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Integrated Multidisciplinary Limb Salvage Programs: Reducing Amputations Among Patients With Peripheral Artery Disease

Advocate Health Care Limb Salvage Center
of Excellence at Advocate Trinity Hospital

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BEST PRACTICES FOR IMPLEMENTING A MULTIDISCIPLINARY LIMB SALVAGE PROGRAM:

Insights From Advocate Health Care Limb Salvage Center of Excellence at Advocate Trinity Hospital

To learn about the best practices for development of a limb salvage program for people at high risk of limb amputation due to peripheral artery disease (PAD), key stakeholders affiliated with Advocate Health Care in Southeast Chicago, Illinois, were interviewed. The Limb Salvage Program at Advocate that was founded in 2014 by **Jaafer A. Golzar, MD, FACC, FSCAI**, is a standardized, multidisciplinary, protocol-based care pathway through which patients with threatened amputation due to PAD are rapidly identified and aggressively treated. The primary goal is reducing major amputations. The program achieved this goal, substantially decreasing the major amputation rate of affected patients from 30% to 1.5%.¹

PAD is an atherosclerotic syndrome defined as occlusion of peripheral arteries in the limbs; most commonly, it affects the lower limbs.^{2,3} An ankle-brachial index (ABI) of less than 0.9 in either leg is diagnostic of PAD.⁴

The prevalence of PAD increases with age.⁵



40-49 years of age



≥70 years of age

50% 

Up to 50% of patients with PAD may be asymptomatic.^{4,6,7}

Up to 12 million Americans are affected by PAD.^{8,9}



Risk factors for PAD^{10,11}

- Diabetes
- High body mass index
- Smoking
- History of cardiovascular disease
- Hypertension
- Hypertension medication use
- Hyperlipidemia
- Black heritage

Black Americans are disproportionately affected: Approximately 30% of Black Americans will develop PAD during their lifetime.^{12*}

*Compared with approximately 19% of white individuals and 22% of Hispanic individuals. Based upon an epidemiologic analysis of data from 6 US community-based cohorts of adults (age, ≥80 years). This study had several methodological limitations, such as the use of primarily historic data from the 1990s or early 2000s.¹²

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Future Opportunities and Widespread Adoption of Limb Salvage Programs



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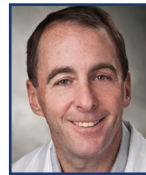
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According to Dr Golzar, the need for a multidisciplinary Limb Salvage Program was highlighted by a high prevalence of amputation in patients with PAD, particularly among the **Black population** of South Chicago, which Advocate Health Care largely serves. Patients who present to the hospital often have advanced disease and **critical limb ischemia (CLI)**, and there were considerable differences in care paths for these patients. According to **Gina Marie Roache**, the inconsistencies in care stressed the need for standardized management strategies for these patients. “We know that with CLI, there isn't a single standardized care path across the country,” she said. “We worked as a team to try to find ways to standardize the care so every patient who came through our doors would get the benefit of being evaluated by a physician who could perform revascularization before making a decision to go to amputation.”

This unmet need in the local community and the wide variations seen in prior care pathways prompted the founding of the Limb Salvage Program at Advocate

Trinity Hospital in South Chicago. Key stakeholders included Dr Golzar; David A. Gerst, DPM; Dominic J. Tolitano, MD; Athanosios (Tom) Vlahos, MD; Imran W. Ali, MD; and Jondelle B. Jenkins, DPM. The team began with creation of a limb salvage treatment algorithm, call schedule, and order set, which were incorporated into the health system’s electronic health record. The order set was important to standardize an approach for physicians who were the first-line caretakers for these patients (eg, emergency department and primary care physicians).

Key pillars of the program were:

- a clear algorithm;
- electronic order sets;
- strategies to manage the patient; and
- an on-call physician schedule.

