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A Global Perspective on Wound Care

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The development of an interprofessional team approach to the care of acute and chronic wounds is a worldwide challenge. This global unmet need has recently been recognized by the World Health Organization (WHO) and addressed by the Association for the Advancement of Wound Care (AAWC) Global Volunteers program. This article provides an overview of the escalating international wound problem. Current programs established to deal with wounds in resource-poor countries are presented as well as information on volunteering.

AT FIRST GLANCE, Dean Rafi, a distinguished college professor in oil-rich Oman, would appear to have little in common with a diabetic woman from a poor rural province outside of Phnom Penh. I was professor Rafi's guest in Oman recently and he treated me to an age-old Arabian tradition: a feast in a tent in the desert. Sitting cross-legged on hand woven mats, we enjoyed an opulent meal (Fig. 1). I lost track of the number of courses. I also had the opportunity to observe a more modern Middle Eastern tradition: before the meal, an assistant passed out small syringes. I watched as the guests pushed aside their dishdashas and injected themselves with insulin. "We are victims of our own success," commented Rafi.

Across the globe, in a makeshift wound clinic at the Sihanouk Center for Hope in Phnom Penh, a 47-year-old diabetic woman limped into the examination room. An examination revealed a red swollen foot with frank purulence pouring from a plantar ulcer. The second toe had become gangrenous (Fig. 2). Emergent surgery was planned. The Cambodian surgeon-in-training handed

me the schedule with the planned operation: it read Above knee amputation. In the operating theater, I persuaded him to follow a more conservative approach. I assisted as he performed a ray amputation followed by the placement of negative pressure utilizing an antique Gomco pump and foam dressings from the Russian market.

These two disparate individuals exemplify to me the under-recognized global epidemic of difficult-to-heal acute and chronic wounds. It is estimated that there will be more than 400 million diabetics worldwide by 2025, with the greatest increases in Asia, Africa, and South America.¹ We can expect that 25% of these patients will develop foot ulcers during their lifetime.² However, these staggering figures account for only one of the wounds that come to the attention of the woundologist.

In the United States, the National Institutes of Health estimates that 3% of the population over the age of 65 will have a wound at any one time.³ In resource-poor regions of the world, we can expect an even greater incidence due to traumatic injuries and ulcers endemic to other regions



Figure 1. An opulent meal. To see this illustration in color, the reader is referred to the web version of this article at www.liebertpub.com/wound

of the world. India, for example, is estimated to have one of the highest incidences of traumatic wounds (10.5 per 1,000).⁴ In 30 countries in Africa and other tropical regions, *Mycobacterium ulcerans* infection leads to the development of the difficult-to-heal Buruli ulcer.⁵

In 2010, the World Health Organization (WHO) recognized the need to address the worldwide problem of wounds. The white paper publication *Wound and Lymphoedema Management* outlined the gravity of the problem and made several recommendations designed to aid clinicians and lay persons caring for wounds in resource-poor countries.⁶ One of the suggestions was the development of a multidisciplinary team working in a specialized center similar to the wound clinic model utilized in the United States. This approach has been



Figure 2. Diabetic foot with infection. To see this illustration in color, the reader is referred to the web version of this article at www.liebertpub.com/wound

shown to increase the healing rates and decrease the recurrence rates.⁷

Under the aegis of the WHO, the World Alliance for Wound and Lymphedema Care (WAWLC) was formed to provide education and assist in the development of centers of excellence in wound healing. John MacDonald serves as the first General Secretary. WAWLC partners along with organizations throughout the world have formed a collaborative attempt to realize this goal.

In the United States, the Association for the Advancement of Wound Care (AAWC) formed AAWC Global Volunteers in partnership with the humanitarian organization, Health Volunteers Overseas (HVO). As one of the first AAWC volunteers, I ventured with one of my nurse colleagues to Phnom Penh, Cambodia in 2009. The primary goal of the trip, like all of our volunteer missions, is clinician education: we utilized didactic lectures, hands-on workshops, bedside rounds, and assisting in the operating room. We quickly learned that flexibility is a valuable skill. We modified our lectures to meet the needs of the setting adjusting content based on the patients encountered that day as well as the feedback from clinicians. Although my surgical and “woundologist” career here in the United States has been rewarding, it cannot compare to the gratification I received in Phnom Penh. Volunteering is an addiction: “crack cocaine for the soul.”

The AAWC/HVO continues to send volunteers to sites in Cambodia. Through its partnerships across the world, sites have been established in Haiti, Peru, and India. In the past, cost has been a major hurdle to volunteering. The recently formed Bates-Jensen Wound REACH Foundation (www.ouchrace.com) now provides travel scholarships for clinicians interested in volunteering.

In February of 2010, wound care volunteering took center stage after the earthquake in Port-au-Prince, Haiti. The challenges of providing wound care in a resource-poor country were exacerbated by the devastation created by the natural disaster. The wound care team in the University of Miami’s Medishare tent routinely had the largest, busiest service (Fig. 3). Numerous U.S. “woundologists” were introduced to volunteering for the first time. As a result, this tragic event increased awareness of the large unmet need for wound care education in developing countries. The Haitian wound care center now located at Bernard Mevs Hospital still flourishes today (Fig. 4). It welcomes volunteers.



