ChenMed

The ChenMed Limb Preservation Program:

"Socks Off" Protects Patients with Diabetes

Introduction

ChenMed patients with diabetes have grown accustomed to removing their shoes and socks whenever they see their physician. ChenMed's "Socks Off" initiative helps primary care providers (PCPs) identify diabetic foot wounds early when they're easier to address. Frequent exams help patients with diabetes avoid dangerous foot and leg issues, which can lead to severe complications, including major limb amputation. Once ChenMed members understand this, they're happy to lose their socks for a short time.

Socks Off, a program designed by Robert Carlin, MD, ChenMed's former National Director of Vascular and General Surgery, also provides PCPs with training in detecting and managing diabetic foot ulcers. Since joining ChenMed in 2021, Dr. Carlin, a vascular surgeon, had been ramping up support for PCPs in assessing and treating lower limb conditions related to diabetes, including ulcers and other peripheral artery disease (PAD) complications. He then focused on a collaborative, multidisciplinary approach to treating lower extremity ulcers in diabetic patients. Dr. Carlin's mission reduce PAD-related hospitalizations and amputations originates from his experience as a vascular surgeon in fee-for-service (FFS) healthcare. Due to reimbursement policies, the field of vascular surgery has seen overuse of vein and artery procedures in addressing diabetic foot problems. Although designed to help patients avoid amputation, such procedures aren't always necessary. Excessive procedures can create more severe issues and may, in themselves, contribute to limb loss.

In the last three years, Dr. Carlin has developed a novel value-based PAD care model known as the ChenMed Limb Preservation Program. After establishing Socks Off as the program's primary care branch, Dr. Carlin collaborated with ChenMed's podiatry team to structure an interdepartmental approach for high-risk disease detection and management of various lower extremity ulcers and PAD. Recent data demonstrates that the program has increased the detection of complex lower extremity wounds and PAD and reduced lower extremity amputations while also decreasing PAD interventions.

Hypothesis

Early detection of lower extremity ulcers, combined with a multidisciplinary approach to treating newly diagnosed ulcers, will result in decreased major limb amputations (MLA), including below knee amputations (BKA) and above-knee amputations (AKA). This can be achieved without a simultaneous increase in PAD-related vascular procedures.

Methods

Implement a comprehensive limb-preservation program involving PCPs and other care providers, internal podiatrists, internal cardiologists, and internal vascular surgery, using best practice guidelines and high-touch practice.

Results

- Increased ulcer detection
- **9.5%** decrease in outpatient PAD procedures
- **10.5%** decrease in major limb amputations
- Declining costs associated with amputations

Background

The relationship between diabetes, ulcers, and PAD

Diabetes is a chronic condition characterized by high blood glucose caused by insufficient insulin production or insulin resistance. Over time, diabetes contributes to plaque build-up within the blood vessels, causing them to narrow and harden. This condition, known as atherosclerosis, can significantly reduce blood flow to the legs and feet, increasing the risk of developing PAD.

Atherosclerosis can cause ischemia, meaning the foot tissues aren't receiving enough oxygen due to reduced blood flow. Ischemia makes the skin more susceptible to injury while interfering with wound healing. Diabetes can also cause peripheral neuropathy, or nerve damage. Neuropathy causes sensation loss in the feet, so many patients don't notice minor cuts or blisters, which go untreated. Due to impaired healing, there's a higher chance of infection that can lead to ulceration. Foot ulcers can progress to vascular disorders of the foot, leg, or ankle, putting people with diabetes at a higher risk of necrosis, gangrene, and amputation.

How FFS reimbursement undermines diabetic foot care

Vascular procedures can potentially prevent some patients from hospitalization or amputation. In many cases, however, active management of diabetic foot ulcers with or without PAD can successfully slow wound progression, relieve pain, preserve ambulation, and restore quality of life. Effective management requires medical supervision by providers with specialized training. Care plans may involve lifestyle changes, orthotics, antibiotics, topical medications, and other evidence-based therapies.

