Created by Michelle O'Neill as part of a service-learning trip to Tyrrell County, NC in March 2013 through the University of North Carolina at Chapel Hill Doctorate of Physical Therapy program.

VENOUS LEG ULCERS

EXAMINATION

95% of VLU's are around the malleoli. Ulcers above the mid-calf or on the foot are likely to have other causes.

VLU bed's are often covered with a fibrinous layer mixed with granulation tissue. The edges are surrounded by an irregular, gently sloping edge. Pitting edema is often present.

Hemosiderin staining occurs. Erythrosites leak into the skin. This results in hemosiderin deposits in macrophages. This stimulates melanin production, which pigments the skin brown.

Recurrent ulceration occurs in up to 70% of those at risk

In the long term, lipodermatosclerosis occurs. The dermis and subcutaneous tissue becomes indurated and fibrosed. Skin becomes atrophic, loses sweat glands and hair follicles, becomes variably pigmented. Severe cases lead to atrophie blanche– white fibrotic areas with low blood flow. Lipodermatosclerosis often preceds ulceration.

Venous eczema is a common symptom of venous insufficiency and can be identified by: red, warm, painful/ tender to the touch, usually chronic, diffuse and poorly demarcated area with an increase in exudate and itchy/ scaley skin. It is treated with topical steroids and emollients. This can be differentiated from cellulitis as the latter is insidious (usually develops over 24-72 hours), well demarcated with no increase in exudate, no itchy/ scaley skin. This is treated with systemic antibiotics.

RISK FACTORS

DIRECT
- -Varicose veins
- -DVT
- -Chronic Venous Insuffi-ciency
- -Poor calf muscle function
- -Arterio-venous fistulae
- -Obesity
- -History of leg fracture

INDIRECT
- -All risk factors leading to DVT inc. protein-C, pro-tein-S, and anti-thrombin III deficiency
- -Family Hx of varicose veins
- -Hx of previous lower leg minor trauma

PATIENT EDUCATION

To prevent recurrence:
- -Compression stockings
- -Adequate skin care
- -Leg elevation

Calf exercises
- -Adopt/maintain a suitable diet
- -Consider joining a support group

MANAGEMENT

First, complete sharp debridement of necrotic tissue. Consider a consult to a vascular specialist since surgery is typically indicated to correct superficial venous disease and as an attempt to prevent ulcers from recurring. Shave therapy (skin graft) or dermal substitute may be used when other treatments have failed.

Graded compression (~40mmHg at ankle, ~18mmHg below the knee) increases limb hydrostatic pressure which reduces superficial venous pressure. Advise patients to remove compression if they notice numbness, tingling, pain, or dusky toes. Use a 4 layer wrap (Profore) for heavily draining wounds with an ABI>0.8. Use a 3 layer wrap (Profore Lite) for heavily draining wounds with an ABI of 0.6-0.8. Use a 2 layer wrap (Coban 2) for patients with lymphedema +VLU (ABI 0.6-0.8) and irregularly shaped legs, morbidly obese patients, active patients that need to wear shoes, and/or patients with a latex allergy/sensitivity. A 1 layer wrap (Coban 2 Lite) is for patients with lymphedema that are less tolerant of compression (ABI <0.6). Use Kerlix & Coban for heavily draining wounds that require frequent dressing changes, wounds contaminated with *Pseudomonas* needing acetic acid dressings, and patients unable to tolerate any higher compression.

Use Cadexomer Iodine paste (Iodosorb) as a primary dressing. It decreases infection (antibacterial agasint *Pseudomonas* and *MRSA*), absorbs drainage, debrides and destroys biofilm, and is more cost-effective than silver.

Consult an MD for systemic pharmacologic intervention for infection. Topical antibiotics are contraindicated secondary to the risk of increasing bacterial resistance.

References: Grey JE, Enoch S, Harding KG. ABC of wound healing Venous and arterial leg ulcers. BMJ, 11 Feb 2006;332:347-350.
Leaper DJ, Durani P. Topical antimicrobial therapy of chronic wounds healing by secondary intention using iodine products. Int Wound J, 2008;5:361-368.