Members of the Limb Salvage team are readily available to assess and treat the patient, and their primary focus is the prevention of amputation. “One of the reasons that we see such an epidemic of

Black Americans experience greater disease severity, atypical symptoms (and asymptomatic PAD), and worse health-related outcomes than do patients of other races and ethnicities.¹³⁻¹⁵

Many Black individuals have limited access to quality vascular care, and those with asymptomatic PAD have a higher risk of delayed care.¹⁴⁻¹⁶



People of certain ethnicities and races have an increased risk of amputation due to PAD as compared to white individuals. Black, Native American, and Hispanic people with PAD are at

greater risk of undergoing a major limb amputation than are non-Hispanic white people.¹⁷

Black patients with PAD have a 37% higher risk of amputation when compared with that of white patients, even after controlling for comorbidities, severity of PAD, and medication use.¹⁵



Yet, despite a known greater risk of amputation, **Black patients with PAD are approximately 25% less likely than are white patients to receive a revascularization procedure prior to amputation.**^{15,17,18*}

*Results of this cross-sectional analysis of 2011-2015 data from the National Inpatient Sample showed that compared with non-Hispanic white patients, Black inpatients with PAD had the highest risk of undergoing a major limb amputation (OR, 1.71), followed by Native American and Hispanic inpatients (OR, 1.48 and 1.36, respectively) (P<0.0001 for all). Study limitations included recruitment of patients requiring hospitalization, which increased the risk of self-selection bias; omission of additional healthcare outcomes from the analysis; and variability in hospitals’ financial policies.¹⁷

*Based on 2003-2014 data from 155,647 patients with clinical PAD from the national Veterans Health Administration Corporate Data Warehouse. Compared with white patients, Black patients had a 37% increased risk of amputation (HR, 1.37). Due to use of observational Veterans Administration data and data modeling, results may not be generalizable, and they are susceptible to residual confounding.¹⁵

*Based on a retrospective analysis of 2003-2006 Medicare Provider Analysis and Review data from 90,481 adults (age, 67-99 years) who underwent major lower extremity amputation. After adjustment for individual patient characteristics, Black patients were significantly less likely than were white patients to have had ≥1 revascularization prior to amputation (OR, 0.73). Study limitations include use of inpatient claim-based data, which may affect generalizability.¹⁸

amputations is because limb salvage can sometimes be extremely challenging, and [it] requires the coordinated efforts of multiple specialties, including podiatry, wound care, and nursing,” Dr Golzar said. According to Ms Roache, the current Limb Salvage Protocol is a standardized care path that allows patients to consistently receive the **same care strategy**. The Limb Salvage Program at Advocate Trinity Hospital uses a minimally invasive, endovascular-first approach when revascularizing patients with PAD. “We include interventional cardiovascular specialists with particular expertise in endovascular procedures—vascular surgeons, interventional radiologists, podiatrists, wound care specialists, and nurses. It is a very collaborative program,” Dr Golzar explained.

An end-stage manifestation of PAD, CLI occurs when blood supply to the limb is insufficient to meet the resting metabolic need of its tissues.^{2,19} CLI is characterized by symptoms (eg, chronic ischemic rest pain, ulcers, or gangrene) lasting more than 2 weeks.²

Patients with CLI are more likely to need an amputation than are those without CLI.^{20*}

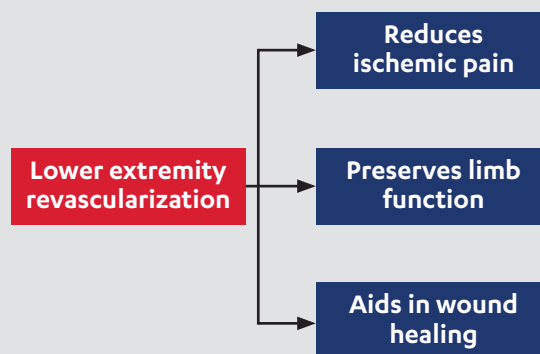


“We worked as a team to try to find ways to standardize the care so every patient who came through our doors would get the benefit of being evaluated by a physician who could perform revascularization before making a decision to go to amputation.”

—Gina Marie Roache

Patients with PAD should be offered guideline-based pharmacotherapy and counseling to reduce the risk of cardiovascular and limb-related events; these should be tailored to target individual patient risk factors.²¹

In addition to medical therapy, wound healing therapy and revascularization should be offered to individuals with PAD and CLI to minimize tissue loss, achieve an intact skin surface, reduce ischemic pain, and maintain functioning of the foot. **Lower extremity revascularization in patients with CLI is defined as the restoration of blood flow to the foot through 1 or more patent arteries.²¹**



Patients with CLI who undergo revascularization or minor amputation experience a lower risk of major amputation or inpatient death compared with those who have no record of vascular interventions.^{22†}