Unfortunately, the fee-for-service (FFS) healthcare system has standardized a fast-track to surgical intervention for patients with diabetic foot problems. PCPs have minimal time with patients, and foot exams don't take priority, even for diabetic patients. Once foot wounds progress enough to get noticed, the patient is immediately referred to the surgeon. Surgeons receive large reimbursements for vascular procedures; research suggests this contributes to patients enduring multiple vascular interventions. Despite these procedures, many patients will eventually undergo an amputation. Not all of these interventions are clinically indicated. In some geographic areas, providers have been accused of performing excessive vascular procedures solely for financial gain.

Value-based, transformative care

When Dr. Carlin joined ChenMed, he brought medical expertise and an understanding of how the FFS system was failing patients with diabetes. He recognized that this experience could help ChenMed PCPs, who had more time to spend with patients and more interdisciplinary support than FFS providers.

"As a vascular surgeon, I lived in what I call a downstream world," says Dr. Carlin. "Meaning, I'd receive patients from the ER or the PCP, and I'd have to sort out who needs my help and who doesn't. So, I have a good idea of what providers are seeing at ground level, and I also understand that the narrative for so much of the fee-for-service world is 'if you see a problem, just do a procedure.'"

In ChenMed's transformative care model, Dr. Carlin saw an opportunity to accelerate high-risk disease detection in a particularly vulnerable population. Roughly 21.4% of US adults over 65 have a diabetes diagnosis; another 16% are estimated to have undiagnosed diabetes.

The ChenMed Transformative Care Model

Transformative care:

- Full risk
- High touch
- Comprehensive
- Whole-person, patient-centered
- Collaborative
- Prioritizes primary care
- Preventive

ChenMed's approach is uniquely equipped to address diabetes and other chronic conditions in older adults.

Getting up to speed: Socks Off

Because surgical specialists have dominated diabetic foot care for so long, many PCPs need training to determine which cases require a specialist referral. Dr. Carlin created a lecture series for PCPs on diagnosing and treating foot ulcers and provided one-to-one support to PCPs on a case-by-case basis. He also recognized that detection can't happen unless PCPs perform foot exams regularly.

"I had a slideshow of examples from my previous world," says Dr. Carlin. "Examples of patients that showed up in my office for the first time with a half-dead foot. I'd talk to the patient and think, 'Well, this didn't start overnight, it was obviously there for weeks. How come no one saw it?' You can't ever blame the patient. But the question is, did they see their doctor, and if so, did they take their socks off?"

In September 2021, Dr. Carlin officially launched his ongoing Socks Off initiative. For all patients with diabetes, PCPs receive an automated pre-appointment order requiring a foot exam without socks. PCPs work to educate patients about good foot care, which is supported by instructional posters in all exam rooms. Care Promoters (medical assistants) began receiving Socks Off education in July 2022 and now remove all diabetic patients' shoes and socks, allowing PCPs to easily examine feet.

"I knew we were going to find more disease," says Dr. Carlin. "But said, I'm going to go to town on the education piece so that we don't see a concomitant increase in procedures at the same time. And now, this is the upstream world. We're modifying behavior way, way before the patient gets to someone like me."

Branching out: the ChenMed

Dr. Carlin's vision has continued to evolve into the ChenMed Limb Preservation Program. In early 2023, Dr. Carlin was put in charge of podiatry at ChenMed, leveling up the interdisciplinary nature of his work. Education has become more comprehensive, targeting PCPs, podiatrists, care promoters, and patients.

Since October 2023, all new patients screened for neuropathy during intake will also receive an ulcer screening. Screening at the earliest possible time could significantly increase early-stage ulcer detection. It can also identify at-risk patients who could then receive preventive care that helps them avoid ulcers altogether.

Restructuring internal podiatry

While crucial, early detection of ulcers is just the first step in diabetic foot care. Ulcers, PAD, and peripheral neuropathy can create significant challenges, and managing these conditions often requires a team effort. Socks Off was getting physicians and care providers up to speed, and the next step was making more experts available to patients and providers.

