



Body System: Integumentary		
Session Topic: Wound Care Management		
Educational Format		Faculty Expertise Required
REQUIRED	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
OPTIONAL	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
Professional Practice Gap	Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> • Family physicians have a knowledge gap with respect to the documentation of wound evaluation. • Family physicians have a knowledge and competence gap to laceration repair. • Family physicians have knowledge and competence gaps related to the management of wounds from chronic non-healing wounds, specifically related to diabetic ulcers. • Family physicians have knowledge gaps in assessing patients for pressure sores and ulcers (including venous stasis ulcers and diabetic ulcers), including actively screening patients for venous insufficiency and microvascular complications that put them at risk for developing ulcerations or inhibiting proper wound healing • Family physicians have knowledge gaps in 	<ol style="list-style-type: none"> 1. Use evidence-based recommendations for systematic wound evaluation and documentation. 2. Apply best practices for basic and advanced laceration repair techniques. 3. Develop collaborative care plans with patients with chronic or complex wounds, ulcer prevention strategy adherence. 4. Coordinate care with multidisciplinary teams, utilizing a patient-centered care approach, for the care and management of patients with chronic, complex wounds. 	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.



<p>counseling diabetic patients and patients with venous ulcers on the risk of recurrence of these ulcers and consistently check for signs of poor blood flow or changes to the skin in their legs and feet, emphasizing adherence to treatment therapies</p> <ul style="list-style-type: none"> • Family physicians have knowledge gaps of current evidence-based recommendations for treatment of diabetic and venous ulcers • Family physicians have knowledge and performance gaps in establishing and coordinating multidisciplinary teams for the care and management of patients with diabetic and venous ulcers 		
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ACGME Core Competencies Addressed (select all that apply)

X	Medical Knowledge		Patient Care
X	Interpersonal and Communication Skills		Practice-Based Learning and Improvement
	Professionalism	X	Systems-Based Practice

Faculty Instructional Goals

Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.

- Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations
- Facilitate learner engagement during the session
- Address related practice barriers to foster optimal patient management
- Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the References section below are a good place to start
 - Visit <http://www.aafp.org/journals> for additional resources
 - Visit <http://familydoctor.org> for patient education and resources
- Provide specific examples illustrating the application of evidence-based guidelines, as it



applies to the management of wound care

- Provide learners with a scientific overview of effective and ineffective new wound care management strategies, techniques, and therapies
- Provide specific strategies and resources to assist physician-learners to establish a plan for a patient-centered, multidisciplinary team approach to the care of patients with chronic non-healing wounds (e.g. diabetic ulcers)
- Provide specific strategies and resources to establishing protocols to systematically and routinely evaluate all patients at risk of developing diabetic or venous stasis ulcers
- Provide specific strategies and resources to assist physician-learners in developing collaborative care plans with diabetic patients emphasizing diabetic foot ulcer prevention strategy adherence; and develop collaborative care plans with patients with venous stasis ulcers, emphasizing adherence to strategies aimed at prevention of recurrence
- Provide an overview, and case-based examples, illustrating current evidence-based recommendations and guidelines for diabetic foot and venous stasis ulcers
- Provide recommendations regarding guidelines for Medicare reimbursement.
- Provide recommendations to maximize office efficiency and guideline adherence to the management of wounds
- Provide an overview of newly available treatments, including efficacy, safety, contraindications, and cost/benefit relative to existing treatments.

Needs Assessment

Wound care management has become a growing reason for which patients seek treatment. There were more than 21 million visits to family physicians for wound care treatment in 2010, some resulting from follow-up care for the 5 million emergency room visits for open wounds.¹

Family physicians should be kept up to date on current research and evidence-based recommendations and guidelines for the treatment and management of wound care. Data from a recent AAFP CME Needs Assessment Survey suggests that family physicians require additional education and training with regard to wound care, and particularly the care and management of venous and diabetic ulcers.² Managing wounds from diabetic foot continues to be a challenge for physicians; it is therefore important that family physicians receive training to help them establish and coordinate a multidisciplinary team with clinical specialists (e.g. podiatrists) and trained nursing staff.^{3,4} CME outcomes data from 2013 and 2015 AAFP FMX (formerly Assembly): *Wound Care* sessions indicate that family physicians have knowledge and practice gaps with regard to assessment of wounds; appropriate debridement; effective dressing of a wound; selection of appropriate medications; management of chronic non-healing wounds; chart documentation of wound evaluation; coordination of care for long-term care residents; and hands-on laceration repair.^{5,6}