*Based upon results from a population-based study conducted in the United Kingdom demonstrating that after 5 years, those with CLI had a significantly higher rate of amputation than did those with acute limb ischemia (43.4% vs 16.9%, respectively; $P=0.01$).²⁰

†Based upon a retrospective analysis of data from 52,527 patients with CLI from the Truven Health MarketScan Commercial and Medicare Supplemental Databases from 2004-2016. Participants with no record of vascular interventions had a much higher risk of major amputation or inpatient death compared with those who underwent minor amputation (HR, 1.59), peripheral vascular intervention (HR, 2.08), or peripheral vascular surgery (HR, 2.12). The study was limited by the use of claim-based data, which lack important clinical variables, may contain errors, and do not represent the uninsured population; long-term outcomes were not assessed.²²

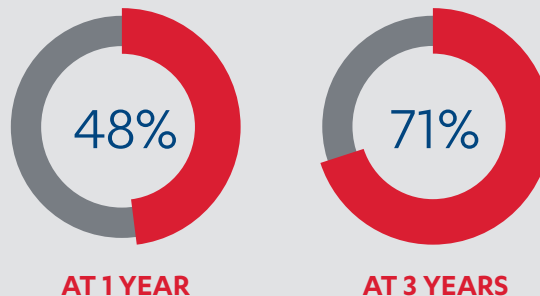
One of the essential pillars for creation and maintenance of a thriving limb salvage program is to have the support of the hospital administration. The program would not have been a success without this partnership. “To be successful, the hospital administration must support the fundamental purpose of the program, which is to help prevent amputation [and to] decrease morbidity and mortality,” said Dr Golzar. “Our hospital administration was involved from the beginning of the program; without their support, it would have been near-impossible to implement and sustain such a complex multidisciplinary initiative.”

Paul Silverman, MD, shared that the initiative for the Limb Salvage Program was well-supported by the administrative staff, because it was an opportunity to simultaneously help **improve patient outcomes** and potentially **reduce patient costs**. There may be expenditures up-front when putting the program in place, but he said that preventing amputation with revascularization procedures may reduce the patient’s future care costs. “[Advocate Health Care] is an outcomes-focused institution,” Dr Silverman explained. “The hospital [administration] saw the program as an opportunity to improve the care of the patients in our healthcare system.”

“Our hospital administration was involved from the beginning of the program; without their support, it would have been near-impossible to implement and sustain such a complex multidisciplinary initiative.”

—Jafer A. Golzar, MD, FACC, FSCAI

After amputation, patients with PAD experience increased rates of mortality over time^{23*}:



Amputation can have a considerable impact on the quality of life (QOL) and mental health of patients with PAD.¹⁶

The perceived loss of ability to participate in certain activities may negatively affect QOL.¹⁶ Shortly after amputation, patients experience high rates of depression and anxiety.^{16,24}

Amputation in PAD also is associated with a high economic burden. **Among patients with CLI, those who undergo a major amputation incur an estimated \$6000 in additional monthly healthcare costs compared with those who do not.²²**



*Based upon the results of a systematic review and meta-analysis of global, retrospective, observational, and cohort studies of primary amputations (2005-2015); \pm 50% of these amputations were attributable to peripheral vascular disease. Most (60.6%) participants had diabetes. Study results may be limited due to design of the analysis and reviewed studies.²³