Since taking charge of podiatry, Dr. Carlin has restructured the department to focus on early stage wound management and limb preservation, created new PAD guidelines for podiatrists, and worked to integrate podiatrists into the care teams. Dr. Carlin has also obtained ankle brachial index (ABI) machines for all podiatrists across ChenMed centers. ABI machines work similarly to a standard blood pressure cuff. The ABI machine identifies and monitors PAD by comparing the blood pressure in the upper and lower limbs. Having these machines onsite reduces the need to send patients out for ABI testing.

The ChenMed Limb Preservation Program

As of 2023, the program's primary initiatives include:

- "Socks Off" primary care initiative
- Increased ulcer screenings
- Patient education
- PAD guidelines
- Education for ulcer and PAD diagnosis
- Podiatry department reorganization
- Regular PCP lecture series
- Internal podiatrists managing early-stage ulcers

Results

To measure the success of the Limb Preservation Program, the ChenMed analytics team uses CPT codes to track ulcer detection, PAD procedures, and associated costs. This method was inspired by the Society for Vascular Surgery Alternative Payment Model.

Ulcer detection

Data from September 2021 (initial Socks Off campaign) through October 3, 2024, shows a steady and significant increase in detecting all types of lower extremity ulcers. Detection of diabetic foot ulcers shows the most significant increase, from 61 to 346 per 1000 members, which is an almost 5x increase in diabetic foot ulcer prevalence. Currently, we have performed 2,700 ABI internally from January to September 2024.

PAD procedures

15%

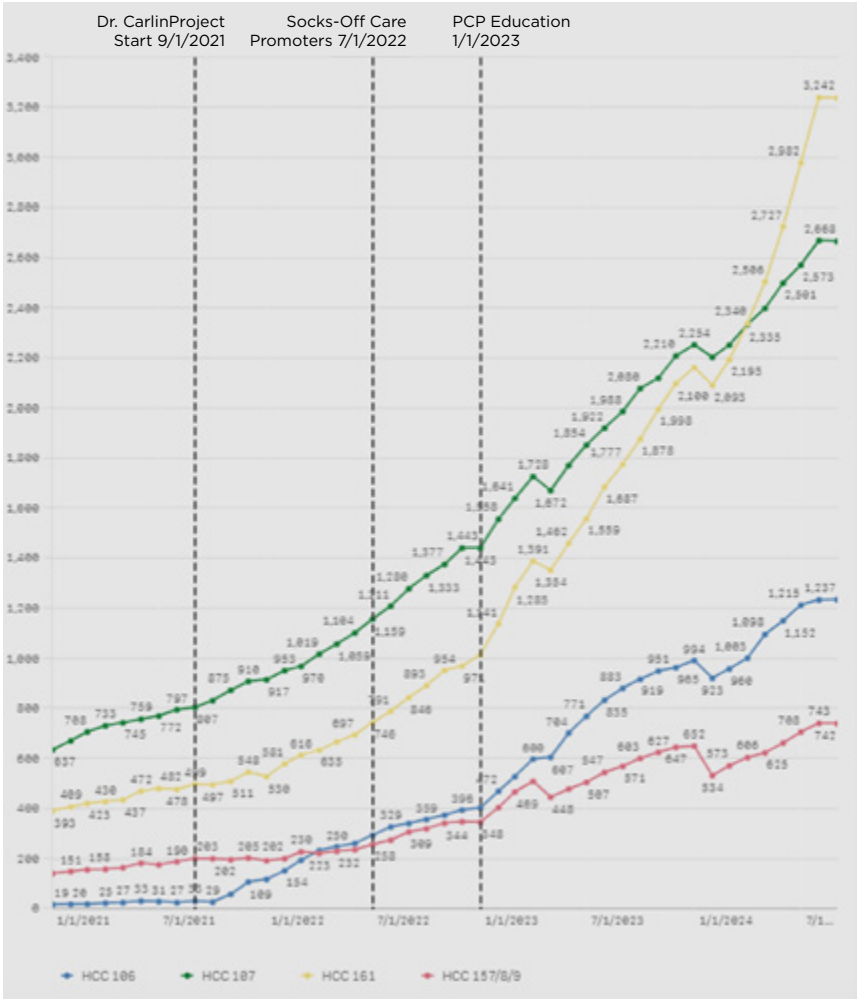
Furthermore, the data shows that increased ulcer detection, with and without PAD, has not increased outpatient PAD procedures. In fact, ChenMed has seen a 15% decrease in outpatient PAD procedures per member per month (PMPM) from January 2021 to April 2024.

