The Case for Specialized Wound Care
Although many physicians routinely treat acute wounds in their day-to-day practice, the variety and complexity of non-healing chronic wounds presents a particular challenge. As with any chronic disease process, a wound, regardless of its cause, requires intervention by multiple health care disciplines to address the many conditions and co-morbidities that impact wound healing. This paper illustrates the need for and value of a specialized, physician-driven, multi-disciplinary approach to outpatient wound care.

The Beginning

The treatment of acute and chronic wounds as an area of medical specialization is traced through a long and eventful clinical history with origins in ancient Egypt and Greece. Details of the use of lint, animal grease and honey as topical treatments for wounds are found in literature circa 1500 BC. The lint provided a fibrous base that promoted wound site closure, the animal grease provided a barrier to environmental pathogens, and the honey served as an antimicrobial agent. Both Egyptians and Greeks noted the importance of closing a wound. The Greeks were the first to differentiate between acute and chronic wounds, calling them “fresh” and “non-healing”, respectively.1 Circa 120-201 AD, a Greek surgeon who served Roman gladiators made many contributions to the world of wound care. Notably he acknowledged the importance of maintaining wound site moisture to ensure successful closure.2 The 19th Century brought the most profound advances with the developments of sterile surgical procedures, Pasteur’s theories of the impact of microbes on disease and Lister’s use of carbolic acid (phenol) as a microbiologic agent in surgery and gauze. The next major advances came in the mid 20th Century with the rediscovery of the importance of moist wound site care preparations and the use of polymer synthetics for wound dressings.

Further historical records document the use of maggots as a wound treatment, dating to use by Maya Indians and Aboriginal tribes in Australia.3 During warfare, many military physicians observed that soldiers whose wounds had become colonized with maggots experienced significantly less morbidity and mortality than soldiers whose wounds had not become colonized. These physicians included Napoleon’s surgeon general, who reported during France’s Egyptian campaign in Syria, 1829 that certain species of fly destroyed only dead tissue and had a positive effect on wound healing.
Dr. Joseph Jones, a ranking Confederate medical officer during the American Civil War, is quoted as follows, “I have frequently seen neglected wounds ... filled with maggots ... as far as my experience extends, these worms only destroy dead tissues, and do not injure specifically the well parts.” The first therapeutic use of maggots is credited to a second Confederate medical officer Dr. J.F. Zacharias, who reported during the American Civil War that, “Maggots ... in a single day would clean a wound much better than any agents we had at our command ... I am sure I saved many lives by their use.” He recorded a high survival rate in patients he treated with maggots.

Today’s approach to wound treatment is significantly more sophisticated and continues to capture the attention of scientific and clinical researchers alike. The ancient principles of promoting wound closure and controlling infection remain the basic hallmarks of successful wound care. The newest thinking and areas of research explore recombinant DNA technology and genetic engineering for growing replacement tissue and blood vessels. Between these extremes lie semi-synthetic human skin, dermal scaffolds, hyperbaric oxygen therapy, negative pressure therapy, topical growth factors, and a billion dollar dressing industry.

Wound management crosses all disciplines from surgery to primary care, physical therapy to plastic surgery and includes specialized nursing, podiatry and dermatology. Within a single hospital, clinicians manage post-operative wounds from pediatrics to geriatrics, acute wounds from the emergency department to the medical surgical unit, and chronic wounds from the intensive care unit to the long-term care unit.
Prevalence of chronic wounds

The statistics are staggering, and well documented. A chronic wound is a manifestation of one or more underlying conditions that becomes visible on the skin. Included are wounds with the following etiologies: pressure, venous, arterial, diabetic, non-healing surgical, cancer-related, inflammatory, and mixed etiologies. The incidence of chronic wounds is highest among the 8 percent of the total US population who are diabetic, which The Centers for Disease Control estimates at almost 24 million Americans. The literature suggests that approximately 15-25 percent of diabetic patients eventually develop foot ulcers. The recurrence rate at two to five years is greater than 50 percent, with 15–24 percent eventually requiring amputation. According to Reiber’s Nationwide Inpatient Study, the length of hospital stay for a diabetic patient with a foot ulcer surpasses that of myocardial infarction and stroke. As the worldwide prevalence of obesity continues to grow at epidemic rates, the incidence related disease including heart disease, vascular insufficiency and diabetes increases dramatically.

