

3M Skin & Wound Care

Lower Extremity Neuropathic Disease (LEND)



LEND Ulcer Clinical Presentation

- Etiology

- *Neuropathic ulcers result from neurologic and musculoskeletal changes leading to a lack of protective sensation and altered weight-bearing*
- *Tissue damage most often results from trauma and/or pressure*
- *Inadequate arterial perfusion may also be a factor*



Neuropathic Changes with LEND

- Sensory Neuropathy
 - *Sensory changes*
 - *Diminished sensitivity to touch*
 - *Loss of protective sensation*
- Motor Neuropathy
 - *Motor/musculoskeletal changes*
 - *Changes in gait, muscle weakness*
- Autonomic Neuropathy
 - *Changes in appearance/condition of skin*
 - *Loss of sweat – dry skin*
 - *Rigid arteries – ischemia, edema*

LEND Ulcer Clinical Presentation

- Mechanism of damage
 - *Sensory Neuropathy*
 - *Loss of protective sensation*
 - *Peripheral Vascular Disease*
- Location
 - *Plantar aspect of foot*
 - *Metatarsal heads*
 - *Tips of toes*
 - *Heels*
 - *Altered pressure points*
 - *Sites of painless trauma*



LEND Ulcer Clinical Presentation

- Wound Appearance
 - *Wound margins well defined, callus common*
 - *Wound base may be necrotic, pale, or pink with granulation tissue present*
 - *Depth – may vary, often deep, may include bone involvement*
 - *Exudate levels vary, often small to moderate*
 - *Frequently infected with or without osteomyelitis*
- Diminished or absent sensation in foot
- Foot deformities common
- Pain: burning, tingling, may improve with walking

LEND Ulcer Clinical Presentation

- Surrounding skin
 - *Tinea Pedis, fungus*
 - *Xerosis, dryness*
 - *Erythema*
 - *Presence of fissures or callus formation*
 - *Maceration/moisture in web spaces*
 - *Nail beds may be thickened*
 - *Edema*
 - *Cellulitis*

LEND Ulcer Treatment Recommendations

- Assess foot and lower extremity
 - *Neuropathic/musculoskeletal integrity*
 - *Deformities of toes or feet*
 - *Sensation – use 5.07 (10gm) Semmes-Weinstein monofilament if available*
 - *Hypersensitivity to touch or pain*
 - *Footwear, gait pattern*

LEND Ulcer Treatment Recommendations

- Perfusion assessment
 - *Skin temperature*
 - *Posterior tibial and dorsalis pedal pulses*
 - *Edema*
 - *Ankle-brachial pressure index (ABPI)*
 - *May be falsely elevated in patients with diabetes and coexisting arterial disease. Additional evaluation may be required*
- Foot care assessment
 - *Skin cleansing and moisturizing habits*
 - *Foot wear, use of stockings, barefoot walking, etc*
 - *Foot wear size, design, condition and status of insoles*

LEND Ulcer Treatment Recommendations

- Assess underlying medical conditions and risk factors for ulcer development
 - *Glucose control*
 - *Inadequate perfusion to lower extremities or feet*
 - *Obesity*
 - *Edema*
 - *Smoking*
- Assess functional or self care ability
 - *Cognition*
 - *Vision*
 - *Mobility*
 - *Range of motion*
 - *Dexterity*



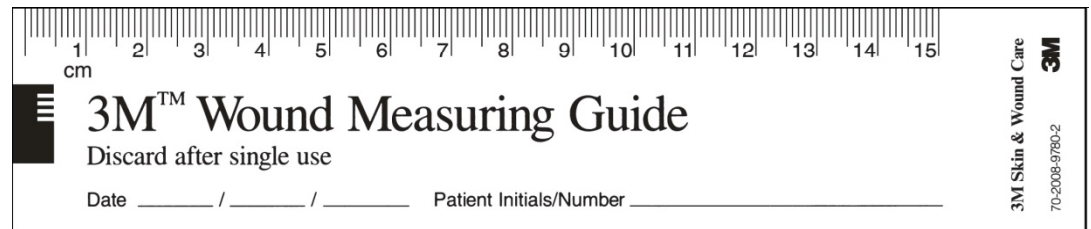
LEND Ulcer Treatment Recommendations

- Assess pain management
- Assess nutritional status
- Obtain referral to orthotist or pedorthist as appropriate for off-loading recommendations
- Obtain referral to podiatrist or diabetic foot specialist for management of toenails, callus, corns

LEND Ulcer Treatment Recommendations

■ Wound Assessment

- *Location*
- *Size and shape*
- *Wound base and tissue type*
- *Wound edges*
- *Exudate amount, color, odor*
- *Periwound condition*
- *Complications: cellulitis, infection, osteomyelitis, Charcot foot/fracture, gangrene*