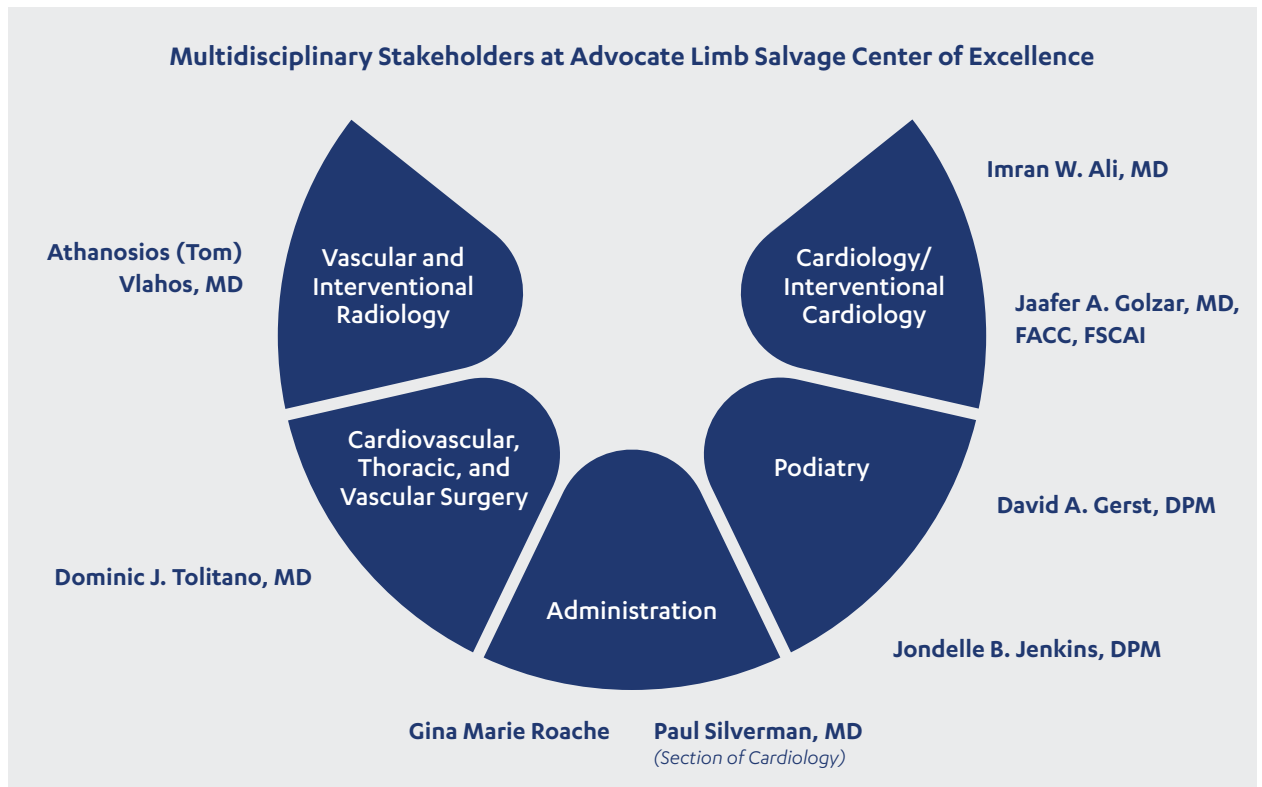
²²Based upon the retrospective 2004-2016 data analysis. Patients with CLI who experienced a major amputation (defined as amputation above the ankle) incurred an estimated additional monthly cost of \$6000, or \$5000 without pharmacy claims, compared with those who were managed otherwise (US\$). Note that results may not be generalizable.²²



The team at Advocate admitted that it can be challenging to assemble all the key stakeholders and encourage buy-in and participation from all healthcare specialties. “Although we had an incredible partnership with our medical and administrative teams at Advocate Trinity Hospital from [the program’s] inception, this can sometimes be challenging at other institutions,” Dr Golzar explained. “It is important to be inclusive of all relevant specialties. Everyone and anyone [who] is passionate about the cause should be at the table from the beginning and help shape the program so that everyone feels like they have ownership.”

Part of the hesitation to participate may come from a misunderstanding that involvement in such a program can detract from a physician’s case load. According to **Dominic J. Tolitano, MD**, interventional cardiologists and vascular surgeons often compete for cases at many institutions; however, he emphasized that the primary focus should be on patient-centered outcomes. “You have to deflate that [competitive] mindset,” he said. “The primary goal is the patient, their health, and their satisfaction. Ultimately, the best outcomes will be achieved when all the right specialties are involved.”

Multidisciplinary Stakeholders at Advocate Limb Salvage Center of Excellence





When the Limb Salvage Program was initiated, a turnkey approach was required to ensure a smooth transition of adoption among hospital staff. Either a medical team member, such as an emergency medicine physician, or a nursing staff member activates the limb salvage protocol while the patient is inpatient or treated as an outpatient. After the patient undergoes initial evaluation, diagnostic testing is performed; when appropriate, the patient may undergo angiography. Following the results of these tests, a decision is made regarding the best treatment

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algorithm for the patient. For example, Dr Tolitano explained that prior to surgical intervention, he often discusses cases with Dr Golzar and collaborates with him to determine the best treatment plan for the patient; Dr Golzar establishes the inflow, and Dr Tolitano establishes the outflow. “A mutual respect among the specialists means that I am not going to tell the vascular surgeon when and how to operate, nor does he tell me how to perform endovascular intervention. It is a collaborative decision,” Dr Golzar said. “When you have that type of mutual respect among your team, it is truly a beautiful process, and the reward is to save a limb and save a life.”