A study commissioned by the American Diabetes Association in 2008 revealed that diabetes has reached the status of “public health crisis,” costing the US at least $174 billion a year. This figure includes $116 billion in health care costs and an estimated $58 billion in indirect costs, such as lost productivity and disability. The International Diabetes Federation predicts that by 2025, the cost will exceed $302.5 billion. The human cost is also staggering – 284,000 Americans died from diabetes in 2007. While this statistic is documented, the reality is that diabetic patients do not die of “high blood sugar,” as diabetes is defined, but of long-term complications associated with
the condition. Diabetics are prone to develop cardiovascular disease, including atherosclerosis and stroke, kidney dysfunction and peripheral neuropathy, which can lead to amputation of the legs or feet.

Patients with non-healing wounds are a significant concern in healthcare systems the world over. Today’s hospital systems struggle to handle the collateral damage of patients who are admitted older and survive longer, but sicker. Although these insidious problems are pervasive, in a large organization such as a hospital, it is easy to see how the full impact of skin and wound care issues on the institution may be missed.

Wound care has lacked standardized treatment and referral plans, multidisciplinary collaboration and evaluation of clinical outcomes to drive future treatment plans. An estimated 800+ outpatient wound programs are in operation in the US, not including all the wound care rendered by clinicians in their offices. Studies suggest that patient outcomes are better when care is provided in an environment of focused expertise.

As with any chronic disease process, a chronic wound of any causal type requires intervention by multiple health care disciplines to address the many conditions and co-morbidities that impact wound healing. For example, an elderly patient with diabetes who also suffers diabetic neuropathy lacks sensitivity in the foot to feel pain caused by a minor wound. Due to lack of recognition and appropriate action to address it, what began as a minor cut or skin crack will develop quickly into an acute wound requiring specialized treatment. This may include a wound specialist for debridement, dressing selection and patient education, an orthotist for pressure relief footwear, a physical therapist for gait training and home modification, a nutritionist to monitor diet and enhance overall nutritional status, a vascular surgeon to evaluate patency of blood vessels, a primary care physician to manage glycemic control and other co-morbidities, an infectious disease specialist for evaluation of osteomyelitis, a podiatrist and plastic surgeon for surgical intervention and a home care nurse for periodic wound assessment and coordination of community services. Without attention to pressure reduction, infection, necrotic tissue, tissue perfusion, nutrition, mobility, pain and psychological issues as a total package, chronic wounds do not heal.

A specialized, multi-disciplinary approach to the treatment of chronic wounds has been demonstrated to have positive outcomes. As the medical need and expenditure for chronic wound care have increased markedly over the past decade, wound centers have grown exponentially throughout the country. Some are hospital-based and others community-based. The viability of the wound center, like all outpatient services, depends largely on its ability to generate revenue and to cost-effectively produce clinical outcomes and patient satisfaction. In addition, patient education is key to not only healing wounds, but preventing future wound development.

Diversified Clinical Services, Inc. (DCS) has been the leader in wound prevention and care in the US for nearly 20 years. Partnering with about 300 hospitals nationwide to primarily provide outpatient wound care, DCS offers a range of services to prevent and heal wounds. Located in 41 states nationwide, DCS, with its affiliated companies, have treated one million patients and nearly two million wounds. The data mined from its database guides practice protocols at all centers and represents the largest accumulation of wound data known to exist. DCS offers hospitals comprehensive programs and advanced therapies to heal wounds, save limbs and help people return to living their lives.

The DCS care model is driven by a multidisciplinary approach that is based on the guiding principle of providing the best outcomes to patients that makes the most business sense. DCS utilizes an approach that minimizes the hospital’s economic risk while maximizing revenue generated through diagnostic utilization, surgical referral, utilization of most-appropriate advanced therapies including systemic hyperbaric oxygen therapy and effective patient referrals through system integration, community-based marketing and an efficient operational management model.
Advancing Wound Healing

The DCS model for delivering advanced wound care is physician driven. The management of chronic wounds is a medical discipline requiring specially trained physician direction and involvement. DCS leads the wound care industry in training wound care specialist physicians. In addition, due to the complexity of the diagnoses encountered and the costs of advanced wound healing technologies, detailed, evidence-based Clinical Practice Guidelines that drive the highest value clinical outcomes must be in place. DCS also leads the wound care industry in providing the most comprehensive Clinical Practice Guidelines for chronic wound management currently available.