A review of the literature validates that management of venous ulcers remains poor, in part because many clinics will often treat the wound and not the cause of the problem.⁷ Additionally, patient with diabetes and a previous history of ulceration are at high risk for reulceration and amputation; due in part to several barriers to patient care including the addition of comorbidities, poor nutrition, and non-adherence to preventive therapies.⁸ Physicians are challenged by a



variety of acute and chronic wound care scenarios, and while there is no single best approach, systematic evidence-based management is recommended.⁹

Family physicians are frequently required to manage ulcers of the lower extremities. Among hospital discharges with diabetes as any-listed diagnosis, the number of discharges with a lower extremity condition (LEC) (e.g., peripheral arterial disease, ulcer/inflammation/infection or neuropathy) as any-listed diagnosis (first or secondary) doubled from 445,000 in 1988 to 890,000 in 2007. During this period, the number of discharges with LEC as the secondary diagnosis increased more rapidly than those with LEC as the first-listed diagnosis. In 2007, of 890,000 discharges with LEC as any-listed diagnosis, about 31% had LEC as the first-listed diagnosis.¹⁰ Additionally, venous ulcers (stasis ulcers) account for 80 percent of lower extremity ulcerations, and while overall prevalence is relatively low, the refractory nature of these ulcers increase the risk of morbidity and mortality, and have a significant impact on patient quality of life.¹¹

More than one-half of non-traumatic lower extremity amputations are related to diabetic foot infections, and 85% of all lower extremity amputations in patients with diabetes are preceded by an ulcer. Physicians must be adept at proper diabetic foot ulcer management in order to avoid infection. Protocols should be in place to ensure that all patients with diabetes should undergo a systematic foot examination at least once a year, and more frequently if risk factors for diabetic foot ulcers exist; that preventive measures include patient education on proper foot care, glycemic and blood pressure control, smoking cessation, use of prescription footwear, intensive care from a podiatrist, and evaluation for surgical interventions as indicated.¹²

Family physicians practice in a variety of settings, such as rural or underserved areas, hospitals/emergency departments or even internationally; such settings often dictate the types of procedures, if any, they perform. Accordingly, their scope of care and patient encounters can vary so much that they may be required to provide:

1. Laceration repair
2. Perineal repair
3. Surgical wound evaluation (peri-operative or postoperative)
4. Debridement for ulcers
5. Topical treatments or dressings
6. Management of venomous spider or snake bites

The American Academy of Family Physicians (AAFP) has developed a set of recommended curriculum guidelines for family medicine residents for the care of the surgical patient.¹³ Key knowledge and skill concepts related to wound care are summarized as follows:

- Basic principles of surgical diagnosis, surgical risk evaluation, specifically wound physiology, care and healing processes
- Clinical assessment, including history, physical examination, laboratory evaluation, and differential diagnosis of key signs and symptoms of surgical conditions
- Recognition of surgical emergencies and techniques
- Ethical, legal and socioeconomic considerations
- Preoperative assessment
- Intraoperative care (e.g. wound closure)



- Postoperative care (e.g. suture removal, dressing changes, drain removal)
- Common complications (e.g. wound dehiscence and infection)
- Outpatient surgery
- Office care of common conditions (e.g. simple lacerations and superficial burns)
- Adjunctive and long-term care of bariatric surgical patients
- Recognition and care of surgical wounds
- Minor surgical techniques (e.g. aspiration, foreign body removal, punch biopsy, wound debridement)
- Recognition and treatment of stasis, arterial, and neuropathic ulcers
- Grading and treatment of decubitus ulcers

Upon a patient's presentation with a wound, physicians are advised to determine the severity and whether muscle, tendons, nerves, blood vessels or bone are involved. In doing so, they need to evaluate the necessary mechanism for repair and anesthetic needs, if appropriate.¹⁴

Although family physicians can and should treat many different types of wounds, surgical consultation should be considered for the following:^{13,14}

1. Deep wounds of the hand or foot
2. Full-thickness lacerations of the eyelid, lip or ear
3. Lacerations involving nerves, arteries, bones or joints
4. Penetrating wounds of unknown depth
5. Severe crush injuries
6. Severely contaminated wounds requiring drainage
7. Wounds where cosmetic outcome is a strong concern

However, family physicians can still serve as the patient's coordinator of care in cases where referral is necessary.

