INTRODUCTION TO
LOWER EXTREMITY WOUND PATHWAY
TOOLS AND FORMS

Carolyn Morin: Enterostomal Therapy
Nurse, Saskatoon Health Region
Faye Street : Wound Resource Nurse,
Kelsey Trail Health Region
What is the Lower Extremity Wound Pathway?

Clinical pathway for the standardization and improved management of most common chronic leg and foot wounds:

- Venous stasis ulcers
- Diabetic ulcers – neuro-ischemic
- Arterial ulcers
- Mixed etiology ulcers

Does not include pressure ulcers at this time.
Diabetic feet

Diabetic neuropathy and vascular compromise set the stage for:

• Ulceration at pressure points
• Unsuspected injury
• Infection
Venous Stasis

Chronic venous insufficiency sets the stage for:

- Ulceration
- Slow healing wounds
- Stasis dermatitis
- Cellulitis
In 2016/17, SK patients were hospitalized 150 times for venous stasis wounds and spent almost 2,200 days in hospital.

In 2016/17, SK patients were hospitalized 524 times for diabetic foot wounds and spent over 8,000 days in hospital.

In 2016/17 there were 173 lower leg amputations with diabetic foot wounds.

Patients may live with open wounds for months or years.

How many nursing visits are for wound care?

CIHI discharge abstract database, 2016/17
Wound care challenges for nurses

- Incomplete information and orders from primary care
- Lack of standardized wound care protocols
- Capacity for wound care not always available from the homecare team if the client is in acute or long term care.
- Sometimes difficult to access wound resource nurse/physicians/specialists for advice
- Wound care consumes considerable amounts of resources and time
Pathway provides:

• Referral form for family physicians and nurse practitioners available in print and EMR
• Patients referred to homecare for treatment according to protocol (no orders required)
• Capacity building for nurses & primary care
• Standardized lower leg assessment, wound care protocols & product formulary
• Tools to record & share information with wound resource nurse/physician/specialist
Lower Extremity Wound Pathway -- Patient Flow

- Identify wound during patient visit
- Medical/social history and wound assessment
- Red flags present?
  - NO
    - Manage pain, infection, underlying conditions
      - Diabetic ulcer?
        - NO
          - Referral for consultation with vascular specialist
        - YES
          - Venous stasis ulcer?
            - YES
              - Severe infection
            - NO
              - Ischemic wound
        - Deep wound/gangrene
          - NO
            - Referral to home care for complete leg/wound assessment
          - YES
            - Referral to emergency on-call vascular specialist
      - NO
        - Homecare treats according to pathway protocols
          - MD/NP reviews & consults on assessment & treatment plan
    - YES
      - Healing meets target?
        - NO
          - Long term follow up by primary care provider
        - YES
Step 1: Primary care triage & referral

1. Identify wound during patient visit
2. Medical/social history and wound assessment
3. Red flags present?
   - NO: Manage pain, infection, underlying conditions
     - Diabetic ulcer?
     - Venous stasis ulcer?
   - YES: Severe infection, Ischemic wound, Deep wound/gangrene
In order to initiate the LEW Pathway process, a physician or NP referral is required.

Because management of a wound may require ordering lab tests, prescribing medications, referring to specialists, etc, the most responsible provider must be a physician/NP.

If a lower extremity wound is identified by a healthcare provider in the community, that provider should contact the patient’s physician/ NP to initiate appropriate referral for wound care.
Role of primary care provider:

• Correct diagnosis of wound etiology
• Identification and management of factors that may interfere with wound healing
• Identification of red flags for urgent referral
• Referral to appropriate secondary or tertiary level of care, and follow up
• Initiation of antimicrobial therapy and/or pain medications as appropriate
• Sharing relevant information with specialists and wound care nurses
CME Program: Practical Management of Lower Extremity Wounds

www.woundpathwaysk.ca

- Capacity building for primary care providers
- Free on-line course
- Open to all
- 2-3 hours
- 3 Mainpro+ credits
The pathway referral form should only be used for conditions that have pathway treatment protocols (venous stasis, diabetic foot wounds, arterial/non-healable wounds).
The referral form was designed by physicians to assist with differentiating venous and diabetic (neuro-ischemic) wounds.