“Effective medical practice using validated Clinical Practice Guidelines must be provided in the environment of a well managed multidisciplinary wound care team with continuous surveillance and comparison of process and outcomes to a national standard, said Robert Warriner, II, M.D. “These are the hallmarks of a DCS Wound Care Center.”

As a rule, DCS Wound Care Centers are located on hospital grounds. Patient care is physician driven and clinicians and staff are typically employed by DCS, although the center operates under local hospital branding. Patient referrals generate from hospital-loyal physicians who send patients to the center either post-inpatient admission or from the office. Other referrals come directly from the community, often from patients themselves. Typical physician referrals are for complex or progressive diabetic lower extremity wounds of Wagner grades 2, 3 or 4 or other wounds with ischemic compromise or progressive infection. Patient generated referrals typically result from prior failed wound care experiences.

The initial appointment consists of a full assessment to determine the etiology of the wound, the appropriate classification and size of the wound, the overall health status of that patient and the patient’s ability to comply with needed therapies. Because 60 percent of diabetic foot ulcers have an ischemic component, vascular diagnostic testing frequently results in vascular surgical or endovascular interventions. Radiologic imaging is usually required to identify the presence of osteomyelitis and medical and surgical subspecialty consultations are often required. The 9-step assessment is illustrated in the graph to the left on this page.

Based on this evaluation, a treatment plan is designed to optimize the therapies best suited to address the patient’s needs.

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**Assessment of:**

1. Adequate perfusion
2. Presence of nonviable tissue
3. Signs of infection or inflammation
4. Presence of edema
5. Conduciveness of wound healing environment
6. Optimization of tissue growth
7. Appropriateness of pressure offloading
8. Controllability of pain
9. Optimization of host factors
**ESSENTIAL STEPS OF WOUND HEALING EVALUATION AND INTERVENTION**

### New or Existing Wound

#### Step 1: Is there adequate perfusion? **W05.01**
- **Yes**
  - Continue Assessment
- **No**
  - Continue Assessment

#### Step 2: Is nonviable tissue present? **W05.02**
- **Yes**
  - Consider autolytic, chemical, enzymatic, biological debridement **W05.02**
- **No**
  - Continue Assessment

#### Step 3: Are signs/symptoms of infection and/or inflammation present? **W05.03A-B**
- **Yes**
  - Define etiology: systemic or local origin... and intervene based on adequacy of arterial perfusion **W05.04**
- **No**
  - Continue Assessment

#### Step 4: Is edema present? **W05.04**
- **Yes**
  - Define etiology: systemic or local origin... and intervene based on adequacy of arterial perfusion **W05.04**
- **No**
  - Continue Assessment

#### Step 5: Is the wound microenvironment conducive to healing? **W05.05**
- **Yes**
  - Wound bed too dry... intervene to increase moisture **W05.05**
- **No**
  - Continue Assessment

#### Step 6: Is offloading or pressure relief appropriate? **W05.07**
- **Yes**
  - Patient has DFU... assess both feet, intervene with plantar offloading and protection against shearing with TCC or affixed walking boot
- **No**
  - Continue Assessment

#### Step 7: Is pain controlled? **W05.06**
- **Yes**
  - Assess pain in every patient at every visit... Episodic vs persistent. Neuropathic vs nociceptive. Use standardized rating tool
- **No**
  - Continue Assessment

#### Step 8: Are host factors optimized? **W05.09**
- **Yes**
  - Assess status of nutrition, diabetes, renal function, cardiac disease, mobility, other systemic disease, psychosocial issues and intervene.
- **No**
  - Continue Assessment

### Consideration:
- New or Existing Wound
- Pulse exam, vascular history normal and... ABI 0.9-1.2, TBI > 0.65, SPP > 50 mmHg
- Consider inflammation and biopsy, labs to diagnosis and intervene **W05.03B**
- Coexisting systemic disease, constant pain, palpable purpura, localized edema, etc...
- Immune compromise, increasing pain and/or tissue necrosis, advancing erythema, fever, etc...
- Consider infection and culture, +/- abscess, osteomyelitis and intervene **W05.03A**
- ABI > 0.8... provide compression with 2, 3, 4 layer short stretch or paste-containing bandages
- ABI < 0.7... provide reduced compression based upon physician judgment with careful monitoring of arterial perfusion
- Consider offloading or pressure relief... evaluate and intervene
- Patient has DFU... assess both feet, intervene with plantar offloading and protection against shearing with TCC or affixed walking boot
- Patient has PU, intervene with appropriate pressure relief surface
- Assess pain in every patient at every visit... Epidemic vs persistent. Neuropathic vs nociceptive. Use standardized rating tool
- Assess status of nutrition, diabetes, renal function, cardiac disease, mobility, other systemic disease, psychosocial issues and intervene.
- Document findings and interventions, revise plan of care including orders as needed.
Wound size and depth are documented at the initial visit and at each subsequent visit. The data collection serves as the basis for estimating the progression of wound contraction and filling, and the efficacy of current treatment. Data combined from more than 300 DCS clinics serves as a measure of clinical outcomes to further drive treatment guidelines.

