By and large, most treatments in podiatric medicine boil down to pain management. Whether it be treating a painful wart or performing a complex ankle repair, the goal of treatment usually includes the reduction of pain. More commonly, the origin of pain can range from metabolic (diabetic peripheral neuropathy) to acute (post-surgical) to problems of biomechanics and structure.

There are times throughout the course of practice, however, when pain becomes substantial, necessitating precise recognition and timely action. Fortunately, today, there are many options available to podiatric practitioners to battle such varied complaints, including new technologies, pharmacologic agents and injectable medications. In spite of these advances, failure to recognize the true extent of a painful condition can place a treating physician in medical-legal jeopardy. Thus prompt referral to other specialists, when necessary, is always recommended.

This month’s panel consists of a variety of podiatric physicians who have dealt with patients with substantial pain issues. They have generously shared their recommendations on how to deal with both the clinical and practice management aspects of this often challenging patient presentation.

Joining this panel: 
Michelle Butterworth, DPM, is in private practice in Kingstree, SC. She is currently the chief of the Medical Staff at Williamsburg Regional Hospital, on the board of directors for the Podiatry Institute, on the Cognitive Exam and Credentials Committees for the American Board of Podiatric Medicine, and is also a member of the PICA Claims Committee. She is a past president of the American College of Foot and Ankle Surgeons and is also a member of the South Carolina Podiatric Medical Association.

Alison Garten, DPM is board certified in Foot Surgery by the American Board of Podiatric Surgery and is a certified pedorthist. She currently is in private practice in Washington, DC. She is a Healogics panel physician at Washington Adventist Hospital Wound Care Center. Dr. Garten is a graduate of the Temple University School of Podiatric Medicine in Philadelphia, Pennsylvania and completed her residency at Washington Hospital Center/Georgetown University Hospital in Washington, DC.

Thomas Graziano, DPM, MD is board certified in Foot and Ankle Surgery and a fellow of the American College of Foot and Ankle Surgeons. He is one of a few podiatric physicians nationwide to hold both medical degrees. He is in private practice in Clifton, NJ.

Seth Steber, DPM has been practicing podiatry since 1996. He is a graduate of the Temple University School of Podiatry. He is employed by Carlisle Regional Medical Center in Carlisle, PA. He is a fellow of the American College of Foot & Ankle Surgeons, the American Academy of Wound Management, and the Association of Extremity Nerve Surgeons.

Elliot Udell, DPM is a diplomate of the American Board of Podiatric Medicine and is board certified in Foot Surgery by the American Board of Podiatric Surgery. He currently is in private practice in Washington, DC.

Our experts discuss the latest trends in this area.

BY MARC HASPEL, DPM

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Medicine. He is a fellow and current president of the American Society of Podiatric Medicine and a fellow of the American Society of Podiatric Dermatology.

**David Zuckerman, DPM** is in private practice in Woodbury, New Jersey for thirty-five years. He is the podiatric medical director for Aspen Laser Systems and Excellence Shockwave therapy. He also runs the Avalon Laser Center/ESWT Center of Cherry Hill, New Jersey.

**PM:** Describe your practice’s use of traditional and/or newer technologies for intractable pain management (TENS units, lasers, pharmacologic compounds, electronic signal treatment, narcotics, etc.).

**Butterworth:** Intractable pain can be very challenging, and I believe that it is a disease state all of its own. I refer most of my chronic pain and intractable pain patients to pain management. I feel that these patients benefit more from a team approach rather than a single physician treatment plan. That being said, if a patient has come to see me for an injury or pain that has not been treated elsewhere, and that patient is not on medications or treatments already for this pain, I do start a typical protocol. I obviously try to determine what is causing the pain, and treat it appropriately with NSAIDs, biomechanical control, immobilization, physical therapy, injections, etc. If the pain is not improved with these methods, I then typically employ a compounding cream as an adjunct. I am very cautious with prescribing narcotics. I will give an initial prescription of 30-40 tablets, but then if the pain requires more narcotics, I find this to be a red flag.

