

Promoting Service Line Success
by creating an

Amputation Prevention Center[®]

Improving Patient Health, Reducing Costs and Increasing Margins

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Amputation Prevention
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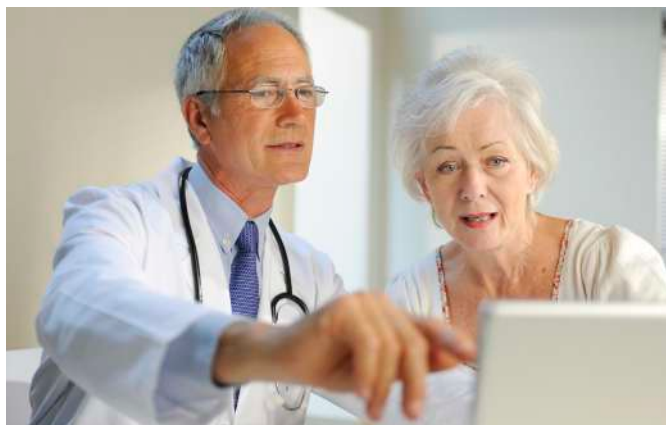
Introduction

Most hospitals face the challenge of determining the best ways to invest limited capital and human resources in programs and services that will not only meet their mission, but also help maintain financial viability. However, hospitals that have service lines with dedicated operations teams and support of senior leadership have been successful in tackling this challenge. In addition, successful service lines have the following key elements:

- Strong clinical and administrative leadership (that drives provider engagement)
- Care management across the continuum
- A strong referral base
- Superior customer service and positive patient outcomes¹

RestorixHealth's Amputation Prevention Center[®] model, operating under the umbrella network called the *Amputation Prevention Centers of America*[®], helps hospitals meet all of these goals.

Hospital-based wound care centers emerged in the late 1980s and continue to grow today. These specialized centers make it easier for patients with debilitating, painful non-healing wounds and ulcers to recover.



For the hospital, these centers result in additional revenue from procedures and patient visits. However, these traditional models have seen increased scrutiny from Medicare and other payers, along with denials and reductions in revenue. For wound care service lines to remain profitable, hospitals will need to adapt to these changes.

Creating a specialty center focused on one segment of the wound care population — the diabetic foot ulcer patient at risk for amputation — can be a solution for shrinking margins. Aligning with surgeons who specialize in limb salvage and building a comprehensive service line around these champions can:

- Increase hospital revenue
- Decrease major amputation rates
- Improve population health

“Every 30 seconds, somewhere in the world, a limb is lost as a consequence of diabetes.”