The treatment plan follows the overall principles of chronic wound care.

Debridement to prepare the wound bed. Debridement, whether surgical or enzymatic, involves removal of all non-viable tissue present at the wound, as well as promotion of growth factors that contribute to healing. Debridement also removes all nonviable or infected tissue and stimulates what may have previously been a no advancing wound edge. Ideally, wound treatments should minimize tissue loss, preserve optimal foot function, and avoid deformities that might lead to recurrent ulceration. The optimal treatment should also recognize the potential for revascularization to ensure healing. The surgeon’s experience in this area and vascular surgery support are important to achieve optimal results.

Infection control and treatment. A foot ulcer serves as a portal of entry for bacteria that can lead to wound infection. Appropriate diagnosis and treatment of infections is critical, as mild cellulitis can rapidly progress to a limb threatening infection if left untreated.

Wound care. Effective use of dressings is essential for optimal management of wounds. The concept of a clean, moist wound-healing environment is widely accepted. Benefits of the healthy wound bed include prevention of tissue dehydration and cell death, acceleration of angiogenesis, and facilitation of the interaction of growth factors with the target cells. Many clinicians advocate the use of antimicrobial wound products such as those that contain silver or iodine. As with any advanced treatment, the use of such products and dressings may be appropriate for some wound indications and must be determined based on the individual characteristics of the wound.

A new category of advanced wound products has been developed in response to an improved understanding of the impaired wound healing integral in the chronic wound. Pathophysiologic defects such as decreased growth factors production and cellular inactivity have led to the development of products that address these deficiencies. Products in this category include recombinant platelet derived growth factor and biological skin substitutes.

Pressure offloading to prevent foot pressure. Ulcerations often occur in high-pressure areas of the insensitive foot and successful healing and prevention involves the use of total contact casting, half shoes, short leg walkers and felted foam dressings to relieve the pressure on the foot. Regardless of the offloading technique employed, patients with diabetic foot ulcers must reduce their daily activity until the ulcer has completely healed.
Advanced wound care. Advanced wound care products have been criticized for their expense and perceived overuse, given the relative lack of clinical evidence to support such use. According to recent studies regarding evidence-based protocols for diabetic foot ulcer treatment, the advanced wound care products should be considered in cases where traditional care does not succeed in 50 percent wound reduction after a three-week treatment period.8

Negative Pressure Wound Therapy. The use of negative pressure wound therapy devices may be useful in treatment of non-healing wounds to reduce edema, remove bacterial products, and draw the edges of a wound together to promote closure. Significant clinical experience and published research has demonstrated the effectiveness of this technology particularly in post surgical wound healing complications and in the management of open surgical wounds, amputation sites, and pressure ulcers.

Systemic Hyperbaric Oxygen Treatment (HBOT). HBOT works in wound healing by allowing the increased concentrations of oxygen in the plasma to circulate and oxygenate wounds that are hypoxic. It also increases the distance that oxygen molecules can diffuse from the vessels into the tissues. Research has demonstrated it causes vasoconstriction (reducing edema), increases collagen synthesis and the formation of new blood vessels, and enhances leukocyte function (fighting infection). Throughout HBOT treatments (typically twenty to thirty 90-minute treatments over four to six weeks) the transcutaneous pressure oximetry is monitored to indicate oxygen levels present at the tissue level near the wound. A wealth of data exists to support the use of systemic HBOT for wound healing. In April of 1999, the American Diabetes Association developed a consensus statement on the diabetic foot stating that HBOT was beneficial as an adjunctive therapy in certain diabetic ischemic wounds.