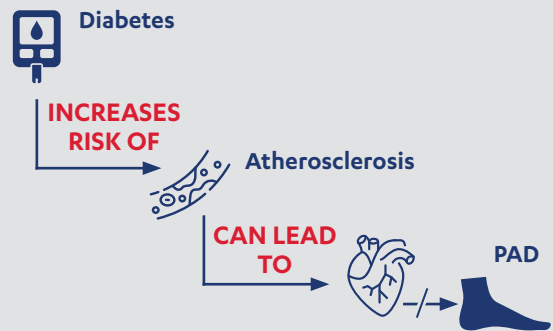
Dr Tolitano attributes much of the success of the Limb Salvage Program to the advance development of a “game plan” and the collaborative relationship between the cardiologist, interventional cardiologist, and vascular surgeon. “It’s important to have a collaborative team to address these issues, because some procedures can be less successful than others.

The expert knowledge from both specialties is vital,” said Dr Tolitano. “That’s why we have seen success—because we understood the importance of working together instead of trying to compete with each other for cases.”

To identify and rapidly treat patients with threatened limb loss, the podiatry and wound care teams should have a close partnership that promotes early referral. An open line of communication is important, because podiatrists often are on the front line in identifying **patients with PAD and diabetes**, said **David A. Gerst, DPM**. Many patients with diabetes in his

Atherosclerosis is the pathophysiological link between PAD and diabetes.¹⁰

The risk of atherosclerosis rises in the presence of diabetes, which drives platelet aggregation, increases inflammation, promotes endothelial dysfunction, and disrupts the function of vascular smooth muscle cells.^{10,25}



Patients with diabetes are up to 7 times more likely to develop PAD than are those without diabetes.¹⁰

Furthermore, in patients with diabetes, PAD is a risk factor for cardiovascular complications (eg, stroke, myocardial infarction, and leg ulcers) that can lead to amputations.^{10,19}

practice maintain annual visits, during which they receive an extensive vascular examination to assess circulation. Dr Gerst uses his own informal scale to assign each patient with a grade that is based on the level of severity; this helps to determine the urgency of following up with the interventional cardiologist. Patients at level 1, for example, require emergent care and follow-up within 1 week, whereas patients at levels 2 and 3 may require follow-up within 2 to 3 weeks. Patients with CLI are referred to Dr Golzar (an endovascular specialist), Dr Tolitano (a vascular surgeon), or Dr Vlahos (an interventional radiologist).

Dr Gerst explained that the strong relationships he has developed with Drs Golzar and Tolitano and with their administrative support staff ensure that the referral process is efficient and seamless. “When I see a patient who is at risk of losing their limb and who needs urgent care, I can pick up the phone and let any of the nurses at Dr Golzar’s office know that this patient has to be seen immediately. He can be booked out for several months, but, after my call,

they will schedule an appointment even before the patient leaves my office. That appointment may be for as soon as the next day,” said Dr Gerst.

Dr Tolitano said that organizing regular multidisciplinary vascular conferences also likely contributed to the reduction in amputation rates, and this could be an effective strategy for staff at institutions who want to lower their amputation rates. Limb salvage team members discuss patients who may be eligible for limb salvage procedures and learn both from successful cases and from those that may have led to amputation to help improve outcomes in future cases. “A structured approach that involves diagnostic angiography to determine whether revascularization is a possibility and includes involvement of [the departments of] podiatry and wound care after revascularization to promote continued healing also are effective limb salvage strategies that could be implemented at institutions,” said Dr Silverman.

EDUCATION OF OTHER PROVIDERS

To educate other providers, the Limb Salvage Program hosts a lecture series. Physician members present to physicians outside of the program on problematic symptoms in patients with PAD and diabetes. According to Dr Golzar, it is essential for primary care physicians to understand that the management of patients with PAD begins and ends with them.