**ULCER CHARACTERISTICS:**

NOTE: Red flags for urgent specialist referral include: severe/limb-threatening infection, gangrene, acute ischemia

<table>
<thead>
<tr>
<th>Location:</th>
<th>Proximal to medial malleolus</th>
<th>Over bony prominence on the lower leg/foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin and wound appearance:</td>
<td>Shallow wound, irregular border</td>
<td>Punched out/deeper wound, well-defined border</td>
</tr>
<tr>
<td></td>
<td>Surrounding skin edema/induration</td>
<td>Surrounding skin atrophic, shiny, dry</td>
</tr>
<tr>
<td></td>
<td>Stasis dermatitis</td>
<td>Dystrophic nails, absent toe hair</td>
</tr>
<tr>
<td></td>
<td>Skin hypopigmentation of lower leg</td>
<td>Foot deformity</td>
</tr>
<tr>
<td>Circulation &amp; sensation:</td>
<td>Pedal pulses present</td>
<td>Poor capillary refill</td>
</tr>
<tr>
<td></td>
<td>No signs of neuropathy</td>
<td>Pedal pulses weak/absent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of sensation in foot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>128Hz tuning fork</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient reports pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient reports numbness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signs of intrinsically painful</td>
</tr>
<tr>
<td>Size of wound:</td>
<td>previous ulcer</td>
<td></td>
</tr>
<tr>
<td>Duration of this ulcer:</td>
<td>Initiating event:</td>
<td></td>
</tr>
</tbody>
</table>

PROBABLE ETIOLOGY: Venous | Arterial | Diabetic (neuro-ischemic) | Mixed | Uncertain

MRP inserts exam findings in the Ulcer Characteristics section of the form.
Triage and referral

Urgent referral (red flags are identified):

- Call the emergency on-call vascular specialist
- OR send the patient to the nearest emergency department.
Non-urgent referral for diabetic foot ulcer:

- Refer patient to both a vascular specialist for assessment and to homecare for wound management. (The same form is used for both referrals.)

Non-urgent referral to homecare for treatment

- Specific orders are not required if the LEW Pathway referral form is used.
- The pathway referral form should only be used for conditions that have pathway treatment protocols.
- If pathway referrals are received for different wounds, the form should be returned and orders requested.
Step 2: Lower Leg Assessment

- Referral to home care for complete leg/wound assessment
  - Red flags present?
    - NO: Homecare treats according to pathway protocols
    - YES: Manage pain, infection, underlying conditions
      - Severe infection
      - Ischemic wound
      - Deep wound/gangrene
      - Referral to emergency on-call vascular specialist
Lower leg assessment form

- Should be completed ASAP after admission to homecare
- **Is a comprehensive baseline assessment** including vascular status (ABPI and pulses), sensation, appearance of legs and feet
- Assists to identify probable etiology
- Allows nurse to select evidenced-based treatment protocol based on assessment & physician referral
- Ideally, nurses performing this assessment have taken CE- 4021 or equivalent training
Lower leg assessment form

Plan two hours to complete assessment and associated paperwork

<table>
<thead>
<tr>
<th>Saskatchewan Lower Extremity Wound Pathway</th>
<th>Client info:</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOWER LEG ASSESSMENT FORM</td>
<td></td>
</tr>
<tr>
<td>Date of assessment:</td>
<td></td>
</tr>
<tr>
<td>Location of assessment:</td>
<td></td>
</tr>
</tbody>
</table>

**SOCIAL HISTORY:**
- Occupation: ____________________________
- Lives:  □ alone  □ with spouse  □ long term care
□ with family (specify): ____________________________
□ other (specify): ____________________________
- Mobility: □ Independent  □ Use of aid(s)________________
□ Bed/Chair bound  □ Assistance from other person
Comment: ____________________________

**HISTORY OF LEG ULCERS:**
- Previous history of leg ulcers  □ Yes  □ No
- If yes: Year of first occurrence: ____________________________
- Date of onset of current ulcer: ____________________________
- Location: ____________________________
- Previous use of compression bandages/stockings  □ Yes  □ No
- Age of stockings: ____________________________
- Comment: ____________________________

**HEALTH HISTORY that may be associated with vascular disease**
- □ No pertinent history
- □ Family history of leg ulcers
- □ Varicose veins
- □ Deep vein thrombosis affected leg
- □ Deep vein thrombosis unaffected leg
- □ Venous surgery
- □ Rest pain/night pain
- □ Lower extremity arterial disease
- □ Intermittent claudication
- □ Angina
- □ Hypertension diagnosis
- □ Heart failure
- □ Stroke/TIA
- □ Diabetes (□ type 1  □ type 2)
- □ Rheumatoid arthritis
- □ Renal disease
- □ Phlebitis
- □ Vasculitis
Signs of lower leg disease