Sometimes I will give one additional narcotic prescription, but I refer the patient out if s/he requires more. I will continue to treat the patient with other methods mentioned above to aid in pain control, but I do not like to be the gatekeeper of narcotic usage. I also determine whether surgical intervention would aid in the patient’s pain control. If so, I discuss the pros and cons of surgery clearly, indicating to patients that they could have continued pain, increased pain, or even CRPS after the surgery. I believe that this is an important and necessary discussion with the patient in order to determine realistic surgical goals. Additionally, I have used TENS Units, some with varied success. I find that this works for patients with nerve type symptoms that have not responded to other therapies. On the contrary, I have very little experience utilizing lasers for pain management.

**Zuckerman:** We have used high dose diode lasers for inflammatory and painful conditions such as plantar fasciitis, Achilles tendinitis, edema, joint pain, neumora, and neuropathy. High energy ultrasound-guided ESWT has been a standard in our practice for over fifteen years. We have found very little use for injections, narcotics, or physical therapy, largely due to the effectiveness of lasersong and extra corporeal shock wave therapy treatments.

**Steber:** Our practice utilizes a multitude of technologies for intractable pain management including oral, topical, electrical, and laser devices. Depending on the symptoms, and the conditions we are treating, we will use multiple treatments to achieve a positive outcome. We prefer a non-narcotic approach for chronic pain syndromes, but we will use them as well in an acute setting such as post-surgery or with acute injury. I believe energy deficiency is a major component of chronic pain. We are strong proponents of electronic signal therapy (Neurogenx, Lansing, MI) and modalities that can drive energy into the cell to relieve pain and restore function.

**Udell:** In our practice, we also use TENS units, cold lasers, topical compounds, interferential therapy and many other modalities (close to twenty in all) in the management of foot pain. All of these modalities can play a role in alleviating or minimizing foot and ankle pain syndromes. When visiting podiatric medicine or pain management conferences, there seems to be an endless number of new physical therapeutic modalities available. Most of these new products are based on old, time-honored technologies but have bells and whistles which make the products appear new. I advise colleagues planning on investing in these therapeutic devices to check out the technology first in order to make sure that there is not another product which does the same thing for a fraction of the price.

There are some electro-therapeutic products which are helping patients with severe pain syndromes, which are out of the scope of podiatry. These include spinal cord stimulators. For these devices, I team with pain management experts who will provide and install these products for those patients who need them.

**Graziano:** In our practice, we have employed TENS units and topical pharmacologic compounds with some limited effect. We have found that immobilization with well-controlled and supervised physical therapeutic modalities are still reasonable, tried and true approaches for intractable pain management.

**PM:** What are the medical/legal ramifications for diagnosing or failing to diagnose complex regional pain syndrome (CRPS)?

**Garten:** Complex regional pain syndrome can be difficult to diagnose. My treatment plan is to identify early if a patient is not responding to treat-

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When diagnosis and treatment of CRPS is determined early, long-term disability can be prevented.—Garten

Udell: Not being an attorney, I cannot give a discourse on legal issues. I have treated many patients with complex regional pain syndrome. Although this condition does have a list of symptoms, which are present in different degrees, the literature varies widely on a definitive plan of treatment. Some experts will argue that CRPS is treatable, but not curable, and no one knows for sure what the exact etiology is. Hence, if I were to be called in as an expert witness, I would defend a colleague by saying that there is no magic bullet for CRPS, and early interventions which vary, may or may not make a definitive difference.

Zuckerman: I agree that immediate referral to a pain management specialist for diagnosis and treatment is recommended. Typically, I find that use of epidural nerve blocks are paramount to the success of treatment. Obviously, however, delay of referral may have legal ramifications.