The early treatment of modifiable risk factors is essential to help prevent progression to later, more critical stages. Dr Gerst added that many physicians often may not recognize the signs and symptoms that precede infection, gangrene, and amputation. Therefore, education about when to refer patients to the program can help improve limb salvage rates. “All physicians and medical staff [in the health system] should be made aware of the limb salvage

program,” said Dr Gerst. “For example, our primary care physicians are all aware of the program, and [they] have good access to us to call and inform us that they have a patient who is in trouble. We will then see the patient immediately.” In addition, he described the importance of setting up a system with office staff, so if they hear certain buzzwords—such as “rest pain,” “night pain,” or “dark toes”—they know that the patient must be seen quickly. Dr Gerst explained, “Early intervention is key to **positive outcomes.**”

Dr Gerst also ensures that he follows up with his **patients with diabetes and/or PAD** every 2 to 3 months to check on their foot health, and he asks those with PAD about following up with their vascular surgeon. “When we have a great partnership and open communication with the physicians, [we] feel



comfortable talking with them and conveying a level of urgency. In return, there is no hesitation to get this patient evaluated expeditiously.” He added that the nurses at Trinity Hospital also receive education about signs to look for in patients with PAD and the types of surgical procedures used to increase circulation and reduce amputations or infections in these patients.

In addition to educating hospital staff and affiliated physicians, forming relationships with providers at affiliated wound care centers also is important. Wound care specialists are well positioned to help ensure that patients with CLI have excellent outcomes. Dr Tolitano explained that wound center clinicians should be aware of the difference between venous and arterial ulcers and of the importance

Comprehensive treatment of PAD should prioritize patient-centered outcomes, such as improvement in pain and activities of daily living, including walking.^{16,21}

Among patients who require lower limb amputations, the type of amputation performed (eg, transtibial vs transfemoral) and ability to walk with prostheses are associated with improved QOL.¹⁶ In addition, **patient QOL may be influenced by factors under the physician’s control, such as:**



provision of postamputation support,



timing of amputation, and



facilitation of informed decision making.¹⁶

Among patients with PAD, the prevalence of major amputation is 5 to 15 times higher in those with diabetes than in those without.²⁶



Between 2009 and 2015, amputation rates plateaued among individuals without diabetes but increased by 50% among those with diabetes.²⁷

In the United States, approximately 150,000 nontraumatic lower extremity amputations were conducted in 2015, translating to an estimated rate of over 400 nontraumatic amputations per day.¹⁶

of early management by a vascular surgeon or interventional cardiologist. “If a patient has an ulcer on their foot or their leg, the specialists in the wound care clinic care advise them to seek treatment right away and refer them to the Limb Salvage Program,” said Dr Tolitano. “The best chance of resolving the wound and, ultimately, salvaging the leg is...with early intervention. No one should wait and see if the wound is going to resolve on its own; the ulcer is often the result of a vascular problem, and the patient needs to be seen by a vascular specialist.”

“The primary goal is the patient, their health, and their satisfaction. Ultimately, the best outcomes will be achieved when all the right specialties are involved.”

—Dominic J. Tolitano, MD



Often, the most important team members are patients and their families. Including the patient and their family in the care process is vital to preventing amputation. When meeting with those who are at risk for PAD, Dr Gerst said that he describes warning signs and symptoms that should prompt them to contact their podiatrist.

For patients who require surgical intervention, setting realistic expectations about the final outcome is of key importance, explained Dr Tolitano. “Although we may be able to save their limb through procedures [eg, angioplasty and bypass graft], we need to educate patients that this will still be a long journey. They are not going to walk off the table and be done.”

Community outreach also has also been initiated as a long-term strategy to increase awareness of PAD and to improve general health outcomes. Dr Golzar described the growth of the Limb Salvage Program as a “grassroots” effort to educate communities about PAD and amputations through word of mouth. If a patient is being recommended for amputation, they should understand that there can be a wide variation in outcomes from centers throughout the country. Further, they should recognize the lower risk of amputation seen among patients treated at Limb Salvage Centers of Excellence, which focus on an aggressive multidisciplinary treatment protocol. “We have patients [who] travel from around the country,” Dr Golzar explained. “We have even had international patients come to us for our expertise in limb salvage.”

Ms Roache noted that the drastically lower life expectancy of patients in southeastern Chicago highlighted the need to deliver the highest standard of care to this underserved population. People living in this area tend to have high rates of hypertension, stroke, and heart disease. Such a trend may be related to multiple factors, including limited access to

primary care physicians and healthy food options in the community. Engaging patients in these **underserved communities** through churches and ministries is an important component of the program. She added that multiple efforts have been made to improve care through education focused on reducing risk factors and promoting general health initiatives (eg, hosting educational events and blood pressure screenings at local churches and community centers).