— Cover of *The Lancet*, November 12, 2005

The Diabetes Epidemic

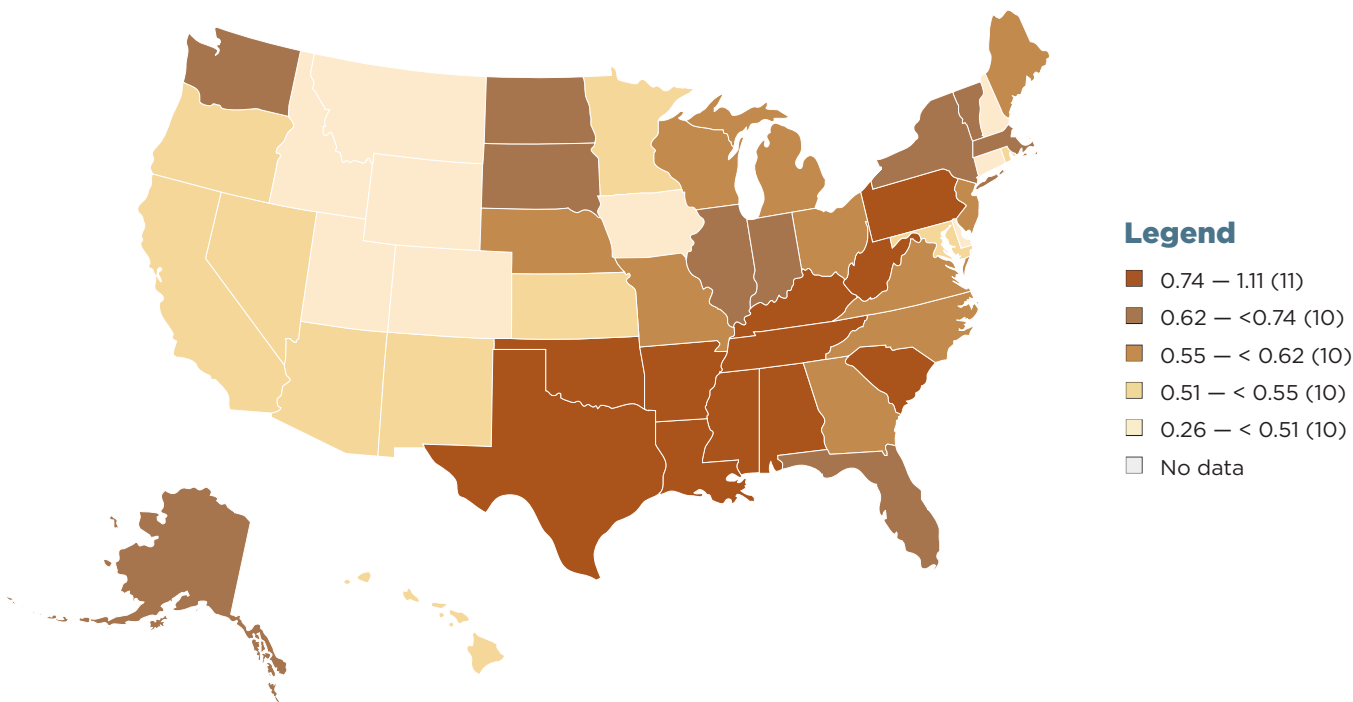
In 2014, the Centers for Disease Control and Prevention (CDC) estimated that more than 29 million adults in the U.S. had diabetes and an additional 86 million more had prediabetes.² About 60 percent of non-traumatic lower limb amputations occur in those with diabetes.³

Up to 25% of those with diabetes will develop a foot ulcer in their lifetime.⁴ The most common reason for hospital admission for diabetes is a lower extremity complication.⁵ About one-third of the total direct costs of diabetes in the U.S. are spent on lower extremity complications.⁶ In addition, two-thirds of these lower extremity-related costs are due to hospitalizations because most patients enter the hospital with an infection.⁷

In 2010, 1.9 million Americans were newly diagnosed with diabetes mellitus. As this trend continues to rise, the plausible threat of diabetic foot infection becomes even more substantial with dire financial consequences and severe limb and life-threatening outcomes.⁵

The World Health Organization has stated that 80% of diabetes-related amputations are preventable.⁸ Given the dire prognosis after amputation, more should be done to ensure limb salvage. After a lower extremity amputation, 50% of patients will undergo a contralateral amputation within 1-3 years.⁹ The mortality rate after major limb loss is alarming with a 5-year relative mortality of 70%, which is higher than many cancers.¹⁰

Leg Amputations by State per 1,000 Medicare Enrollees (2012 Data)



Organized Limb Salvage Teams

Those who suffer from diabetic foot complications are amongst the most complex and vulnerable of all diabetes patients, with high morbidity and mortality rates, according to the *History of the Team Approach to Amputation Prevention: Pioneers and Milestones*¹⁰. In addition, the authors state that specialized diabetic foot clinics of the 21st century should be equipped to coordinate revascularization procedures, to aggressively treat infections and to manage chronic diseases within a multidisciplinary forum.

