WASHINGTON — The United States has one of the highest diabetes-associated limb amputation rates of any industrialized country, but many of these expensive and debilitating operations could be prevented through more aggressive early treatment of minor wounds, ulcers, and infections.

Among people with diabetes in the United States, 7,100 lose a limb each year, compared with 5.5,100 in Germany, 3,5,100 in the Netherlands, 2,71,000 in the United Kingdom, and 1,2/1,000 in Denmark.

According to the International Working Group on the Diabetic Foot, the prevalence of limb amputation among diabetes ranges between 0.2% and 4% worldwide. Between 50% and 85% of all lower-extremity amputations could be prevented with better control alone. Dr. Driver, D.P.M., at a health care congress sponsored by the Wall Street Journal and CNBC. Eighty-five percent of all amputations are preceded by foot lesions that have been allowed to progress. Lower-extremity ulcers and infections need to be seen as medical emergencies, and we need to treat them early and aggressively.

Intensive patient education and a concentrated limb-sparing effort by cross-disciplinary medical teams using a wide range of surgical and medical interventions can greatly reduce amputation rates, according to a retrospective study by Dr. Driver and her colleagues at Madigan Army Medical Center in Tacoma, Wash.

From 1999, when Madigan introduced a comprehensive Limb Preservation Service, to 2003, amputations went from 9/9,100 leg ulcer patients to 1,8/1,000, an 82% decrease. This was despite an overall increase in the number of diabetic patients entering the medical center (Diabetes Care 2005;28:248-53). There is no single “magic bullet” therapy that will spare amputations, emphasized Dr. Driver, who is now director of clinical research in foot care, endovascular, and vascular services at Boston Medical Center: Treatment of advanced nonhealing wounds takes a combination of diligent monitoring of the feet and legs; aggressive treatment of any injury or infection, however minor it may seem at the time; careful debridement for more advanced ulcers; and application of a wide range of state-of-the-art therapies. Patients as well as physicians need to understand that in the context of diabetes, even a relatively insignificant injury can presage severe problems down the road.

Specialized matrix dressings like Promogran and wound-healing gels like Regranex, which contain growth factors to stimulate healing, definitely have a place in the management of diabetic leg ulcers, though neither of these alone is universally effective, Dr. Driver said. She had high praise for vacuum-assisted closure (VAC), a relatively new form of negative-pressure wound therapy (NPWT) that involves targeted application of subatmospheric pressure to a wound. VAC is used in conjunction with specialized dressings such as Granufloam.

“This is used for wounds that are very deep. It has three main benefits: It removes fluid from the wound, it pulls the edges of the wound together, and it stimulates new growth,” Dr. Driver said. A 12-week study at 18 U.S. centers randomized 162 patients with severe advanced foot ulcers to treatment with VAC (n = 77) or moist wound therapy (n = 85) using state-of-the-art dressings. After 112 days, 43 of the 77 VAC patients (56%) who showed 100% wound closure, compared with 33 of those treated with moist dressings (39%).

There was an 82% decrease in the need for subsequent surgeries or amputations (43 procedures in the VAC patients vs. 120 procedures in the moist wound therapy patients). The average total cost to achieve healing was $25,954 for VAC vs. $38,806 for moist wound care, a difference of $12,852 (Lancet 2005;366:1704-10).

A subsequent study pitted VAC against advanced moist wound therapy (AMWT), which included hydrogels and alginates, in 342 diabetic patients with severe foot ulcers. At 12 months, 100 of the 162 VAC patients (62%) achieved complete wound closure, compared with 48 of the AMWT patients (29%). A total of 105 VAC patients (62%) reached the 75% closure mark, compared with 85 (51%) of the AMWT group (Diabetes Care 2008;31:631-4).

The patients treated with VAC also had fewer amputations (6 vs. 11) and fewer acute care admissions, all of which contributed to a markedly lower total cost of care. VAC, Regranex, Promogran, and many of the other cutting-edge wound healing therapies are not cheap, but when properly applied they can greatly reduce the overall cost of care for diabetes-associated ulcers. Left unchecked, those costs can be tremendous, and the total price mounts rapidly as ulcers persist. Of total expenditures on leg ulcers—and Medicare spends between $1.5 billion and $2 billion annually—70%-80% is for hospitalizations, not ambulatory care or medications.

According to data from Medicare, the average cost for managing a patient with a noninfected foot or leg ulcer is $775 per month. That increases to $2,048 per month if the patient develops cellulitis. If he or she goes on to develop osteomyelitis, the cost averages $3,798 per month.

In analyzing data from her experience at Madigan Army Medical Center, Dr. Driver said she found that wound depth directly correlates with number of outpatient visits. Patients with ulcers extending down to the tendon or bone required more care. There were 1,088 diabetics, no matter what their body weight, who had amputations (6 vs. 11) and fewer acute care admissions, all of which contributed to a markedly lower total cost of care. VAC, Regranex, Promogran, and many of the other cutting-edge wound healing therapies are not cheap, but when properly applied they can greatly reduce the overall cost of care for diabetes-associated ulcers. Left unchecked, those costs can be tremendous, and the total price mounts rapidly as ulcers persist. Of total expenditures on leg ulcers—and Medicare spends between $1.5 billion and $2 billion annually—70%-80% is for hospitalizations, not ambulatory care or medications.

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