To meet the American Heart Association’s goal of reducing the rate of nontraumatic lower extremity amputations by 20% by 2030, **it is imperative that limb salvage programs consider disparities in health equity among patients with PAD and include supportive services from multiple specialties.**¹⁶





The primary goal of the limb program is to save both limbs and lives. According to Dr Golzar, “When we initiated the program, we had limited resources on how to start and maintain a successful limb salvage program. The vision of creating an organized, algorithmic, turnkey process for a limb salvage program was unprecedented. There are many physicians across the country who are doing incredible work in the limb salvage area. We educate physicians at global scale conferences on advanced endovascular procedures and [ways] to prevent amputation. However, it was challenging to find a program to emulate that provided the process we were envisioning. That’s why we had to develop a program from the ground up.” He went on to explain, “Although the best metrics to assess quality have yet to be identified on a national scale, we are at the ground level of defining quality metrics for CLI, which will likely vary based on the institution, geographic area, and complexity of patients.”

“Our initial goal was simple: [to] prevent major amputation in patients,” said Dr Golzar. “Ultimately, by preventing amputation, we not only save limbs—we save lives.”

Top-line results of the program point to success. Dr Golzar and his colleagues followed the outcomes of 126 patients treated at Advocate Trinity Hospital over an 18-month period from 2014 to mid-2016. “We were blown away by the results,” said Dr Golzar. “The major amputation rate for our limb salvage program was less than 5%.¹ [This was] an unprecedented amputation rate in patients with CLI, especially in a complex patient population and in an underserved community. If we can do this in Southside Chicago, it can be done anywhere if physicians, nurses, and hospital administration dedicate their efforts and work together.”

FUTURE OPPORTUNITIES AND WIDESPREAD ADOPTION OF LIMB SALVAGE PROGRAMS



According to Dr Golzar, the team at Advocate Trinity Hospital strives to be the model for other institutions in cities across the country to develop limb salvage “Centers of Excellence.” The low major amputation rate at their institution has remained durable since 2014. Dr Tolitano recommended that small institutions develop a vascular program headed by a cardiologist and a surgeon and that also includes other specialists, such as podiatrists and pulmonologists. The intent of this program would be to discuss cases at regular conferences and to refer particular patients to vascular surgeons. This would also encourage communication between interventional cardiologists and area vascular surgeons. There may be some initial concerns about the cost of limb salvage procedures; however, Dr Tolitano pointed out that having a multidisciplinary limb salvage program to identify and treat such patients early likely will reduce overall hospital costs in the long term. “Oftentimes, patients are not seen

early, and they require repeated procedures and hospitalizations—all of which cost money,” he said.

“However, if we can see these patients early and treat them in collaborative way, patients will have a better outcome and will stay out of the hospital.” Dr Golzar shared, “We are very proud of what we’ve done in Chicago.”

“We recognized the inequities and high amputation rates in South Chicago. We built a strong team that was passionate in treating these patients, and we did something that we could show our community and the country. If we can do it in Chicago, you can do it anywhere. So let’s stop talking about [it] and take action.”

—Jaafer A. Golzar, MD, FACC, FSCAI

Table 1.**“Toe and Flow” Model: Complementary Distribution of Patient Responsibilities²⁸**

Toe (podiatry)	Flow (vascular surgery)
Screening and prevention Gait analysis/biomechanical intervention Pressure reduction/off-loading/footwear	
	Vascular assessment and revascularization
Surgical débridement/drainage of complex infection	Surgical débridement/drainage of complex infection
Postoperative monitoring of the high-risk foot	Postoperative monitoring of the high-risk foot
	Long-term monitoring of vascular reconstruction
Prophylactic/curative reconstructive surgery	
	Medical management of peripheral vascular disease
Wound care	Wound care

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The “toe and flow” model of amputation prevention integrates both vascular and podiatric surgery to offer a uniquely synergistic approach (Table 1).²⁸ This model is associated with a more than 50% reduction in amputation among patients with diabetic foot ulcers.²⁹ Institutional programs with diabetic foot care teams may fall into a range of clinical levels (Table 2).²⁸ In a diabetic rapid-response acute foot team, a vascular surgeon and a podiatric surgeon comprise the “irreducible minimum,” and the team may also be supported by adjunct specialists, as necessary.³⁰