Major limb

10%

Major limb amputations decreased by 10% from 2022 (Jan to Dec) to 2023 (Jan to Dec). In addition to Socks Off, this likely reflects the podiatry reorganization in early 2023, which focuses on getting podiatrists involved in wound management early on and incorporating podiatry into the long-term management of diabetic foot conditions.

Costs associated with each amputation have also seen a decline in the same period. In addition to the decline in procedure number, earlier detection and better wound management can also decrease the costs associated with each amputation. Healthier limbs require more straightforward procedures, lowering surgical costs and reducing recovery times. They're also associated with fewer complication risks, decreasing the costs of post-operative care or rehospitalization.



Detection of all lower extremity ulcer types continues to significantly increase every month

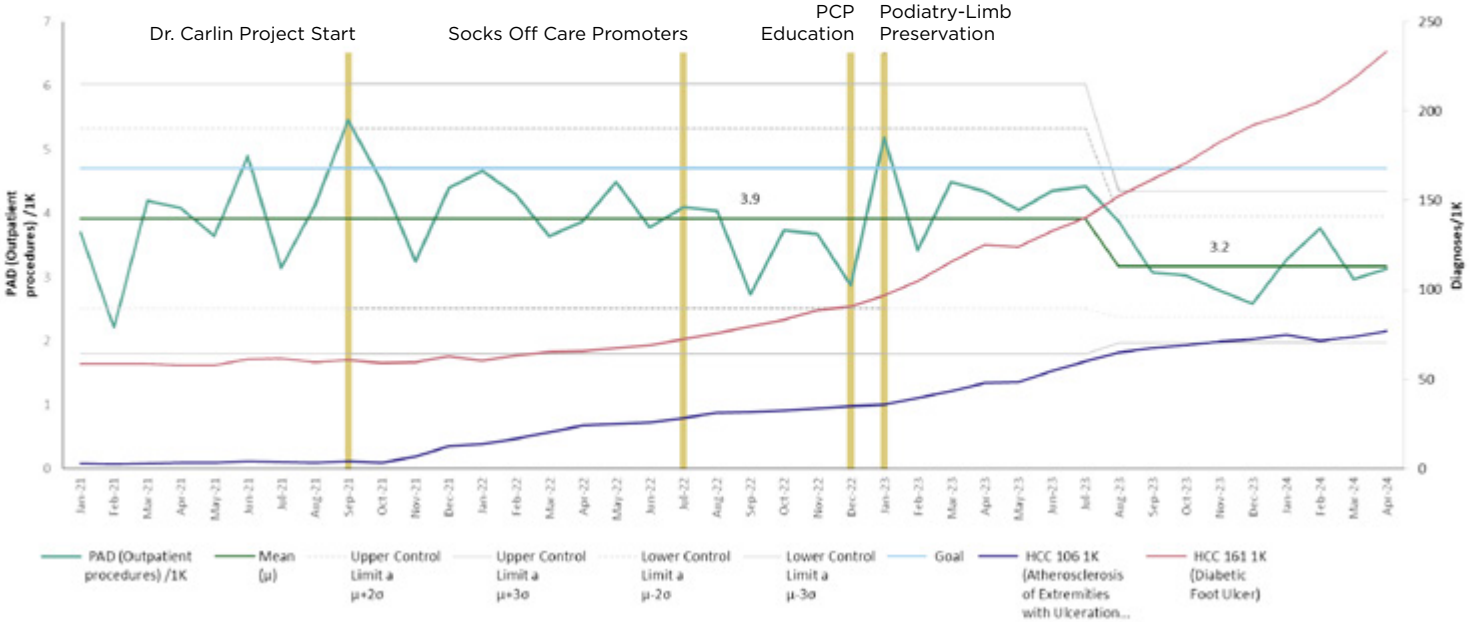
106/263 atherosclerosis with gangrene

107/383 venous ulcer

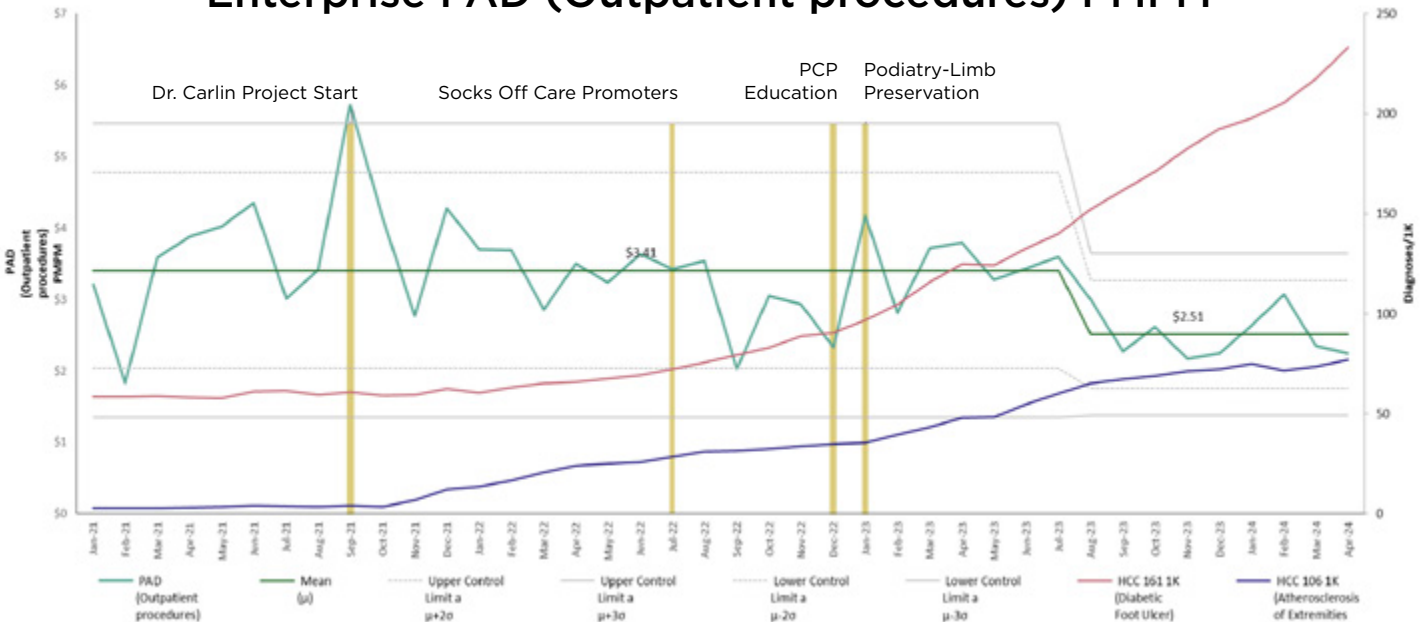
161/383 diabetic foot ulcer

157-159/383 pressure ulcers

Enterprise PAD (Outpatient procedures)/1k

