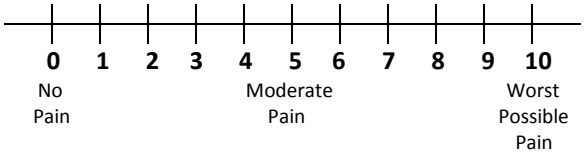
Waterloo Wellington Integrated Wound Care Program
Evidence-Based Wound Care

Arterial Leg Ulcer Clinical Pathway

0-7 Days Expected Outcomes	Notes
Most Responsible Physician(MRP)/Nurse Practitioner (NP) identified/informed	• Refer patient to 'Care Connects' if no responsible practitioner currently involved with patient • Determine if MRP/NP is part of Family Health Team (FHT) or Community Health Centre (CHC) and consider additional supports available
Medical/surgical history and co-morbidity management considered within care plan	Risk factors include: • Smoking • Diabetes mellitus • Hyperlipidemia • Hypertension • Coronary artery disease • History of cerebral vascular accident (CVA) • Low hemoglobin • Obesity • Poor nutrition • Decreased thyroid function • Psoriasis • Autoimmune diseases • Chronic renal disease • Congestive heart failure • Impaired liver function • Use of systemic steroids, immunosuppressive and chemotherapy • >70 years of age • Age 50-69 years with history of diabetes or smoking • < 50 years with diabetes and one other atherosclerotic factor • History of vascular surgery or deep vein thrombosis • Bleeding disorders • Family history of arterial disease
Medication reconciliation and their impact on wound healing reviewed	• Prescription, non-prescription, naturopathic and illicit drug use (including e-cigarettes, inhaled substances and nicotine replacement therapy) • Medications that can affect healing include: chemotherapy, anticoagulants, antiplatelets, corticosteroids, vasoconstrictors, antihypertensives, diuretics and immunosepressive drugs • Other medications used to treat acute episodic illnesses may affect healing (eg. antibiotics, colchicine, anti-rheumatoid arthritics) • Vitamin and mineral supplementation
Recent blood work and diagnostic test results reviewed and implications for wound healing considered	• Determine bloodwork ➢ Blood Sugar, if patient is Diabetic ➢ A1C, if patient is Diabetic ➢ Albumin ➢ CBC ➢ Kidney Function ➢ Colesterol level • Any diagnostic tests done previously i.e: Vascular Segmental Studies, UltraSound Doppler

Patient's nutritional status optimized	• **Calculate Body Mass Index (BMI)** • **Determine recent weight loss/gain** • **Review blood work results** • **Complete Mini Nutritional Assessment (MNA)** ➢ **If screening section results ≤ 11 = complete assessment section** ➢ **If Assessment section results ≤ 24 = Registered Dietician referral required**
Physical assessment performed	• **Baseline blood pressure, pulse and respiration** • **Baseline weight and height, BMI**
Wound and periwound assessment completed **Arterial Wound Characteristics** **4 P's of Arterial Ulcers** **Pale** wound base **Punched-out** appearance **Painful** **Parched** (low to no exudate)	**Complete:** • **Measure and document size of wound using the following reliable tool:** ➢ **Bates-Jensen Wound Assessment Tool (BWAT) OR** ➢ **Leg Ulcer Measurement Tool (LUMT)** • **Determine wound etiology** ➢ **Arterial ulcers are typically pale at base of wound, have 'punched out' appearance, are more painful than expected and have low to no exudate** ➢ **Results of LLA and ABPI/TBPI** • **Assessment for infection** ➢ **NERDS – Any 3 or more of the following indicate HIGH superficial infection** ➢ **STONEES - Any 3 or more of the following indicate HIGH superficial infection in deep compartment (Require Urgent Medical Attention)** • **Obtain photos following best practice as per framework for individual organization policies and procedures.** **Suggest following publication as guideline: http://mydigitalpublication.com/publication/?i=206722**
Pain management considered and initiated **Pain Red Flags** **Possible Infection** • **Increase in pain level (new pain in patients with altered sensation)** **Possible Arterial Involvement** • **Pain on walking (caused by intermittent claudication)** • **Pain with elevation of lower limbs** • **Rest pain** • **Nocturnal pain**	**Complete:** • **Use 0 – 10 Numeric Pain Rating Scale**  • **Arterial pain is typically described as:** ➢ **Pain with elevation of lower limbs, rest pain, nocturnal pain and pain on walking (caused by intermittent claudication)** • **Identify and document type of pain** 1. **Neuropathic Pain (described as burning, stinging, shooting, stabbing or hyperesthesia – sensitivity to touch). Suggested pharmaceutical treatment: Second generation tricyclic agents – e.g. Nortriptyline or Desipramine. If pain is not relieved try using Gabapentin or Pregabalin.**