Butterworth: The podiatric surgeon should be suspicious of CRPS in any patient who has pain extending beyond what is considered normal healing times for an injury or surgery. The physician should also be suspicious if a patient has pain out of proportion to what is expected from the injury or surgery, or if the patient does not respond adequately to standard treatments for pain control. I am currently on the PICA Claims Committee and review many malpractice cases. One of the more common areas I see involving legal cases is failure to diagnose and properly refer/treat CRPS. CRPS, and even chronic pain, are disease states all their own. I do not feel that we, as podiatric surgeons, are specialists in this area, but we need to be able to identify and diagnose these disorders in a timely manner. CRPS should always be part of the differential diagnosis for continued pain, pain out of proportion, and pain that does not respond to standard therapies. There are also obvious objective findings of which the physician should be aware. Certainly, the medical-legal ramifications can be quite costly for physicians who fail to diagnose CRPS in a timely manner.

PM: What is your feeling about the use of alcohol injections for neuromas and other conditions where nerve injuries are involved (e.g., stump neuromas, intractable plantar keratomas with neural component, etc.)?

Udell: I have had great success using the protocol developed by Dr. Gary Dockery of injecting 4% alcohol into a neuroma.—Udell

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Steber: I also like alcohol injections for painful intractable keratomas. I have had good success with them in the past. They are not my first line of defense in painful nerve syndromes such as Morton’s neuroma—moreover, I have rarely used them for nerve conditions outside of neuromas. I feel we should try to treat the nerve condition with modalities that relieve pain and restore normal function.

Zuckerman: I, too, have used, and found 4% alcohol injections in a series of 3-6 doses can be very effective in the treatment of neuromas and stump neuromas. When the areas are inflamed, I have also found that therapy laser in the proper dosage can bring dramatic relief with nerve pain and inflammation problems.

Butterworth: While I think alcohol injections for these disorders...
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give the patient another treatment option, my first line treatment for neuromas, stump neuromas, neuritis, etc. typically includes anti-inflammatory measures, biomechanical control, and activity as well as shoe gear modifications. If the patient fails to respond adequately to these conservative treatment modalities, I then discuss alcohol injections and surgical intervention. Often the patient will embrace the idea of trying something else before surgery. Often, the patient does not want to endure multiple injections and weekly office visits and opts for surgery right away. I personally have about a 50% success rate with sclerosing alcohol injections for neuromas. I utilize the standard protocol and give a maximum of 7 injections 7-10 days apart. I consider it an intermediate step between typical conservative therapy and surgical intervention. Surgery can always be performed if the alcohol treatments fail to adequately reduce pain.

Graziano: While there is evidence that an alcohol injection for neuroma may have some benefit, careful consideration should be given to the dose of alcohol and location of injection for maximum effectiveness. All things considered, I am not a proponent of this treatment modality. Like other conservative modalities, it offers temporary relief of this condition. In my opinion, chronic inflammation produces significant fibrosis which, if unresponsive to a short course of corticosteroid, alcohol injection, or other conservative measures, should be excised.

PM: How do you determine the type and dosage of steroid injection therapy for osteoarthropathies and other painful inflammations?

Garten: Typically, I use an intermediate and short-acting steroid combination along with a long-acting anesthetic (0.50% Marcaine plain). I find that a shorter-acting solution is less irritating, and is less likely to cause a post-injection flare than does a long-acting dexamethasone suspension. Normally, my combination consists of Kenalog 40 (triamcinolone acetonide), dexamethasone sodium phosphate, and 0.50% Marcaine plain. I almost never, however, use a steroid injection for insertional Achilles tendinitis or for a second metatarsophalangeal bursitis/capsulitis for risk of rupture or concern of accelerating a pre-dislocation syndrome.

Zuckerman: I typical will use 20 mg Depo-Medrol. Over the years, with the advent of therapy lasers, our use of local steroid injections has been dramatically reduced. There have been many situations where a steroid injection failed, and high dose laser therapy resolved the pain.

Udell: Every doctor will have a unique protocol for the use of injectable steroids, and they all work. I use .25cc of dexamethasone mixed with lidocaine and, maybe, Marcaine. I sometimes will use Sarapin, and when I do, I can use less steroid. On occasion, I will use a longer acting steroid such as triamcinolone. The soluble short-acting steroids may not yield long-term relief for patients with chronic pain, but there is less risk of osteopenia or other problems associated with long-term use of steroids.

