



Association for  
the Advancement  
of Wound Care



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Wound Care Workup

**Lower Extremity Summit**  
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# Chronic Wounds

- 3-6 million people in the US with chronic, non-healing ulcers
- Cost estimate > \$3 billion per year
- Account for \$20 Account for \$20-25 billion in healthcare costs
- Impact on patients
  - Significant other comorbidities
  - Quality of life issues
  - Social stigma
  - Financial costs
  - Emotional/physical stress (appearance, odor)
  - Pain
  - Disability for patient and lost productivity for patients and caregivers

# Barriers to Wound Healing

- Vascular dysfunction (arterial or venous)
- Bioburden and infection
- Scarring and fibrosis
- Edema
- Pressure
- Necrotic tissue
- Host factors
  - Nutrition
  - Comorbidities
  - Social history
  - Medications: steroids antirheumatic agents chemotherapy

# Background

- Comprehensive and thorough history and physical exam critical to diagnosing and treating wound
  - Helps rule out atypical etiology
  - Expedites development of appropriate treatment plan
  - Encourages collaboration with interdisciplinary healthcare team

# Starting Wound Workup

- Good wound assessment
- Based on history and appearance, classify the wound type
- Choose a dressing to address immediate needs of wound
- Assess the patient's vascular status
- Rule out wound zerbras
- Determine diagnostics needed
- Consider early collaboration

# Wound Assessment

- Appearance
  - Drainage
  - Irregular or uniform
  - Periwound skin
- Location
- Size (including depth and presence of undermining/tunneling)
- Color
- Pain level
- Wound bed consistency
  - Bioburden/Non-viable tissue/Granulation tissue

# Wound History

- Detailed Wound History
  - Location(s)
  - Duration
  - Quality (*Acute vs. Chronic*)
  - Severity (*Mild, Moderate, Severe if previous wound? Worse vs. Improving?*)
  - Timing (*Does the wound come and go?*)
  - Precipitating event (*Initial trauma? Spontaneous?*)
  - Modifying Factor(s) (*What makes wound better or worse?*)
  - Associated Sign/Symptom(s)?
- Past and current treatment(s)

# Patient History & Exam

- Detailed Patient History & Physical Examination
  - Exposures
  - Family History
  - Personal Habits
  - Systemic disease
- Past medical history
- Past surgical/procedural history
- Allergies history
- Histology Exam
- Laboratory Tests



# Detailed Patient History & Exam

- Exposures
  - Environmental
    - Sun exposure
    - Contaminated water exposure
    - Soil exposure
    - Infectious disease exposure
    - Travel history

# Detailed Patient History & Exam

- Family History
  - Family member (or community member) with similar wound
    - Congenital or genetic component of wound
  - Autoimmune disorder
  - Cancer

# Detailed Patient History & Exam

- Personal Habits
  - Smoking
  - Diet concerns
  - Illicit drug use
  - Unusual activity/hobbies

# Detailed Patient History & Exam

- Systemic Disease & Past Medical History
- Diabetes
- Vascular disease
- Renal disease
- Mobility impairments
- Mental illness

# Detailed Patient History & Exam

- Past surgical/procedural history
- Surgeries
- Skin grafts
- Vascular procedures
- Cancer treatments

# Histological Testing

- Dermal Punch Biopsy
  - Helps differentiate atypical wounds vs. “normal” wounds
  - Invasive procedure
  - Low risk, low complications
  - Failure to biopsy more problematic than unnecessary biopsy
  - Provides full thickness skin specimens
    - Tumors
    - Inflammatory skin conditions
    - Bullous skin conditions
- Biopsy should include 1-2 sites (wound size)
  - Wound margin including normal and abnormal tissue
  - Wound bed
  - If 2+ biopsies, specify site selection for pathologist

# Basic Laboratory Testing

- CBC
  - Leukocytosis
  - Anemia
  - Thrombocytopenia
- BMP
  - Renal insufficiency
  - Electrolyte abnormalities
- Liver function panel
- HgA1C
- Nutritional Status
  - Serum protein
  - Albumin
  - Prealbumin
  - Transferrin
- Coagulation studies to evaluate for abnormalities, especially if deep wound excision is required

# Additional Laboratory Testing

- Inflammatory disease suspicion
  - Biopsy for diagnostics
  - CBC
  - UA
  - Hepatitis panel
  - ANCA
  - Cryoglobulins, Cryofibrinogens
- Consider referral to vascular specialist, rheumatology, internal medicine dermatology for systemic treatment



# Additional Laboratory Testing

- Infection suspicion
  - Almost all ulcers colonized with bacteria
  - Diagnosis of an acute infection is a clinical diagnosis and not a microbiological diagnosis
  - Only obtain wound cultures if there are signs of an acute infection
    - Increasing erythema of the surrounding skin of more than 2 cm
    - Induration
    - Lymphangitis
    - Increase in ulcer size
    - Large amount of drainage
    - Fever
    - Malodor
  - Avoid swab cultures or antibiotics if not needed
  - Take the sample after debriding and cleansing the wound
  - Deep tissue culture is preferable to superficially swabbing the wound base or drainage

# Imaging Studies

- Plain radiography
  - Evaluate underlying osseous abnormalities (including osteomyelitis), proximity of the wound to hardware, or foreign bodies
  - Compare to prior scans for boney/soft tissue changes
- CT or MRI
  - Consider if concern for an abscess or osteomyelitis (clinically or from radiography) Vascular ultrasonography
- Vascular studies
  - Evaluate for aneurysm, arterial-occlusive disease, or deep venous occlusion
- Arterial blood flow evaluation
  - Ankle-brachial index (ABI), if available
  - Tibial-brachial index (TBI) for all patients with diabetes and those with renal disease

# Collaborate

- Infectious Disease
- Interventional Cardiology
- Vascular surgeon
- Plastic surgeon
- PT/OT
- Endocrinology
- Home Care
- Prosthetists
- Pain management
- Dermatology
- Registered Dietician
- Palliative Care
- Rheumatology/Immunology/  
Oncology

# Conclusion

- Complete workup:
  - Formulate the treatment plan
  - Customize it to standards of care established for the diagnosis
  - Quicker healing
  - Reduced amputations
  - Reduced morbidity and mortality
  - Higher patient satisfaction

# References

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