Acute arterial occlusion is a life and limb-threatening situation which requires immediate emergency intervention especially if there is sudden or severe pain	2. **Nociceptive Pain (described as sharp, aching or throbbing). Suggested pharmaceutical treatment: Non-Opioids – e.g. ASA or Acetaminophen** **Mild Opioids – e.g. Codeine** **Strong Opioids – e.g. Morphine or Oxycodone** • **Obtain MRP/NP orders for pharmaceutical treatments (opioids and non-opioids)** • **Non-pharmacological pain control options**
Lower Limb Assessment Completed	
Bilateral lower leg assessment (LLA)completed **Right ABPI/TBPI**: Highest Right Ankle/Toe Pressure / Highest Brachial = _____ **Left ABPI/TBPI**: Highest Left Ankle/Toe Pressure / Highest Brachial = _____ **Assess for Signs and symptoms of Peripheral Arterial Disease (PAD):** • **Pain with elevation of lower limbs, rest pain, nocturnal pain and pain on walking (caused by intermittent claudication)** • **Dependent rubor in lower legs and feet** • **Pallor in feet on elevation** • **Dry, shiny skin on lower legs** • **Edema subsequent to leg being dependent** • **Thick or flaking toe nails** • **Hairless lower legs and feet** • **Weak or absent pulses** • **Intense hyperesthesia (sensitive to light touch)** • **Limb muscle may appear wasted from ischemic atrophy** • **Delayed capillary refill** • **Distal gangrene** • **Non-healing wound**	**Complete:** • **Complete ABPI/TBPI** • **If ABPI/TBPI completed within last 3 mths, results must be obtained** • **If unable to obtain ABPI/TBPI, referral to medical imaging for Vascular Segmental Studies is recommended** • **Referral to Vascular Surgeon as soon as Vascular Segmental Studies result is available.** • **Repeat ABPI/TBPI assessment every 3 months if healing is not progressing** • **Assess pulses (popliteal – behind knee , dorsalis pedis – top of foot , posterior tibial – medial ankle)** 
Correct Outcome Based Pathway Confirmed	
Wound etiology and appropriate pathway established	• **Confirm wound etiology** ➢ **Arterial ulcers are typically pale at base of wound, have 'punched out' appearance, are more painful than expected and have low to no exudate** ➢ **Results of LLA and ABPI/TBPI** • **Identify initial cause of wound**

	• Results of lower leg assessment (LLA) • Results of ABPI/TBPI • Results of wound assessment • Vascular Segmental Studies results If etiology is still unknown, referral is needed for wound Care lead or ET.
Referral For Vascular Assessment Initiated/Completed	
Peripheral Arterial Disease (PAD) (see guidelines for PAD) ABPI 0.5 to 0.8 TBPI 0.64 to 0.7 Suggest Transcutaneous Oxygen Pressure ($TcPo_2$), Laser Doppler Flowmetry, Doppler Arterial Waveforms or Segmental Doppler Pressure studies ABPI <0.5 TBPI <0.64 Urgent vascular surgical consult needed	• Communication with MRP and/or Nurse Practioner to update on any significant changes in patient's condition or the outcome of the assessment. • Referral to Vascular Surgeon as soon as Vascular Segmental Studies result is available. Acute arterial occlusion is a life and limb-threatening situation which requires immediate emergency intervention Signs and symptoms that may become severe may be associated with the following: • Pale or blue skin • Skin cold to the touch • Sudden decrease in mobility • No pulse where one was present prior to this
Wound Therapy Initiated	
Wound treatment plan determined in accordance to treatment goal (healable, maintenance or non-healable) Caution: USE DRY WOUND HEALING 1. Keep eschar dry 2. No occlusive dressings 3. Do NOT debride 4. Avoid tourniquet effect when securing dressings 5. If eschar becomes wet/boggy – URGENT referral to advanced wound care specialist is recommended	• Arrange for MRP/nurse practitioner orders as required to begin plan of care including agreeance to professional referral recommendations • Identify any potential barriers to wound treatment plan • Utilize toolkit to determine wound cleansing, debridement and dressing selection ➢ South West Region Wound Care Program ➢ Wound Cleansing Table and Dressing Selection and Cleansing enablers ➢ CAWC Product Picker chart CAUTION: When Using Compression Compression is typically contraindicated in the presence of peripheral arterial disease. In some circumstances light compression may be beneficial, but only if arterial supply is sufficient. Sufficient arterial supply should be objectively evidenced by diagnostic tests. In such cases, compression should be ordered by an advanced wound care physician or nurse practitioner only. Compression therapy history documented: • Previous compression garments • Age of compression garments