Steber: For osteoarthropathies, I like a combination of phosphates and acetates since there is a quick-acting water-soluble steroid to start working right away as well as the longer lasting effect of the acetate. For extra-articular conditions, I prefer the use of only a water-soluble phosphate corticosteroid to reduce the risk of soft tissue atrophy.

Butterworth: My clinical decision-making in this area is mostly based on my experience. I think success of the steroid injections is highly dependent on the patient, the patient’s activity levels, and other treatments rendered, more so than the type and amount of steroid utilized. Most often, I will typically combine a phosphate and acetate for most of my injections for these conditions. One exception to this is an injection into the lesser metatarsophalangeal joints and the retrocaneal bursa. I never inject acetate in these areas. Also, when an injection is performed, either the toe is strapped or the foot is immobilized.

My standard injection, for most other arthropathies and inflammatory conditions, is typically 4mg dexamethasone phosphate and 10mg of Kenalog. If the patient has already had this combination, and has not responded adequately, I will either increase the dexamethasone phosphate to 10mg or Kenalog to 40mg. I have also used Depomedrol up to 40mg for severe joint degeneration, such as in the sinus tarsi following calcaneal fractures, with successful pain control. If the patient does not respond to the steroid injections, I think about other differential diagnoses or factors that could contribute to failure. I usually will not just increase or change the dosage of the steroid. As I have already noted, other anti-inflammatory measures, activity reduction, and biomechanical control are also very important in treating these entities. I believe that one should not just rely on the steroid injection. These other treatment modalities can enhance the success of the steroid injections.

Over the years, with the advent of therapy lasers, our use of local steroid injections has been dramatically reduced.—Zuckerman

PM: In what clinical situations have you used (or would you use) topical pain compound medications? Explain why or why not.

Butterworth: I think topical compound medications can be a great adjunct to our treatment protocol for many disorders we see as podiatric physicians. Compounding creams...
have exploded on the market in the past couple of years. Unfortunately, like many new medical entities, I think they have been over-utilized and utilized inappropriately. Because of this, and the significant cost of some of these products, I think compounding medications have gotten a bad reputation. I do use compounding medications, and I think they can be very effective, when utilized appropriately and when indicated. I have utilized them for many podiatric disorders including, but not limited to, planter fasciitis, tendonitis, joint pain and inflammation, gout, chronic pain, neuropathic pain, and post-op pain and scarring. I typically do not utilize them as a first line therapy, but I think they are a great adjunct for patients who do not respond to our standard treatment protocols. I also think they are very effective in patients who cannot take oral NSAIDs secondary to medical problems such as GI disturbances, renal impairment, and patients who are on anti-coagulants. I think they are also effective in patients with vascular insufficiency. Pain control is a real problem in our country. The side-effects, and addictive potential, of opioids are well-documented. The NSAIDs have many side-effects and drug interactions as well. These topical agents have minimal side-effects and systemic absorption, so they are safer than their oral counterparts, and many studies have shown them to be just as effective.

Graziano: I consider topical pain compounds in situations which are, for whatever reason, not amenable to corticosteroid injection.—Graziano

Garten: Topical pain compounds, or prescription topical NSAIDS creams, can be helpful in some patient populations. I generally reserve these treatments for patients who are allergic to, or not amenable to, injectable or oral treatment/medication; have uncontrolled diabetes or current blood glucose that could be easily elevated by steroid injection; have hypertension that is currently too high for a steroid injection; or are unable to take oral NSAIDS due to GI upset/GERD. Also in cases of painful peripheral neuropathy, I believe topical compounds work well.

Steber: I use topical pain compounds medications mostly in chronic pain conditions. I find it the treatment of choice in my patients who do not want to take oral medication for their pain. It is rarely used alone as the sole treatment for pain, and I will combine it with other treatments, such as electrical stimulation, injections, etc.

Butterworth: This is a very challenging group of patients regarding pain management. I typically start with the most benign treatments, and work my way up the ladder. I will normally start with topical therapy such as Biofreeze or a compounding cream. I start with these agents since there are limited to no side-effects. I also discuss biomechanical control and footwear modifications, maximizing shock absorption and encouraging proper support.

