

# Wound healing elective: an opportunity to improve medical education curriculum to better manage the increasing burden of chronic wounds

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## Abstract

Chronic wounds are highly prevalent and have become a public health crisis. Successful treatment of chronic wounds requires that healthcare providers study both the pathophysiology of wound healing and maintain knowledge of the most current wound care guidelines set forth by the Agency for Healthcare Research and Quality. Unfortunately, medical students currently receive limited wound care training. A focused and well-organized course integrating a diverse group of medical and surgical faculty, residents, and medical students in the clinical years has been created to address this growing medical issue. The goal of such curricular innovations is to help future physicians gain exposure to chronic wounds and develop crucial clinical skills so they enter residency prepared to offer basic treatments and prevent rapid deterioration of the many wounds they will encounter.

*Keywords: wound healing, chronic wounds, curriculum, medical education, medical students, residents*

## Introduction

Chronic wounds represent an unrealized public health crisis [1]. These are most commonly caused by vascular (venous and arterial) disease and/or prolonged pressure of neuropathy, which is often associated with diabetes mellitus. Approximately 6.5 million people in the United States are affected by

chronic wounds, defined as wounds that have failed to heal after three months of appropriate wound care. In the United States, costs associated with managing chronic wounds are estimated to be at least \$25 billion annually and are predicted to rise in the coming years [2]. For patients with chronic wounds from diabetes mellitus, one in 6 will lose their limb from ulcer sequelae. These patients have an increased 5-year mortality, which is comparable to and may even surpass some common cancers [3]. As the average age of the United States population continues to rise and the number of individuals with chronic health conditions grows larger, the prevalence of people who are living with or at risk of suffering from chronic wounds continues to increase [4]. Successful treatment of chronic wounds requires that healthcare providers study both the physiology of wound healing and maintain knowledge of current wound care guidelines set forth by the Agency for Healthcare Research and Quality (AHRQ). Unfortunately, medical students typically receive limited wound care training, with a recent study reporting that only 7 medical schools in the US offer a formal wound healing elective [5]. A focused and well-organized course integrating a diverse group of medical and surgical faculty, residents, and medical students in the clinical years may help address this important medical issue. Such curricular innovations may help medical students and future residents gain exposure to chronic wounds and develop crucial clinical skills, which may be used at the very least to

offer basic treatment and prevent rapid deterioration of the many wounds they will encounter during their careers.

## Discussion

In an effort to improve medical students' knowledge and comfort with wound care management, the University of Miami Miller School of Medicine offers a two-to-four-week wound healing elective to all third and fourth year medical students. This unique course offers medical students the opportunity to experience a multidisciplinary approach to complex wound care, which is a critical component of quality wound care delivery. This program is the only one known to include a surgical component. Students spend three to four days per week in a wound healing center and one-to-two days per week in the operating room engaging in hands on training. They acquire technical skills such as debridement, reconstruction, and closure of wounds. During this course students learn how to adequately assess a chronic wound by utilizing Doppler ultrasound, measuring Ankle Brachial Indices (ABI), Peripheral Vascular Recordings, MRI, bone scans, CT scans, and/or other special studies. They are challenged to form an appropriate plan of management with necessary consultations and/or referrals. Faculty, fellows, and residents from various disciplines including the departments of dermatology, plastic surgery, vascular surgery, general surgery, internal medicine, physical medicine and rehabilitation, hyperbarics, and podiatry all serve as clinical instructors, offering their unique perspectives during the course. This elective has been very well received

by medical students who leave the course with the ability to understand different etiologies of chronic wounds and apply basic scientific principles as they relate to the treatment of chronic wounds.

## Conclusion

Focused education through a wound healing curriculum has the potential to provide medical trainees with valuable, hands-on experience in chronic wound management as it pertains to dermatology and/or their specialty of interest. Throughout the experience, students familiarize themselves with many current chronic wound care therapies, study their various indications, and learn to use a team-based approach when caring for this unique patient population. Students may also enhance their higher-level leadership competencies, such as multidisciplinary medical care coordination. Courses like this also provide a good team-based setting for students to recognize and respect ethical boundaries during their interactions with both patients and colleagues. This elective may serve as a model for other institutions to employ and will be particularly beneficial to young physicians in training given the importance and prevalence of wound care nationwide. It is an opportunity for residents and early career physicians to become more involved in teaching while building a strong foundation for our future physicians to be better prepared to deal with the management of these difficult-to-heal wounds.

## Potential conflicts of interest

The authors declare no conflicts of interests.

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