They go on to say that “history has taught us that optimal management of diabetic foot complications is best provided in a hospital-based diabetic foot center. The clinic must be available to manage emergencies and equipped to perform urgent investigations, wound debridement and to initiate immediate parenteral antibiotic therapy. It must also be able to obtain rapid vascular, podiatric and orthopedic opinions and to arrange for emergency admissions to the hospital.”¹¹

In the mid-1980s, the evolution of distal revascularization techniques and a change in philosophy of vascular surgeons (the belief that limb salvage was possible in even the most severe ischemic diabetic foot cases) led to the pairing of surgical podiatrists and endovascular/vascular interventionists, along with surgeons who began to work together to reduce the rate of major amputations. Recently, interventional cardiologists and radiologists have played a role in limb salvage through the use of endovascular interventions to restore perfusion. From these collaborations and specialty affiliations, the rates of major amputations (below- and

above-the-knee) have significantly decreased. In recent years, podiatrists’ expertise has included complex surgical procedures to save patients from major amputations, while vascular surgeons and interventional specialists began using new technologies to restore blood flow to the foot. This led to the collaboration of the two specialties, coined “toe and flow.”¹² With the increased expertise and advances in technology, hospitals have been able to harness these new skills and adopt the new technology.

The Amputation Prevention Centers of America[®] assists hospitals to establish highly coordinated outpatient and inpatient Amputation Prevention Centers[®] with care coordination across the continuum.

“Over the last 15 years, the U.S. rate of diabetic foot amputations has soared to nearly 100,000 annually with more than 60% of non-traumatic amputations being performed on patients with diabetes.”

— Centers for Disease Control and Prevention, National Diabetes Fact Sheet, 2011

Amputation Prevention Centers[®]

Amputation Prevention Centers are sub-specialty programs that treat patients with limb-threatening conditions who are in need of immediate surgical and/or medical attention.

APCs follow clinically-proven practice pathways to provide state-of-the-art care for those at risk, utilizing vascular surgeons and interventionalists to restore distal perfusion and surgical podiatrists to perform multiple procedures to avoid major amputations and heal wounds.

The dedicated APC Nurse Liaison works to coordinate patient care throughout the continuum (e.g., inpatient, outpatient, skilled nursing facility).

The APC serves as a referral hub for healthcare providers in the region, attracting patients from beyond the hospital's primary and secondary services areas.



Highly Coordinated Care

The patient requiring amputation prevention services is complex and requires coordination of efforts across various healthcare settings, i.e., emergency department, surgical department, inpatient, outpatient, skilled nursing facility and home care. An APC patient typically has multiple admissions to the hospital and multiple surgeries in order to achieve limb salvage. Without coordinated care throughout the continuum, the care plan may be disrupted, resulting in adverse outcomes. As the patient transitions through the various care settings, it is paramount to keep the patient and care plan on track.

The APC Nurse Liaisons have been successful in improving care by tracking patients, ensuring adherence to treatment plans and facilitating safe transitions between healthcare facilities or home. The APC Nurse Liaisons remains in constant contact with the patient and the other providers to ensure ongoing communication coordinated care.

The Financial Impact

Using an aggressive surgical, podiatric and endovascular/vascular team, these Amputation Prevention Centers® have seen:

- Significant reduction in major amputation rates
- Greater profits from increased inpatient and surgical volume
- Reduced inpatient lengths of stay
- Increased referrals to other hospital service lines (such as cardiology and nephrology)

Amputation is costly to the healthcare system and takes a negative toll on the hospital with an increased length of stay in a complex patient awaiting placement for rehabilitation. In fact, of the common admissions for diabetes-related comorbidities, diabetic foot ulcer and lower-extremity amputation have the longest lengths of stay at 7.7 days and 9.6 days, respectively.¹³