Table 2.**Range of Clinical Levels of Diabetic Foot Care Programs²⁸**

	Basic	Intermediate	Center of Excellence
Goal	Prevention and basic curative care of own patient population	Prevention and curative care for all types of patients; more advanced assessment and diagnosis from the regional catchment area of the hospital, possibly with additional referrals from outside the region	Prevention and specialized curative care for complex cases to advance the knowledge base and to teach other centers (eg, national, regional, or even international referral centers)
Setting	General practitioner's office, health center, or small regional hospital	Hospital	Usually, a large teaching or university hospital
Clinicians involved	<ul style="list-style-type: none"> • General practitioner • Podiatrist • Diabetic nurse 	<ul style="list-style-type: none"> • Diabetologist • Vascular surgeon • Podiatrist • Diabetic nurse 	<ul style="list-style-type: none"> • Diabetologist • Vascular surgeon • Podiatrist • Orthopedist • Orthotist • Educator • Plaster technician • Rehabilitation specialist • Diabetic nurse • Psychiatrist
Facilitating elements	Close collaboration with a referral center	<ul style="list-style-type: none"> • Motivated coordinator to inspire team • Exchange of experience with other centers • Staff meetings to discuss diabetic foot patients • Active collaboration with other departments within the hospital • Active collaboration with extramural facilities (eg, general practitioners, nursing homes) 	<ul style="list-style-type: none"> • Organize regional, national, or international meetings • Allow providers to visit to improve knowledge and practical skills • Active collaboration with other reference centers • Active participation in developing guidelines

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CLINICAL RESOURCES

PAD Toolkit for Health Care Professionals (American Heart Association)

<https://www.heart.org/en/health-topics/peripheral-artery-disease/pad-toolkit>

CardioVascular Coalition

<https://cardiovascularcoalition.com/>

Peripheral Artery Disease (PAD) National Action Plan

<https://www.heart.org/en/health-topics/peripheral-artery-disease/pad-resources/pad-action-plan>

PATIENT RESOURCES

Save Legs. Change Lives.™

Janssen has created the **Save Legs. Change Lives.™** *Spot Peripheral Artery Disease Now* initiative to raise awareness about this serious condition and encourage screening to make sure it doesn't go undiagnosed.

Janssen has joined forces with leading professional associations, healthcare systems, and community organizations to address inequalities and to help ensure health equity for everyone.

Save Legs. Change Lives.™ is committed to helping patients get all the support they need in the fight against PAD. Here, you'll find important resources from partner organizations that can provide information and assistance in reducing your risk and managing your condition.

<https://www.savelegschangelives.com/patient-resources.html>

REGIONAL RESOURCES

The Balm in Gilead, Inc

Supporting the creation of culturally tailored PAD educational resources and awareness programming for faith-based institutions in the area of Chicago, Illinois, that serve individuals of African descent with the goals of preventing diseases, improving health outcomes, and eliminating health disparities

<https://www.balmingilead.org>

Save Your Soles

A grassroots campaign in Philadelphia, Pennsylvania, focused on eliminating lower extremity amputations among patients with diabetes

<https://saveyoursoles.health>

The Limb Preservation Foundation (LPF)

An independent, nonprofit organization for patients in the Rocky Mountain Region (Colorado, Wyoming, Utah, Nebraska, Kansas, New Mexico, Arizona, Montana, Idaho) supporting the prevention and treatment of limb-threatening conditions

<https://limbpreservation.org>

PROFESSIONAL SOCIETIES

Academy of Clinical Electrophysiology & Wound Management (ACEWM) https://www.acewm.org	Society of Black Vascular Surgeons https://www.blackvascular.org
American Limb Preservation Society (ALPS) https://limbpreservationsociety.org	Society for Vascular Surgery (SVS) https://vascular.org
Association for the Advancement of Wound Care (AAWC) https://aawconline.memberclicks.net	Southwestern Academic Limb Salvage Alliance (SALSA) https://diabeticfootonline.com/about
Critical Limb Ischemia (CLI) Global Society https://www.cliglobalsociety.org	Wound Care Collaborative Community (WCCC) https://www.woundcarecc.org

NOTES



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Jennifer is a New York-based artist living with type 1 diabetes.