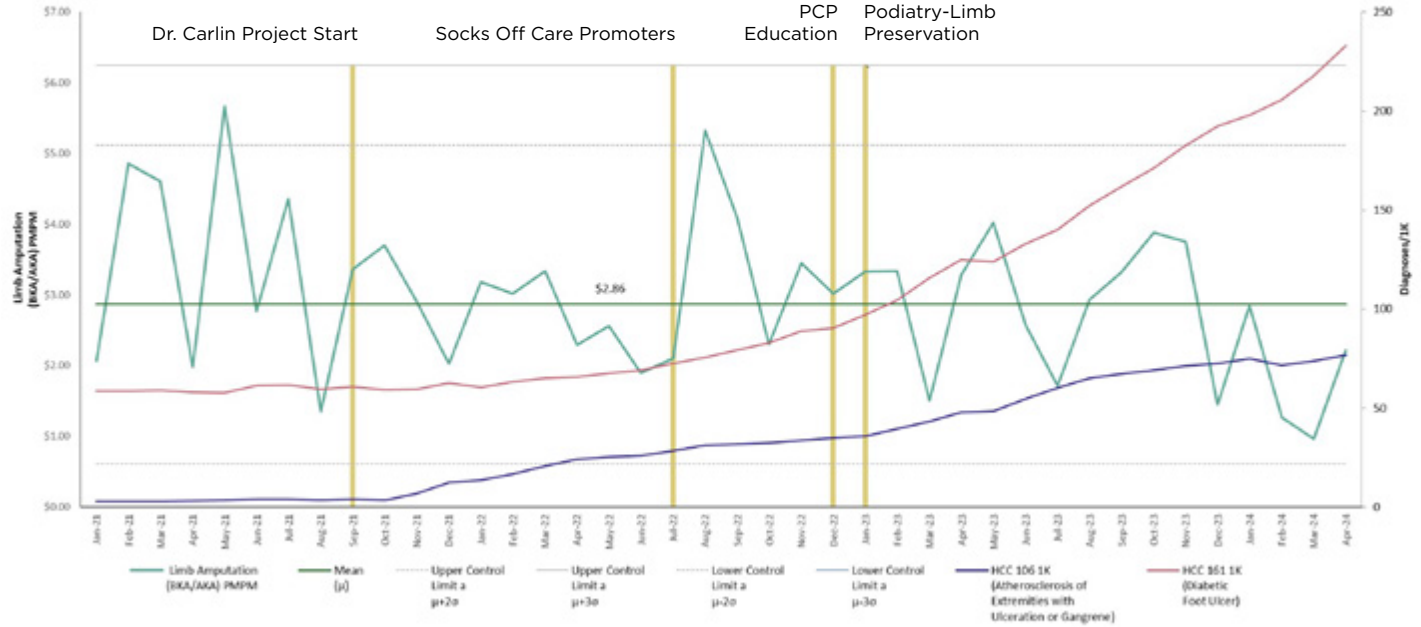


Enterprise PAD (Outpatient procedures) PMPM



PMP of major limb amputations

Enterprise Limb Amputation (BKA/AKA) PMPM



Average cost/MLA is approx. $30,000

*Source: Analytics team and Vascular Procedures Qlik Sense database.
Amputation procedures are claims-based, using CPT codes (BKA/AKA).

Looking Forward

The overarching and ongoing goal of the Limb Preservation Program involves keeping diagnosis and management of diabetic foot diseases in-house as much as possible. “Once you send someone out externally, now you’re relying on them, and you may not know what they’re doing,” explains Dr. Carlin. “All of a sudden, they could send the patient to a surgeon like me, and the PCP doesn’t know about it.”

The next step in the process is expanding ChenMed’s podiatry bandwidth. We intend to make in-house podiatry available to moreclinics and establish podiatry telemedicine for centers that don’t have in-person coverage. This would include remote wound care, allowing trained podiatrists to manage diabetic ulcers virtually. Growing the podiatry department means fewer patients will need to see external podiatrists.

ChenMed expects to seestabilization in the lower range of amputation rates as detection and wound management improves. While some vascular surgeries and amputations continue to be necessary, the ChenMed Limb Preservation Program strives to ensure that patients will never have to endure unnecessary procedures again.

Conclusion

As mainstream healthcare slowly shifts to value-based payments, ChenMed’s Limb Preservation Program has paved the way for better outcomes and a significant cost reduction in medical care for diabetic foot and limb diseases. We are thankful for Dr. Carlin’s innovation in developing this program so that patients have another opportunity for early detection of issues before they get worse.

Dr. Sachil Shah, National Director of Cardiovascular Care and Podiatry, currently leads ChenMed’s Limb Preservation Program, and he will take this initiative forward with his leadership and ChenMed’s transformative care model. The program will help more patients keep their limbs and maintain independence, even saving the lives of many older adults.

Learn more about ChenMed’s practice model here.