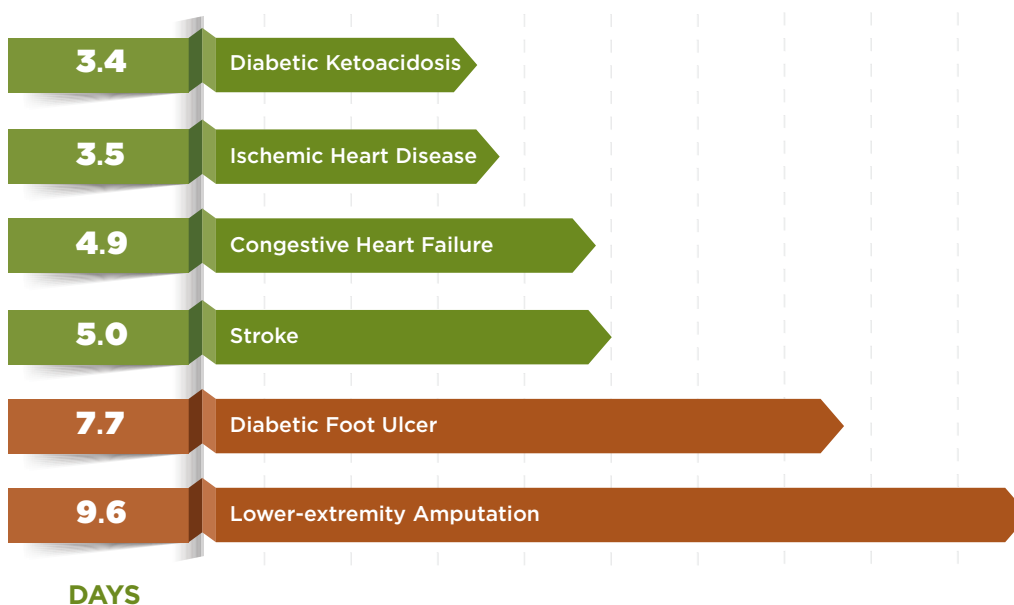
The treatment plan for these patients often includes multiple surgical interventions (i.e., debridement, abscess drainage, vascular reconstruction, foot/tendon reconstruction, skin grafting), inpatient hospital stays and a broad range of consults including cardiology, neurology, nephrology, ophthalmology and/or endocrinology. An independent accounting firm found that due to the complexity of the patient and increased utilization of services, the incremental downstream revenue from two organized amputation prevention programs (one on the East Coast and one on the West Coast) to be from \$4.9 million to \$7.4 million annually, depending on the geographic location of the program and the resulting wage index affecting the payment. Another study revealed the impact of an integrated diabetic foot

surgical service on outcomes and changes in surgical volume and focus. There were 790 (27 percent) surgical procedures related to the treatment of diabetic foot complications in 374 patients (2.1 surgical procedures per patient). Of these, 502 were classified as non-vascular diabetic foot surgery and 288 were vascular interventions. Vascular reconstructions increased 44.1 percent following institution of the team, which achieved a 46 percent decrease in below-the-knee amputations over the two-year period, following implementation of the organized team.¹⁴

Georgetown University’s limb salvage program has been a model for developing this service. Christopher E. Attinger, M.D., Medical Director

states, “Due to the medical complexity of limb salvage patients, the inpatient collections are much higher than those of the outpatient wound center and therefore can serve as justification for the latter’s financial viability. More importantly, with the wound center in place, the hospital can provide the local/regional community with a comprehensive service that can effectively treat the most challenging wounds. The success is built on a multidisciplinary team approach, use of evidence-based treatment protocols, efficient clinical structure and a supportive hospital system. The beneficiaries include the patient with a healed wound, the physician with a gratifying practice, the healthcare system with lower costs and the hospital with a steady influx of complex patients.¹⁵

Average Length of Stay



*Centers for Disease Control and Prevention - United States Hospital Discharge Data

Skrepneck GH, Armstrong DG. A diabetic emergency one million feet long: Disparities and burdens of illnesses among diabetic foot ulcer cases within emergency departments in the United States 2006-2010. PLoS ONE 2015;10(8)

Specialty Service Contracting

An Amputation Prevention Center[®] service line lends itself to the possibility of specialty-care contracts with payers. The highly specialized approach to limb salvage is similar to a center of excellence for cardiac surgery or orthopedic surgery. Just as these other service lines have gained acceptance by payers as highly specialized and coordinated delivery models, an Amputation Prevention Center[®] is proving to be a delivery model where payers can proactively refer patients with positive outcomes.