Figure 3. University of Miami's medishare tent. To see this illustration in color, the reader is referred to the web version of this article at www.liebertpub.com/wound

Multispecialty clinics operating in resource-poor regions face a new challenge that we have only recently begun to address: the need for wound care products. In some clinics, such as those in Ghana, the practitioners understand the importance of techniques such as compression. However, they may not have access to compression wraps. At last year's Symposium on Advanced Wound Care (SAWC), Dr. Terry Treadwell described the method he used to produce Unna Boot-like compression wraps from local materials. He taught this skill to a local man who would, in turn, teach it to clinicians throughout the country. In certain regions of the world, wound clinics have become expert at basic



Figure 4. Bernard Mevs Hospital. To see this illustration in color, the reader is referred to the web version of this article at www.liebertpub.com/wound

wound care; however, not all wounds respond to this treatment alone. There is also a need for advanced dressings and devices, in particular, skin grafting and related biologics.

In 2012, we returned to Bernard Mevs hospital with a recently FDA cleared device (Epigraft™; MoMelan Technologies, Cambridge, MA; Acquired by Kinetic Concepts, Inc., San Antonio, TX in late 2012) that is capable of harvesting up to 100 epidermal pinch grafts in the clinic without the need for anesthesia. Initial experience has been positive in some of the most difficult cases. Figures 5 and 6 detail the results in a 20-year old, with lymphatic filariasis, who had a long-standing nonhealing wound on the dorsum of her foot with a clean granular base. The lymphedema was well controlled with compression. An epidermal graft was placed with excellent graft take at one month.⁸

Finally, the AAWC is exploring volunteer opportunities in the United States, which has many of its own challenges in underserved areas.

The instructions below are for clinicians interested in volunteering with AAWC/HVO Global Volunteers.

Volunteer placement process

There are multiple steps to the placement process. The process varies slightly from country to country and project to project. We strive to make this process as quick as possible, but potential volunteers should be aware that final approval can take several months.

- Fill out a Volunteer Profile Form (VPF), www.hvousing.org/volunteerToolkit/formspolicies.shtml
- You will be contacted by an HVO recruiter to discuss various program opportunities
- Submit a copy of your CV to the HVO recruiter
- Volunteer's VPF and CV are sent to the US-based program director for assignment approval for the specific program of interest. The program director will
 - Review volunteer's credentials
 - Check references
 - Contact the volunteer to discuss the program and their potential role
 - Inform HVO recruiter if the volunteer is approved
- If approved by the program director, HVO sends a request to the site for approval



Figure 5. Lymphatic filariasis with dorsal foot wound. To see this illustration in color, the reader is referred to the web version of this article at www.liebertpub.com/wound



Figure 6. Dorsal foot wound after grafting. To see this illustration in color, the reader is referred to the web version of this article at www.liebertpub.com/wound

- Once approved by the program director and the site, you will then work with the HVO recruiter to finalize dates and other administrative tasks
- See your travel medicine specialist to ensure that you have the appropriate vaccinations and that you are taking the appropriate prophylactic medications
- Contact the AAWC/Global Volunteers with any questions on the materials to be presented. You can always contact Dr. Serena (Chair of HVO Wound Management Steering Committee) at serena@serenagroups.com

Other things to keep in mind:

- Recruitment is done on a year round, rolling basis
- All volunteers must be active members of HVO and AAWC
 - www.hvousing.org/waystogive.shtml
 - www.aawconline.org

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Thomas E. Serena, MD, FACS, FACHM, MAPWCA, Founder and Medical Director, Serena-Group™, is a Phi Beta Kappa graduate of The College of William and Mary and Penn State Medical School. He completed his residency in surgery at the Milton S. Hershey Medical Center with fellowship training in plastic and reconstructive surgery at the Southern Illinois University. He has opened and operates wound care centers across the United States and globally. Dr. Serena has been the lead or principal investigator in over 75 clinical trials. In 2011, he developed a diagnostic procedure that now bears his name (The Serena Technique®). He is recognized internationally as an expert in the field of wound healing: He has more than 100 published peer-reviewed articles and has given over 350 invited lectures throughout the world. He has been a member of the Board of Directors of the WHS and the AAWC. He is currently the vice president of ACHM and president of the APWCA. Dr. Serena has done extensive medical relief work with Health Volunteers Overseas and serves as chairman of the AAWC Global Volunteers/HVO Steering Committee. He consults for the government of Rwanda on AIDS prevention research.

REFERENCES

1. Mbanya JC, Gan D, Allgot B, et al. Diabetes Atlas, 3rd edition. Brussels: International Diabetes Federation, 2006.
2. Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. *JAMA* 2005; **293**: 217–228.
3. Sen CK, Gordillo GM, Roy S, et al. Human skin wounds: a major and snowballing threat to public health and the economy. *Wound Repair Regen* 2009; **17**: 763–771.
4. Shukla VK, Mumtaz A, Gupta SK. Wound healing research: a perspective from India. *Int J Lower Extremity Wounds* 2005; **4**: 7–8.
5. Buruli Ulcer. Fact Sheet No. 199, revised. Geneva: World Health Organization, 2007.
6. MacDonald JM, Geyer MJ, eds. Wound and Lymphoedema Management. Geneva: World Health Organization Press, 2010.
7. Ghauri AS, Nyamekye I, Grabs AJ, Farndon JR, Whyman MR, Poskitt KR. Influence of a specialised leg ulcer service and venous surgery on the outcome of venous leg ulcers. *Eur J Vasc Endovasc Surg* 1998; **16**: 238–244.
8. Serena TS, Francius A, MacDonald J, Taylor C. Epidermal skin grafting for chronic wounds in Haiti. *Int J Lower Extremity Wounds* (in press).

Abbreviations and Acronyms

AAWC = Association for the Advancement of Wound Care
HVO = Health Volunteers Overseas
SAWC = Symposium on Advanced Wound Care
VPF = Volunteer Profile Form
WAWLC = World Alliance for Wound and Lymphedema Care
WHO = World Health Organization
WHS = Wound Healing Society
ACHM = American College of Hyperbaric Medicine