I naturally focus on precise diagnosing with these patients. Although I tend to assume burning pain or numbness is neuropathy, especially in our diabetic patients, I am not always satisfied with that diagnosis. I always evaluate these patients’ arterial supply, and order arterial Doppler studies for any questionable vascular insufficiency. I will discuss performing the epidermal nerve fiber densities, then I progress towards either Neurontin or Lyrica. I start off with low doses and titrate up. At this point, I get their family physicians or endocrinologists involved, and typically have them continue the patients’ treatment with these agents. I also utilize injections effectively for areas of pinpoint tenderness throughout the treatment process.

Steber: Treating peripheral neuropathy is something I have a passion for and I am always looking for ways to help these patients, who are experiencing chronic pain secondary to neuropathy. My eyes were opened to seriously relieving pain and restoring sensation after taking the Lee Dellon course back in 2001. It made me a better diagnostician regarding chronic pain syndromes and neuropathy. I treat diabetic neuropathy pain with Class IV lasers, injections, topical pain compounds, electrical signal therapy, and surgery. However, I refer patients to pain management if they require narcotic therapy. If there is any evidence of nerve entrapments in these patients, I consider neurolysis procedures. Yet, over the past several years, I have reduced the number of neurolysis procedures by embracing electrical signal therapy.

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Zuckerman: I treat patients with diabetic neuropathy with therapy laser at a low dose. I found nerve blocks to be also very effective, depending on the specific level of pain that these patients have. I also use oral medications such as Neurontin and Lyrica. I find that they are effective, but do have side-effects, which leave some patients leery of taking them.

Garten: I used to treat patients with painful diabetic neuropathy in my office with Neurontin or Lyrica, but now I refer the patient to a neurologist for treatment. In addition, if patients are unable or do not want to take a prescription medication, I will also prescribe NeuRemedy (Realm Labs, Boca Raton, FL) or a similar product and a topical compound. Actually, I have used acupuncture as a treatment as well, which I have found to be successful. Unfortunately, sometimes, allopathic physicians tend to overlook this modality as a potential treatment.

PM: What is your protocol post-surgically, or otherwise, when treating patients who request continued pain medication? At what point do you refer these patients out to other specialists?

Graziano: I typically prescribe hydrocodone/acetaminophen for patients following bone surgery of any type. I usually prescribe enough medication to get the patient through the inflammatory phase of healing (lasting approximately 4 days). I become cautious of patients who ask for another prescription for narcotics unless the extent of the surgery warrants it. In such cases, I will prescribe additional limited narcotics. In addition, depending on the type of surgery performed, I often administer a loading dose of Toradol, in the recovery area, followed by a five day oral dose of the same medication. I do not tolerate patients who abuse the privilege, and if I suspect abuse, I promptly refer them out to the appropriate specialists.

If a patient requires narcotic therapy for a chronic condition, I will refer that patient to a pain management specialist.—Steber

I believe it is important to be direct with patients who are not responding to exhaustive treatment by referring them out for other opinions when warranted. If these patients are sincere about improving, they will heed the advice. On the other hand, if they refuse to see other specialists, then they may just be looking for more narcotics and feigning their symptoms.

Steber: Narcotic pain medication has a limited role in my practice. Its role is to assist pain relief in an acute episode, such as surgery or an acute injury. If a patient requires narcotic therapy for a chronic condition, I will refer that patient to a pain management specialist. My protocol is to routinely limit the number of pain prescriptions to only two prescriptions. If the patient feels that more is required, then a referral is made to the specialist.

Garten: I typically prescribe to an adult, Percocet 5/325 mg q 8 hours #30 prn for severe pain post-op. I advise patients that, at most, they should need to take the medication for 3-7 days following surgery. If they continue to have pain with the Percocet alone, then I have them take Motrin 800 mg in between the narcotic medication. In my experience, typically patients, after the first week, may need one tablet before bed due to residual pain. If they need more than one prescription of narcotics, then I think it is important to evaluate the origin of the pain. I typically try to avoid a second prescription of a narcotic, but, instead, will continue with Tylenol or an NSAID. Ultimately, I refer patients for second opinions, or to pain specialists early on if they are not responding to my typical post-op pain management protocol.