DCS, through its Wound Care Centers, provides more systemic hyperbaric oxygen therapy than any other wound program in the world. According to prevailing literature, the healing rate of wounds utilizing HBOT illustrates that 94 percent of patients maintained an intact limb at 55 months post-HBOT.9

In 1996, Faglia published the results of a non-randomized controlled study of 68 patients who were referred for amputation due to a non-healing wound. Half of the study participants received aggressive HBOT and half did not. The study, later used by CMS to approve HBOT for reimbursement, showed that with HBOT, only 3 out of 35 patients required amputation, while 11 out of 33 without HBOT lost limbs.10
The complications of diabetes are particularly devastating to the foot and often lead to amputation in the absence of early intervention. In 1997, 67 percent of hospital discharges for lower-extremity amputation were related to diabetes. In addition, 85 percent of diabetes-related amputations are preceded by the appearance of a foot ulcer.\(^\text{11}\)

According to the National Institute of Diabetes and Digestive and Kidney Diseases, 75,000 lower extremity amputations were performed on diabetics in 2003, representing roughly 50 percent of all lower extremity amputations. The total annual cost for diabetes-related amputations is approximately three billion dollars per year ($38,077 per amputation procedure).\(^\text{12}\)

Limb salvage is most cost effective. More so than the surgical procedure itself, amputation is costly because of the consequences (e.g., nursing and institutional care). Avoiding amputation is probably the most important means of reducing costs and achieving cost effectiveness in the management of diabetic foot ulcers.

When evaluating the cost-effective management of diabetic foot ulcers, the long-term perspective has to be considered, taking into account the risk of new ulcers and amputations, as well as the use of resources resulting from complications and disability caused by previous ulcers. Many patients will develop a new ulcer within a short time after healing. In a report of the long-term prognosis for patients with diabetes mellitus after healing of an initial ulcer, 34 percent, 61 percent and 70 percent had developed a new foot ulcer after one, three and five years of follow up, respectively.\(^\text{13}\)
Cost effectiveness of Systemic Hyperbaric Oxygen Therapy (HBOT)

Multiple clinical publications have sought to assess the cost-effectiveness of the use of systemic hyperbaric oxygen therapy in the treatment of chronic wounds, namely diabetic foot ulcers. Results of these studies suggest that HBOT may accelerate wound healing and reduce amputation. The lack of randomized, controlled trials makes it difficult to assess the cost effectiveness of adjunctive HBOT in diabetic ulcers. However, one study reports a cohort of 1000 hypothetical patients with severe diabetic foot ulcers (Wagner classification 3 or above). The cost-effectiveness model estimated that the incremental cost per additional quality-adjusted life year gained at years one, five and 12 was $27,310; $5,166; and $2,255, respectively. This study concluded that HBOT in the treatment of diabetic foot ulcers was cost effective, particularly on a long-term basis. The Blue Cross Blue Shield Association reviewed the data and concluded that adequate evidence exists to support the use of adjunctive HBOT in the treatment of adequately perfused non-healing wounds of the lower extremities. The Medical Services Advisory Committee technical assessment completed in Australia also found that people with diabetes with ulcers treated with HBOT had fewer amputations and they concluded that evidence is strong enough to support the use of HBOT to improve healing rates in this population. HBOT is a reasonable, cost-effective adjunct to standard therapy.14
Establishing a Wound Care Center

For hospitals looking to establish a center of excellence for wound care, and for those with an existing wound care program, DCS provides strategic partnership to optimize the hospital’s wound care capabilities. DCS’ comprehensive approach produces immediate direct and ancillary net revenues, builds physician relationships, supports key hospital surgical programs and provides a needed service for a growing base of underserved patients.

DCS’ evidence-based Clinical Practice Guidelines and policies, along with procedures and protocols that meet Joint Commission standards, help to ensure quality patient care, as does its proven staff model. Offering expertise, DCS can help reduce risks and increase overall patient satisfaction.