Managed care payers have said that an Amputation Prevention Center[®] can help decrease the number of non-traumatic lower extremity amputations, which reduces the overall cost of treating patients who would otherwise undergo amputations. The comprehensive, collaborative team approach also helps reduce length of stay and unnecessary hospitalizations and readmissions. The benefits to payers are seen in increased savings, decreased lower extremity amputations and consistently high patient satisfaction.

“Up to 80% of lower extremity amputations are preventable.”

— *The World Health Organization and International Diabetes Federation*



Clinical Outcomes

Researchers from around the world have found that diabetic foot teams, such as those located in hospital-based limb salvage centers that are structured to treat patients with limb-threatening conditions urgently and aggressively, see significant decreases in major amputation rates.¹⁶

One author reporting from a U.S.-based hospital found that an organized effort with written pathways and policies reduced amputations by 72 percent over two years.¹⁶ Limb-sparing procedures such as toe or transmetatarsal amputation rates rose during the reporting period. The ratio of major limb loss to limb-sparing amputation can be used as a marker of effectiveness in an Amputation Prevention Center[®]. This is referred to as the “hi-lo amputation ratio” — the number of “major” amputations (below or above-the-knee) vs. the number of “minor” amputations (toe or mid-foot). This ratio decreased eight-fold over the study period.¹⁶

A retrospective analysis of data of all diabetic patients with critical limb ischemia (CLI) presenting to a one-stop multidisciplinary clinic over 2.5 years also showed an impact. In 312 patients, only 4.1 percent required major amputations.¹⁷

Understanding the pathophysiology, promptly identifying risk factors and using a multidisciplinary team is necessary to achieve optimal outcomes. Prompt recognition, classification and treatment of diabetic foot infection is mandatory to achieve a goal of limb salvage and preserve as much function as possible.⁵

According to the Centers for Medicare and Medicaid Services (CMS), the goal of coordinated care is “to ensure that patients, especially the chronically ill, get the right care at the right time, while avoiding unnecessary duplication of services and preventing medical errors, thus improving outcomes and reducing costs.” An Amputation Prevention Center[®] delivers such coordinated care for patients with chronic foot ulcers, as a result of diabetes or other disease, that puts the patient at risk for a major amputation. Since most patients with lower extremity wounds have peripheral vascular disease and other co-morbidities (such as coronary artery disease), it is essential to coordinate care with other specialists.

72%
REDUCED
AMPUTATIONS

APCs
ENSURE THAT
PATIENTS GET THE
RIGHT CARE AT THE
RIGHT TIME

Summary

Amputation Prevention Centers® are proven to reduce the number of non-traumatic lower extremity amputations in patients with diabetes. Utilizing a comprehensive team of vascular surgeons, endovascular specialists and surgical podiatrists, Amputation Prevention Centers® provide select hospitals with an opportunity to create a limb salvage team that can intervene and positively affect the healthcare of patients with diabetes who present with limb-threatening conditions — all while helping hospitals reduce costs and improve margins.

The Amputation Prevention Center® ensures that the patient sees the right providers on the first visit, thus establishing a plan of care to achieve the best outcomes. Early intervention has been proven to reduce lengths of stay, reduce major amputations, achieve faster wound healing and increase the patient's length and quality of life.

The Amputation Prevention Center® also serves as a referral hub, attracting patients from the hospital's primary and secondary services areas — and beyond.

About RestorixHealth®

RestorixHealth partners with hospitals and health systems to develop turnkey, targeted and profitable programs that can improve population health, offer a competitive advantage and increase market share. As the second largest wound care management company in the U.S., RestorixHealth continues to grow because of superior customer service and strong clinical and financial outcomes.

For more information about Amputation Preventions Centers of America®, please call

914.372.3150 or email
customersolutions@restorixhealth.com

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SAVING LIMBS. SAVING LIVES.