There is some evidence suggesting that there is inconsistent adherence to evidence-based guidelines for the diagnosis, evaluation, treatment, and management of diabetic and venous ulcers, by both health care providers and patients. Physicians are in need of continuing education that provides specific recommendations that foster guideline adherence, and provides up to date recommendations on current evidence-based management strategies, techniques, and treatment options. Physicians should consider evidence-based guidelines for the following aspects of diabetic and venous stasis ulcer care and management:¹⁵⁻¹⁹

- Assessment and Classification of Patients with Ulcers and Lower-Extremity Venous Disease (LEVD) / Neuropathic Disease (LEND), and Suspect Diabetic Foot Infection
- Prevention and Education of Ulcers and Recurrence
- Interventions for Patients with LEND, LEVD and Ulcers / Diabetic Foot Ulcers & Infection
- Development and Coordination of a qualified professional multidisciplinary team evaluate and document venous ulcer (VU), and diabetic foot ulcer/infection for patient diagnosis and risk factors for delayed healing or recurrence of VU to guide treatment plan
- Document venous ulcer, and diabetic foot ulcer wound characteristics, monitor and manage ulcer progress



- Patient-oriented care to prevent or heal VU, and diabetic foot ulcer; and prevent recurrence. Improve venous return and provide patient and skin care
- Local Wound Care for VU / Diabetic Foot Ulcer/Infection
- Adjunctive interventions to apply if conservative therapy does not work in 30 days
- Local evidence-based wound care VU/Diabetic Foot Ulcer programs, pain management and patient education until healed
- Palliative care for patients with a VU
- Assessment of Suspected Limb Ischaemia
- Consideration of Imaging Studies to evaluate diabetic foot infection
- Diagnosis and Treatment of Osteomyelitis of the Foot in patients with diabetes
- Consideration and management of surgical interventions

In addition to being knowledgeable about evidence-based recommendations and guidelines for the diagnosis, evaluation, treatment and management of diabetic and venous stasis ulcers, physicians are often in need of education to help them put into place the strategies and protocols for coordinating and managing referral, follow-up care, patient education, and establishing patient-centered practices of care.²⁰⁻²⁶

For proper wound healing, family physicians should ensure patients are receiving adequate nutrition, as vitamin and mineral deficiencies, for instance, can also impair cell structure and prevent proper mechanisms of repair.^{27,28} However, there is currently insufficient scientific evidence to counsel patients on specific healing benefits from macro or micro-nutrients.^{29,30} Nutritional counseling may need to be provided to patients who have underlying chronic diseases as well.

Family physicians should also be kept up to date on current scientific evidence illustrating wound care management techniques with insufficient evidence for recommended use. The following are from a current Cochrane review:

- Topical silver for treating infected wounds³¹
- Honey as a topical treatment for wounds³²
- Hyperbaric oxygen therapy for treating acute surgical and traumatic wounds³³
- Silver based wound dressings and topical agents for treating diabetic foot ulcers³⁴

Some recent laboratory-based clinical investigations show that Larval Debridement Therapy (LDT) should be considered as a primary or secondary treatment in wound management, as maggots and their secretions appear to promote fibroblast motogenesis and angiogenesis.³⁵ Another recent study indicates that vacuum-assisted closure (VAC), a new method in wound care, may speed wound healing by causing vacuum; appears to be as safe as, and more effective than moist dressing for the treatment of diabetic foot ulcers.³⁶ Family physicians should refer to the Infectious Diseases Society of American (IDSA) guidelines for the diagnosis and treatment of diabetic foot infections, or the evidence-based recommendations from U.S. Department of Veterans Affairs for advanced wound care therapies for non-healing diabetic ulcers.^{19,37} A review of the literature validates that physicians are often challenged with the treatment of diabetic foot ulcers (DFU), and indicates that clostridial collagenase ointment (CCO) debridement provides equivalent debridement of DFUs similar to saline moistened gauze (SMG) while fostering better progress toward healing as measured by decreasing wound area over time



and improved response rates at the end of follow-up.³⁸ Additionally, studies indicate that patients with chronic wounds are at risk for obstructive sleep apnea (OSA); therefore, physicians should consider including an OSA assessment when managing these patients.³⁹

Family physicians can improve care by utilizing the American Medical Association (AMA) PCPI approved quality measures for chronic wound care to develop a patient-centered quality improvement initiative to improve patient safety and optimal chronic wound care management.⁴⁰ These AMA PCPI quality measures include the following:

- Assessment of wound characteristics in patients undergoing debridement
- Offloading (pressure relief) of diabetic foot ulcers
- Patient education regarding diabetic foot care
- Patient education regarding long term compression therapy
- Use of compression system in patients with venous ulcers
- Use of wet to dry dressings in patients with chronic skin ulcers (overuse measure)
- Use of wound surface culture technique in patients with chronic skin ulcers (overuse measure)

Physicians may improve their care of patients with acute and chronic wounds by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:^{11,12,14,41,42}