The lower leg assessment is set up the same way as the primary care referral – to assist with determining etiology.
Step 3: Initiate treatment according to standardized protocols
Standardized treatment protocols

• Based on wound etiology
• Evidence based standardized care
• If wound fails to follow wound-healing trajectory or if concerns with protocols, contact wound resource nurse.
• Wound team may vary by region – identify local wound resources and coordinate care
• Please refer to printable copies
# Treatment Protocol for Diabetic Foot Ulcer (DFU)

## Saskatchewan Lower Extremity Wound Pathway

### Treatment Protocol for Neuropathic & Diabetic Foot Ulcer (DFU)

<table>
<thead>
<tr>
<th>Initiate Wound Record</th>
<th>CLIENT INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confirm that patient with DFU has been referred to a vascular specialist for assessment.</strong> **</td>
<td>Name</td>
</tr>
<tr>
<td></td>
<td>Date</td>
</tr>
<tr>
<td>□ Photograph wound and file as per regional policy</td>
<td></td>
</tr>
<tr>
<td>□ Initiate wound record</td>
<td></td>
</tr>
</tbody>
</table>

### Laboratory

Follow Home Care policy for sending a wound swab for C & S and inform most responsible practitioner in client’s name and why. □ Swab C&S: date:

### Wound Management:

**See formulary for current Health Pro product selection**

- □ Cleanse and moisturize peri-wound and intact skin lower limb/feet/foot
- □ Cleanse wound with 60-100mls of normal saline or alternative at the appropriate psi (4-15) at least room temperature
- □ Gently remove loose debris/yellow slough/crusting with gauze
- □ Protect peri-wound skin from moisture damage, use skin sealant or barrier
- □ Identify infection or suspected infection (see Lower Leg Assessment Form for additional infection guidelines)

**Do not underestimate the severity of infection in a diabetic foot.**

If any of these signs/symptoms are present contact the most responsible provider.
# Treatment Protocol for Venous Stasis Ulcers

## Saskatchewan Lower Extremity Wound Pathway

**TREATMENT PROTOCOL FOR VENOUS STASIS ULCERS**

### Initiate Wound Record

** Contact physician/NP if urgent specialist referral is indicated. **

- [ ] Photograph wound and file as per regional policy
- [ ] Initiate wound record

### Client Information

- **Name:**
- **Date:**

### Laboratory

Follow Home Care policy for sending a wound swab for C & S and inform most responsible practitioner in client’s name and why.

- [ ] Swab C&S: date:

### Wound Management

** See formulary for current Health Pro product selection**

** Consult wound clinician nurse if concerns arise related to client comorbidities, atypical presentation**

- [ ] Cleanse and moisturize peri-wound and intact skin lower limb/foot
- [ ] Cleanse wound with 60-100mls of normal saline or alternative at the appropriate psi (4-15) at least room temperature
- [ ] Gently remove loose debris/yellow slough/crusting with gauze
- [ ] Protect peri-wound skin from exudate, use skin sealant or barrier: __________________
- [ ] Identify infection or suspected infection (see LEW assessment form for localized and spreading infection guidelines)
- [ ] Apply an antimicrobial contact layer if indicated (refer to formulary or contact wound specialist nurse for advice on product selection): __________________

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To open a PDF copy of this form, click on the link in the sidebar.
## Treatment Protocol for Arterial/Non-healable Wounds

### Saskatchewan Lower Extremity Wound Pathway

**TREATMENT PROTOCOL FOR ARTERIAL/NON-HEALABLE WOUNDS**

<table>
<thead>
<tr>
<th>Initiate Wound Record</th>
<th>CLIENT INFORMATION:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confirm that patient with arterial wound has been referred to a vascular specialist for re-vascularization consult.</strong></td>
<td></td>
</tr>
<tr>
<td>☐ Photograph wound and file as per regional policy</td>
<td></td>
</tr>
<tr>
<td>☐ Initiate wound record</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLIENT INFORMATION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
</tbody>
</table>

### ARTERIAL WOUND

- ☐ Date of re-vascularization consult: ____________________________
- ☐ Maintain a clean, stable wound until consult has taken place. Paint wound with Betadine or Cidex.
- ☐ Apply a protective dry gauze dressing, if required, and secure it.

