply mechanical force including: Wound irrigation with 30 cc syringe, 20 cc fluid, at 10cm from wound bed with an 18g IV catheter to produce 8-12psi Wet-to-dry dressings (not recommended)	Wound irrigation, is selective preserving viable tissue, is safe and relatively pain free and easy to access and perform.	Irrigation is slow to debride especially if there is a large amount of necrotic tissue, does not work on dry necrotic tissue. Wet-to-dry dressings are non-selective potentially removing healthy as well as necrotic tissue and are very painful when removed.
Silver Nitrate	Chemical cautery agent which is used to remove hypergranulation tissue from a non-healing wound.	Needs minor amount of training, is selective, and preserves viable tissue.	

Table 2 Debridement with sharp instruments adapted from Capital Health

Method	Mechanism of Action	Advantages	Disadvantages
Level 1 Sharp Debridement	Use of tweezers, forceps and scissors to remove loose avascular tissue. Scalpels are **not** used No tissue is removed below level of dermis.	Produces immediate debridement. Is selective removing only necrotic tissue.	Requires additional education for HCPs.
Level 2 Sharp Debridement CSWD	Using a sharp instrument (scalpel, curette or scissors), to remove non-viable tissue to the level of but not into viable tissue.	Produces immediate debridement. Is one of the most cost-effective methods. Is selective removing only necrotic tissue. Very effective on heavily exudating wounds. If done correctly should not cause pain but may cause minor amounts of bleeding.	Requires additional education for HCPs as carries a higher degree of clinical risk than other debridement methods. Requires appropriate setting and equipment. May not be best choice for painful wounds or for clients on anticoagulants. Not indicated for wounds where demarcation between viable and non-viable tissue is not clear.
Level 3 Sharp Debridement Surgical	Done by a surgeon in the operating room or other suitable environment. Goes below the level of non-viable tissue i.e. wound edge so can cause pain and bleeding.	Produces immediate debridement. Turns a chronic wound into an acute wound thereby promoting more rapid wound healing.	Non-selective viable tissue is removed. Painful. Expensive.

Appendix C: Dressing Selection

Primary dressings

Absorbent

Alginate and non-bordered foam can be cut to size and used as primary dressings to transfer exudate away from the wound, minimizing the risk of maceration.

Anti-microbial

When a pilonidal sinus wound is infected, an antimicrobial dressing is advocated. Iodine and silver are available for use. Reassessment is indicated to ensure the effectiveness of the antimicrobial dressing in reducing the bacterial load (using NERDS and STONEES). Antimicrobial dressings should be continued for 14-21 days for wounds that are improving, at which time the need for further antimicrobial therapy should be reassessed (Wounds UK, 2011). Nanocrystalline Silver (e.g. Acticoat™ Flex) has a wear time of 3-7 days depending on product options and the outer dressing changed more frequently if needed based on drainage.
Refer to WRHA Silver Based Dressings Clinical Practice Guidelines
https://professionals.wrha.mb.ca/old/extranet/eipt/files/EIPT-013-016.pdf

Non-Adherent Contact Layer

A non-adherent contact layer is a thin sheet that protects the wound bed from direct contact with dressings. They conform to the shape of the wound and are porous to allow exudate to pass through for absorption by an overlying, secondary dressing.

Packing

Alginate or hydrofibre, can be loosely inserted into a wound and are easily removed with warm saline or showering/bathing. These dressings can prevent leakage and are often removed daily but can be left for 2-3 days depending on the level of wound exudate.

Gauze

Dressings should be laid gently into the wound and not packed tightly as this can cause discomfort. Always leave enough length outside to enable removal. If more than one piece is used this must be documented to ensure nothing gets retained in the sinus. They should be easy to remove and residual fibres on the wound surface should be avoided.

Secondary or outer dressing

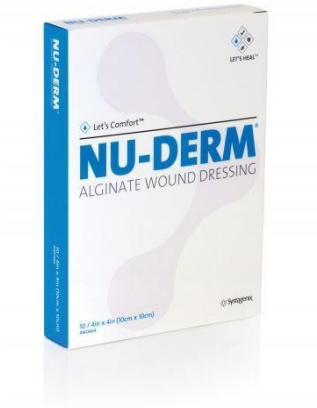
Foam

A secondary dressing is often required due to the increased levels of moisture and drainage produced. To reduce the risk of cross-infection, a foam dressing prevents migration of bacteria into the wound and should be used where possible. (Gauze does not have this property and can result in more contamination of the wound.)

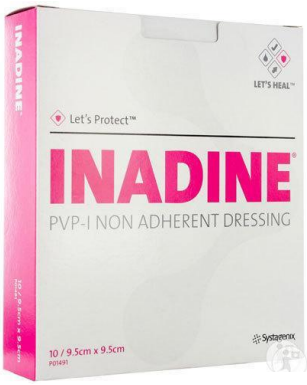
Bordered foam (sacral shape) is applied directly over the cavity, maintaining a good seal, preventing leakage and bacterial infiltration. The downside is that it is triangular with the apex of the triangle designed to be applied by the anus. Discharge from the wound thus drains towards the smallest part of the dressing and makes the seal difficult to maintain. It is possible to apply the dressing upside-down to counteract this problem. (refer to image on page 29 of the sacral foam dressing application).