DCS provides:

- **A Multi-Disciplinary Methodology**
  - Physician driven
  - Evidence-based Clinical Practice Guidelines
  - Standardized care based on best practices

- **Shared Risk**
  - DCS makes capital investment by purchasing and maintaining hyperbaric oxygen chambers, and other technology for advances in wound therapies
  - Attractive variable fee structure
  - Sound, shared-risk financial model

- **Support to Launch and Operate Center**
  - 120-150 day implementation
  - Policies, procedures and protocols that meet Joint Commission standards

- **Professional training**
  - accredited by UHMS (50 CME Credits)
  - Scheduling services
  - Regional oversight & corporate support

- **Focused Community Education and Outreach Programs**
  - Educational training directed toward referring community
  - Media
  - Targeted strategic plans and customizable educational materials
  - Pre-cut literature and collateral

- **Reimbursement Expertise**
  - Quarterly assessments
  - Accurate and timely claim submission and processing support
  - Establishment of Superbill and Chargemaster
  - Largest reimbursement support department in industry

- **Focused Clinical Training**
  - Comprehensive physician extender wound healing and prevention curriculum
  - Webcasts and computer-based courses
  - Annual regional and on-site courses

- **Comprehensive Data Management**
  - Proprietary, web based data tracking
  - Outcome data used to benchmark performance

  against 300 world class Wound Care Center® programs

  Patient satisfaction monitoring
Evidence-based Decision Making

Although many physicians treat acute wounds routinely in their day-to-day practice, the variety and complexity of chronic wounds presents a particular challenge. One way DCS has been able to advance the clinical practice of wound care is through the use of a proprietary database that currently has nearly 2 million wounds that describe: what the diagnosis was; how it was treated; and what the outcome was.

Such a database is a very powerful tool that supports an evidence-based approach to treating chronic wounds. DCS’ in-house medical staff has been able to translate this data into a comprehensive and proprietary set of Clinical Practice Guidelines, which are used to train the physicians working in DCS centers. The data illustrates the efficacy of treatments given in the past to help drive protocols for the future. The result is significantly improved patient care that is highly cost-effective for the payors, and provides a good financial return for its hospital partners.

A Physician Driven Approach

DCS programs are operated in conjunction with physician medical directors and teams of physicians from the local medical communities in which they operate. Information regarding the patient’s progress, along with updated photos of the wound, is submitted to the referring physician on an ongoing basis. The referring physician always remains an active member of the wound care management team and the patient remains under his or her care. Programs have continuous support from DCS’ Senior Medical Advisors and a national network of trained wound care nurses. DCS also assists hospitals in educating their physician communities to help physicians understand how specialized Wound Care Centers can help their patients.

Assessment

As reimbursement guidelines continually change, a thorough evaluation of hospital-based wound care programs from both a clinical and financial standpoint may help administrators determine the feasibility of offering this specialized wound care approach. A thorough and impartial assessment performed by DCS’ Wound Care Survey team can provide both clarity and confirmation. With more than 100 points of data, the comprehensive overview conducted by expert leaders in the area of reimbursement and clinical practice can confirm areas of excellence as well as identify opportunities for improvement.

DCS can fully assess a hospital’s existing inpatient and outpatient wound care programs. With the evaluation results, administrators can help determine the clinical effectiveness and the economic implications of the existing wound care programs.
**Maintaining Continuity of Care**

DCS is leading the way in offering hospitals a comprehensive plan to administer wound care. Helping to ensure continuity of wound care when a person is in the hospital, being treated at a post-acute setting or using outpatient services, DCS uses evidence-based Clinical Practice Guidelines to improve clinical and financial outcomes for wound-related services.

DCS helps ease patient transition from hospitals to post-acute settings through its Extended Care Program. By arranging for hospital-affiliated physician extenders to teach wound care to clinicians at nearby post-acute facilities, DCS helps hospitals build relationships that can result in enhanced patient care and reduced length of stay.

**Conclusion**

A specialized approach to the treatment of chronic wounds is required to cost-effectively and efficiently manage a community’s wound needs. DCS, the nation’s largest provider of such services with more than 300 hospital partners, offers a unique and comprehensive, physician-driven approach. With a database of more than 2 million wounds, DCS’ evidence-based medicine drives clinical treatment protocols that produce unparalleled results. The DCS model has also proven to be a financially-viable source of revenue for its hospital partners. For more information, contact DCS at 1-800-839-9035 or online at www.diversifiedclinicalservices.com.


5. Association for the Advancement of Wound Care. AAWC, Statement on Comprehensive Multidisciplinary Wound Care, 2005


11. Number (in Thousands) of Hospital Discharges for Nontraumatic Lower Extremity Amputation with Diabetes as a Listed Diagnosis, United States, 1980-2003. Atlanta, GA: Centers for Disease Control and Prevention; National Center for Chronic Disease Prevention and Health Promotion