**Once the limb has been successfully re-vascularized, re-evaluate the client by completing an updated Lower Leg Assessment and a new treatment plan.**

**If re-vascularization is not possible, treat as non-healable wound.**

### NON-HEALABLE WOUND (when moist wound healing is contra-indicated)

Wound is considered non-healable due to: ☐ Not a surgical candidate ☐ Patient at end of life ☐ Other

Wound is covered with **stable, hard, dry eschar or dry gangrene**
Documentation

- **Photograph wound** and file as per current regional policy.
- Guidelines and supports for wound photography, secure storage and sharing are coming soon.
- **Initiate a wound record** – NISS 145.0 or equivalent. Use baseline wound measure from Lower Leg Assessment.

<table>
<thead>
<tr>
<th>WOUND #</th>
<th>Lower limb – □ Venous □ Arterial □ Mixed □ Diabetic □ Pressure Ulcer – Stage # ______</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surgical – □ Open □ Closed – Date closed ______ □ Burn □ Skin Tear □ Other:</td>
</tr>
<tr>
<td>DATE/TIME</td>
<td>Size in cm L / W</td>
</tr>
<tr>
<td>_______</td>
<td>_______</td>
</tr>
</tbody>
</table>
Wound monitoring

- Percentage reduction in surface area (L x W) in 4 weeks is an indicator that a wound is responding to treatment.
- Ruler-based methods of measuring wound area are not 100% accurate, but provide enough info to assess change over time.
- Depth: full-thickness ulcers or those with tunneling and undermining will take longer to heal.

<table>
<thead>
<tr>
<th>DATE/TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size in cm</td>
</tr>
<tr>
<td>Surface area (LxW)</td>
</tr>
<tr>
<td>% change in area (↑ ↓)</td>
</tr>
<tr>
<td>Depth in cm</td>
</tr>
</tbody>
</table>
## Skin & wound product formulary

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>PRODUCT</th>
</tr>
</thead>
</table>
| ABSORBENT DRESSINGS | • Classic Health Pads (Classic Health)  
                      • Mextra (Mölnlycke)  
                      • Dressing Roll       |
| ALGINATE           | • Nu-Derm alginate (Systagenix) – sheet or ribbon                       |
| ANTIMICROBIALS     | • Acticoat Flex (Smith & Nephew)                                        |
|                    | • Silvercel hydroalginate with silver (Systagenix) – ribbon             |
|                    | • Iodosorb Cadexomer Iodine (Smith & Nephew)                            |
|                    | • Inadine (Systagenix)                                                 |
|                    | • Aquacel Ag + Extra sheet (ConvaTec)                                   |
|                    | • Aquacel Ag + ribbon (ConvaTec)                                        |
|                    | • Aquacel Ag Foam (ConvaTec)                                            |
|                    | • InterDry AG (Coloplast)                                               |
|                    | • Mepilex Transfer AG (Mölnlycke)                                       |

To open a PDF copy of this form, click on the link in the sidebar.
Communication to referring provider

Send communication form when treatment is initiated, and at any treatment change.

**This is important to physicians**

RE: Patient Name:
Patient contact info:

Your patient was assessed by Regional Home Care Team personnel as follows:
Date: __________________________ Location: __________________________
Assessed by: __________________________
☐ ABI ☐ TBI __________________________ Other investigation: __________________________

REGIONAL HOME CARE TEAM REQUESTING:
Clinical follow-up:
☐ re. foot deformities: __________________________
☐ re. surgical consult: __________________________
☐ re. non-healing wound: __________________________
☐ other:

TREATMENT INITIATED ACCORDING TO WOUND PROTOCOL (NO FOLLOW UP REQUIRED)
Who is part of the multidisciplinary team?

- Patient & family
- Primary care provider
- Community nurse
- Wound resource nurse
- Podiatrist
- Diabetes educator
- Physiotherapist
- Occupational therapist
- Nutritionist
- Social worker
- Orthotist
- Vascular specialist
Education & resources

- CE-4021 “Care of the Patient with Lower Extremity Wounds” SK Polytechnic
- Additional self-study modules at [www.woundpathwaysk.ca](http://www.woundpathwaysk.ca)
- Pathway web pages (search sask wound pathway) for documents & links [http://www.sasksurgery.ca/provider/lowerextremitywound.html](http://www.sasksurgery.ca/provider/lowerextremitywound.html)
In summary:

The purpose of the pathway is to improve patient outcomes through early optimal wound management:

• Better healing times
• Reduced hospitalization and amputation
In summary:

Improvements for providers include:

- Standardized tools and protocols
- Better communication and teamwork
- Improved patient outcomes = reduced provider hours/products
QUESTIONS?

For more information contact your area’s wound resource nurse, or visit the Lower Extremity Wound Pathway web pages at

www.sasksurgery.ca/provide/lowerextremitywound.html