	• **Adherence** • **Application and removal of compression in past** • **Finances** • **Reason compression treatment plan has changed if applicable**
Patient Discharge Planning Initiated For Patient Independence And Prevention	
Patient and caregiver concerns and goals integrated into the care plan and shared with care team	**Complete:** • **Cardiff Wound Impact Questionnaire** **OR** • **World Health Organization Quality of Life (WHOQOL) form** • **Ensure all patient/caregiver goals and concerns been addressed**
Patient counselled on the benefit of comfort measures	• **Personal assistance available to perform activities of daily living** • **Safety of transfers** • **Recommendations for exercise to decrease claudication if tolerated** • **Consider Occupational Therapist referral for comfort measures** • **Encourage patient to sleep in bed with no lower limb elevation (most arterial pain increases when feet elevated above heart level)** • **Mobility and dexterity aids currently being used**
Coping strategies implemented into plan of care	• **Patient's concerns and fears** • **Signs of anxiety or other mental health issues (eg. delusions, hallucinations, paranoid behaviour)** • **Depression screen using Geriatric Depression Scale assessment form –GDS15** • **Suicide assessment if applicable** • **ETOH and illicit /recreational drug use**
Family and caregiver support identified and incorporated into plan of care	• **Family/caregiver actively able to participate in treatment plan**
Social supports/communityresources currently utilized is integrated into plan of care	• **Family support** • **Community resources** • **Respite and Adult Day Program** • **Private insurance availability** • **Eligibility for Assistive Devices Program, ODSP, High-needs fund, Veterans Affairs Canada or Aborignal Services** • **Confirm that ongoing medication coverage is arranged** **Link to Trillium Drug Benefits** **http://www.health.gov.on.ca/en/public/programs/drugs/programs/odb/opdp_trillium.aspx**
Professional referrals are initiated	• **Ensure referrals done according to patient's needs** • **Refer to guideline for list of health care professionals**

	• **Consider referrals to ET/Wound Care Lead if required to ensure appropriate treatment plan.**
21-28 Days Expected Outcomes	**Notes**
20 – 30% reduction in wound size	
Reassess, measure and document size of wound. Calculate the percentage of healing	• **Measure and document size of wound** ➢ **Bates-Jensen Wound Assessment Tool (BWAT)** ➢ **Complete BWAT score at each visit** • **Re-assess for infection at each visit (arterial wounds are at high risk of infection)** ➢ **NERDS – Any 3 or more of the following indicate HIGH superficial infection** ➢ **STONEES - Any 3 or more of the following indicate HIGH superficial infection in deep compartment (Require Urgent Medical Attention)** • **Obtain photos following best practice as per framework for individual organization policies** • **Complete: Percentage of Healing (Cacluated from the initial visit)** • **<u>Calculation:</u>** **The two most important points are that measurements are done weekly, and using a standardized method within each organization.** **<u>V (Initial) – V (Current)</u> x 100 = % reduction in volume** **V (Initial)** **(V = volume of wound calculated as Longest Length x Perpendicular Widest Width x Depth straight in)** **(Adapted from Sussman and Bates-Jensen 2007)** • **Consider required referrals to ET/WCS/MRP/Surgeon/NP and further follow-up with previous professional referrals if healing percentage is not achieved** • **Wound Therapy Reassessed** • **Utilize toolkit to determine wound cleansing, debridement and dressing selection (South West Region Wound Care Program: Wound Cleansing Table and Dressing Selection and Cleansing enablers and CAWC Product Picker chart)** • **Review the Treatment Plan** • **Review pain level with elevation of lower limbs, rest pain, nocturnal pain and pain on walking (caused by intermittent claudication)** • **Review medical/surgical history and co-morbidity management for changes** • **Review medication for changes** • **Review recent blood work, diagnostic test results and home gylcaemic control** • **Review recent dietary consult if applicable** • **identify need for debridement (in presence of good arterial supply)**
Chronic Disease Self- Management Plan Initiated	
Chronic Disease Management	• **Client and caregiver appropriate for self-management** • **Identify any potential barriers**

	• Review adherence to the plan • Resources in place for self-management
Patient/caregiver educational plan initiated **Compression is typically contraindicated in the presence of peripheral arterial disease. In some circumstances light compression may be beneficial. In such cases, compression should be ordered by an advanced wound care physician or nurse practitioner only. See algorithm in guidelines.**	**Patient/caregiver educational plan initiated** • Emergency signs and symptoms of Peripheral Arterial Disease (PAD) that require immediate medical attention • Risks of compression therapy • Smoking cessation including e-cigarettes and nicotene replacement • Glucose control therapies • Weight control • Pain Management • Self management of wound care • Reduce risk of an infection • Diagnostic vascular testing • Vascular surgery: revascularization • Graduated walking program • Prevention of injury – avoid extremes (hot/cold, caffine, loose/tight garments) • When to call primary care giver (eg. signs and symptoms of infection, deep vein thrombosis, cellulitis, impaired blood flow) • Limb preservation • Community support groups
Ability to self-manage optimized	• Barriers to participate in self care transportation, socioeconomic, social environment, other co-morbidities) • Cognitive ability to self manage care • Review importance and potential barriers to smoking cessation at every visit • Hygeine to prevent infections • Environment • Wound care • Compression application and removal if prescribed • Daily exercise
77-84 Days Expected Outcomes	**Notes**
Wound is closed by 12 weeks	
	• Ensure wound is closed. • Encourage client to control factors that lead to arterial disease ➢ Smoking cessation ➢ Blood pressure regulated ➢ Cholesteral controlled • Report any signs and symptoms of leg/foot pain to physican/NP/vascular surgeon • Promote exercise and diet If wound is not closed, move to most appropraite pathway i.e: Maintenance Pathway or Non-healing Pathway