- Noninfected wounds caused by clean objects may undergo primary closure up to 18 hours from the time of injury. Wounds on the head and face may be closed up to 24 hours from the time of injury.
- Tissue adhesives can be used as an alternative for closure of simple, noninfected lacerations in which the wound edges are easily approximated in areas of low tension and moisture.
- Sutures can be uncovered and allowed to get wet within the first 24 to 48 hours without increasing the risk of infection.
- Prophylactic systemic antibiotics are not necessary for healthy patients with clean, noninfected, nonbite wounds.
- Topical antimicrobials should be considered for mild, superficial wound infections. Mupirocin (Bactroban) is preferred for wounds with suspected methicillin-resistant *Staphylococcus aureus*.
- Nonsuperficial mild to moderate wound infections can be treated with oral antibiotics.
- Most severe wound infections, and moderate infections in high-risk patients, require initial parenteral antibiotics, with transition to oral antibiotics after therapeutic response.
- Saline or tap water may be used for wound irrigation, whereas povidone-iodine, detergents, and hydrogen peroxide should be avoided.
- The sting from a local anesthetic injection can be decreased by slow administration and buffering the solution.
- Suturing is the preferred technique for skin laceration repair.
- Tissue adhesives are comparable with sutures in cosmetic results, dehiscence rates, and infection risk.



- Applying white petrolatum to a sterile wound to promote wound healing is as effective as applying an antibiotic ointment.
- Wound cleansing and minor debridement are the mainstays for managing necrotic brown recluse bites
- Compression therapy has been proven beneficial for venous ulcer treatment and is the standard of care.
- Leg elevation minimizes edema in patients with venous insufficiency and is recommended as adjunctive therapy for venous ulcers. The recommended regimen is 30 minutes, three or four times per day.
- Dressings are beneficial for venous ulcer healing, but no dressing has been shown to be superior.
- Pentoxifylline (Trental) is effective when used with compression therapy for venous ulcers, and may be useful as monotherapy.
- Aspirin (300 mg per day) is effective when used with compression therapy for venous ulcers.
- Diagnosis of diabetic foot infection is based on the presence of at least two classic findings of inflammation or purulence.
- Magnetic resonance imaging is the most accurate imaging study in early osteomyelitis.
- Surgical debridement and drainage of deep tissue abscesses and infections should be performed in a timely manner.
- All patients with diabetes should undergo a systematic foot examination at least once a year, and more frequently if risk factors for diabetic foot ulcers exist.

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Common Questions About Wound Care⁴²
- Essentials of Skin Laceration Repair¹⁴
- Diagnosis and treatment of venous ulcers¹¹
- Diabetic foot infections¹²
- Standards of medical care in diabetes. VI: Prevention and management of diabetes complications⁴³
- Management of diabetes. A national clinical guideline⁴⁴
- ADA Standards of medical care in diabetes⁴⁵
- Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections¹⁹
- NPUAP-EPUAP Prevention and treatment of pressure ulcers: clinical practice guideline⁴⁶
- Guideline for management of wounds in patients with lower-extremity venous disease¹⁵
- Guideline for management of wounds in patients with lower-extremity neuropathic disease¹⁶
- International Skin Tear Advisory Panel: a tool kit to aid in the prevention, assessment, and treatment of skin tears using a Simplified Classification System⁴⁷
- Pressure Ulcers: Prevention, Evaluation, and Management⁴⁸
- Association for the Advancement of Wound Care (AAWC) guideline of pressure ulcer guidelines⁴⁹



- Association for the Advancement of Wound Care (AAWC) guideline of venous ulcer guidelines¹⁷
- (AAFP) Care of the Surgical Patient. Recommended Curriculum Guidelines for Family Medicine Residents¹³
- Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections¹⁹
- Advanced Wound Care Therapies for Non-Healing Diabetic, Venous, and Arterial Ulcers³⁷
- (AMA) PCPI Approved Quality Measures: Chronic Wound Care⁴⁰
- Rethinking the difficult patient encounter⁵⁰
- An organized approach to chronic disease care²⁰
- Making diabetes checkups more fruitful²¹
- Patient-physician partnering to improve chronic disease care²²
- Engaging Patients in Collaborative Care Plans²³
- Encouraging patients to change unhealthy behaviors with motivational interviewing²⁴
- 12 errors to avoid in coding skin procedures⁵¹
- A nursing home documentation tool for more efficient visits⁵²
- Simple tools to increase patient satisfaction with the referral process²⁵
- FamilyDoctor.org. Caring for Your Incision After Surgery (patient education)⁵³
- FamilyDoctor.org. Diabetes Overview (patient education)⁵⁴
- FamilyDoctor.org. Varicose Veins | Overview (patient education)⁵⁵

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