LEND Ulcer Treatment Recommendations

- Wound Management
 - *Cleanse wound per facility protocol*
 - *Consult physician or wound care specialist for wounds with nonviable, necrotic tissue or eschar, sinus tracts or tunnels*
 - *Referral for off-loading device*
 - *Select a topical dressing to fill depth, manage exudate, and promote moist wound healing*
 - *Maintain stable, dry eschar*
 - *Determine proper use of antiseptics to assist with maintenance of stable eschar*
 - *Identify and treat infection*

LEND Ulcer Treatment Recommendations

- Maintain skin integrity of feet and lower extremities
- Nutrition management and glucose control
- Pain management
- Compression for management of edema
 - *Consult physician or wound care specialist*
 - *Assess perfusion status prior to compression*
 - *Monitor patients receiving compression therapy due to decreased sensation of pain*

LEND Ulcer Treatment Recommendations

- Patient and family education
 - *Self-care strategies for prevention and follow-up care*
 - *Refer to diabetic educator as appropriate*
 - *Off-loading importance and compliance*
 - *Glucose control*
 - *Smoking cessation*
 - *Diabetic foot care*
 - *Stress management*
 - *Signs and symptoms to report to physician of infection or ulcer deterioration*



3M Wound Product Guide for Lower Extremity Wounds

Lower Extremity Venous Ulcer	Lower Extremity Arterial Ulcer	Neuropathic Ulcer/ Diabetic Ulcers
<p>Lower extremity venous leg ulcers are caused by chronic venous hypertension. Failure of valves in the veins or faulty calf muscle pump action in the legs results in inadequate fluid return from the legs. Fluid extravasation, tissue ischemia and, eventually, ulceration is the common course of this condition.</p>	<p>Lower extremity arterial ulcers are caused by lower extremity vascular arterial disease.</p>	<p>Neuropathic ulcers result from neurologic and musculoskeletal changes leading to a lack of protective sensation and altered weight-bearing. Tissue damage most often results from trauma and/or repetitive pressure. Inadequate arterial perfusion may also be a factor.</p>
		
<p>CLEAN: 3M™ Wound Cleanser</p> <p>PROTECT: Cavilon No Sting Barrier Film</p> <p>FILL: 3M™ Tegaderm™ Non-Adherent Contact Layer (fragile/painful wound bed) Tegaderm™ Alginate Dressing</p> <p>COVER: Tegaderm™ Foam Dressing (nonadhesive)</p> <p>COMPRESS: 3M™ Colban™ 2 Layer Compression System (ABPI ≥ 0.8) 3M™ Colban™ 2 Layer Lite Compression System (ABPI ≥ 0.5)</p>	<p>CLEAN: 3M™ Wound Cleanser</p> <p>PROTECT: Cavilon No Sting Barrier Film</p> <p>FILL: <u>Non-Draining to Minimal Drainage</u> Tegaderm™ Contact Layer (fragile/painful wound bed) Tegaderm™ Hydrogel Wound Filler</p> <p><u>Moderate to Heavy Drainage</u> Tegaderm™ Alginate Dressing</p> <p>COVER: <u>Non-Draining to Minimal Drainage</u> Tegaderm™ +Pad Dressing Medipore™ +Pad Dressing</p> <p><u>Moderate to Heavy Drainage</u> Tegaderm™ High Performance Foam Adhesive Dressing Tegaderm™ Foam Dressing (nonadhesive)</p>	<p>CLEAN: 3M™ Wound Cleanser</p> <p>PROTECT: Cavilon No Sting Barrier Film</p> <p>FILL: <u>Non-Draining to Minimal Drainage</u> Tegaderm™ Contact Layer (fragile/painful wound bed) Tegaderm™ Hydrogel Wound Filler</p> <p><u>Moderate to Heavy Drainage</u> Tegaderm™ Alginate Dressing</p> <p>COVER: <u>Non-Draining to Minimal Drainage</u> Tegaderm™ +Pad Dressing Medipore™ +Pad Dressing</p> <p><u>Moderate to Heavy Drainage</u> Tegaderm™ High Performance Foam Adhesive Dressing Tegaderm™ Foam Dressing (nonadhesive)</p>

3M Resources

- For further information on 3M Advance Wound Care products and solutions contact:
 - *Your 3M Skin Health Representative*
 - *3M Health Care Customer Help Line*
 - *1-800-228-3957*
 - *3M Website*
 - *www.3M.com/skinhealth*

LEND References

- WOCN Guideline for Management of Wounds in Patients with Lower-Extremity Neuropathic Disease 2004
- AHRQ Guideline www.guideline.gov
- WOCN Clinical Fact Sheets
- Wound Care Guidelines of the Wound Healing Society, Wound Rep Reg (2006) 14 645-674