Suggested Dressings (on WRHA formulary)

Absorbent

Alginate Pad: Nu-derm™ Alginate: Systagenix Acelity	Foam: Mepilex® Transfer: Mölnlycke
	

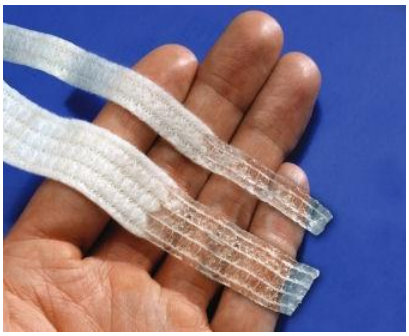
Antimicrobial dressings

Acticoat ™ Flex 3: Smith & Nephew (Nanocrystalline Silver)	INADINE™: Systagenix Acelity
 	 

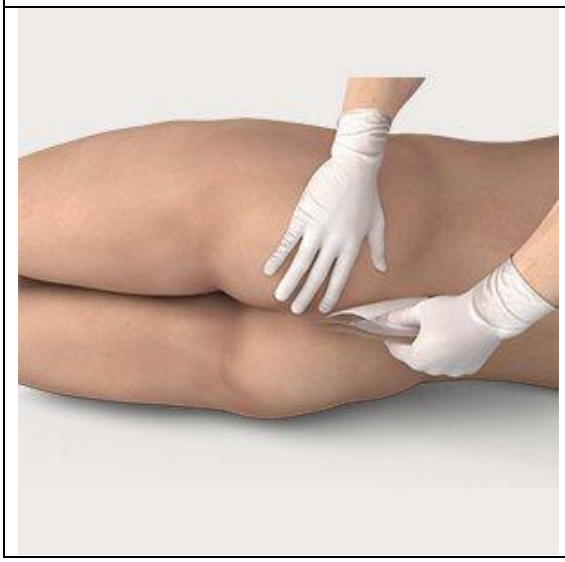
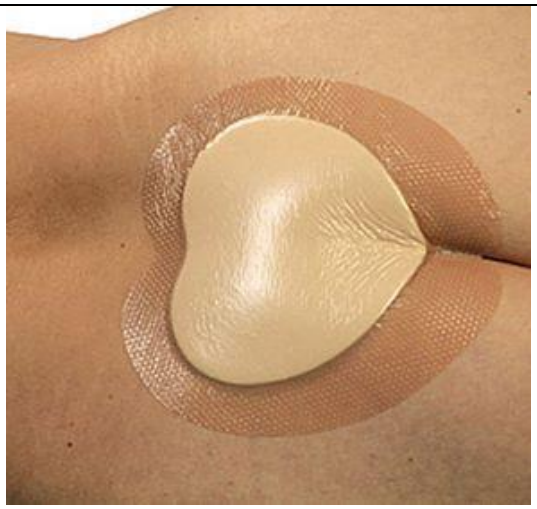
Non-adherent contact layer

ADAPTIC™: Systagenix Acelity	Mepitel® and Mepitel 1®: Mölnlycke
	 

Packing

DERMA PAK-ITS, ¼, ½ OR 1 inch	Alginate Ribbon: Nu-derm™ Alginate: Systagenix Acelity
	
Hydrofibre Ribbon: Convatec Aquacel™	
	

Secondary or Outer dressing

Mepilex® Border, Sacrum Mölnlycke	
	

Appendix D: Silver Nitrate

Silver Nitrate ($AgNO_3$) Sticks for Wound Care

Purpose

- To use for removal of hyper granulation tissue as silver nitrate is an effective cautery agent.

Indications for Use

- Removal of hyper granulation tissue
- To open rolled wound edges

Contraindications for Use

- Sensitivity or allergy to silver

Form of Dressing/Product

- 15 cm sticks

Application

- Requires signed prescriber or Advanced Wound Care Clinician order
- Clinician should be trained in the administration of silver nitrate
- Repeat application every 1-2 days until the hyper granulation tissue is level with the surrounding skin OR the wound edge is opened

Equipment

- Non Sterile gloves

- Appropriate wound cleansing agent
- Sterile water (homemade or commercial) or tap water
- Wound dressing

Steps

1. Verify client identity using 2 client identifiers
2. Perform hand hygiene before initial contact with client or client environment.
3. Review client file for documentation and prescriber orders.
4. Explain procedure and expected outcomes to client.
5. Perform hand hygiene.
6. Position client in a comfortable position so only the affected area is exposed.
7. Don gloves
8. Remove soiled dressing.
9. Note type and amount of wound drainage on used dressing.
10. Inspect wound for odor, color, drainage, peri-wound skin integrity and measure wound weekly.
11. Remove gloves.
12. Perform hand hygiene.
13. Open and prepare supplies.
14. Don gloves.
15. Cleanse wound with normal saline or other appropriate cleansing agent. Dry and protect peri-wound skin.
16. Moisten the tip of one silver nitrate stick with sterile water or tap water. This will activate the silver nitrate. Do NOT use normal saline to moisten the tip as this will decrease the effectiveness of the silver nitrate.
17. Gently roll the silver nitrate stick on the hyper granulation tissue or rolled wound edge. Do NOT touch the peri-wound skin. Note: The newly burnt skin tissue will appear a grayish color.
18. Apply the appropriate wound dressing. The dressing should keep the area dry to discourage the regrowth of the hyper granulation tissue.
19. Remove gloves
20. Dispose of used supplies and garbage
21. Perform hand hygiene
22. Document in client file: wound assessment, use of silver nitrate and client response to procedure

Adapted from British Columbia Provincial Nursing Skin and Wound Committee, Skin and Wound Product Information Sheet: Silver Nitrate ($AgNO_3$) Sticks for Wound Care, June 2013.