Udell: I am not a believer in prescribing too many narcotic analgesics, and the authorities swooped down on him. Even though he ultimately prevailed, his legal defense cost him a bundle of money in fees, along with many sleepless nights. Pain management specialists seem to have carte blanche in prescribing narcotic analgesics for chronic pain. While I will continue to do my therapies, if the patients are not improving I will direct them to their pain management specialist for further evaluation and prescriptions.

PM: Please share a memorable outcome where pain management was incorporated into the patient treatment plan.

Graziano: One chronic condition that immediately comes to mind, which requires not only a pain management plan but aggressive medical management is hyperuricemia and subsequent gouty arthritis. In my opinion, hyperuricemia is grossly mismanaged, and its consequences are under-appreciated. Many of our patients with diabetes mellitus, hypertension, and obesity (metabolic syndrome) have concurrent hyperuricemia. Oftentimes, we are the first specialists that these patients see in this regard. We should be working in concert with their primary physicians, but if necessary, it is incumbent on us to take the lead and manage their pain. In order to accomplish this, we must normalize their uric acid and provide periodic pain management for periodic flare-ups. Accordingly, I, personally, can cite a number of instances.
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stances where I have had to manage patients' hyperuricemia to effectively manage the pain associated with difficult gouty attacks.

Butterworth: One of my most memorable patients was actually scheduled to have surgery, which I was dreading. I had a male patient in his forties who needed an entire forefoot reconstruction, had a history of narcotic abuse, and was currently on methadone. He had significant pain and deformities. Therefore, I was very concerned about how I would deal with his pain post-op. Also, none of my conservative therapies were relieving his pain at all, including NSAIDs, injections, physical therapy, immobilization, etc. Because of his severe deformities and pain, I felt surgery was indicated, in spite of my concern for his post-operative pain management. I was also fearful that the patient might develop CRPS post-op. I proceeded to perform a 1st MTPJ arthrodesis, 5th metatarsal osteotomy, and multiple hammertoe repairs. He was ordered 30 tablets of 5mg of Lortab post-op, then was converted to Tramadol after that. He was continued on his methadone the entire time. I worked very closely with his pain management and primary care physicians throughout the pre-op and post-op course. I was pleasantly surprised that this patient did so well post-op, and his pain in his foot was completely resolved. I think one of the reasons this was such as positive experience was because the patient knew what to expect before the surgery as far as pain medication to be prescribed, and a team approach was utilized to manage this patient throughout the entire process.

Udell: I once had a patient diagnosed with CRPS, who had severe atrophy from the loss of the motor neuron component of this syndrome, and she was about to be committed to a lifetime of being in a wheelchair. We started her on intensive physical medicine and, as a result, she was able to ambulate freely without having to depend on that wheelchair.

Zuckerman: I encountered a twenty-one year old female patient sitting in my treatment room in a chair next to the examination table. She was on crutches. She told me that I was her last resort. She had been to a few podiatrists, and they couldn’t help her foot pain. Clearly, she was nervous, but very alert. This patient told me that the doctors were telling her it all might be in her head. All her tests were normal. She did mention that one local steroid injection given on the top of her foot had helped.

I ordered radiographs of both feet

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to compare the asymptomatic with the painful foot. On the latter image, I noted osteoporotic areas within the mid-tarsal bones. Suspecting reflex sympathetic dystrophy, I immediately arranged for a consult with pain management and explained the need for epidural nerve blocks.

Following three nerve blocks, along with other medications, I noted that the patient was feeling better. Next, I lobbied her insurance company to approve physical therapy extensively over the following few months.

Eventually, I learned my young patient was doing better, but now was under the care of a pain management specialist. About one year later, my front desk receptionist informed me that someone wanted to see me. To my surprise, it was the same young woman, in tears, wanting to give me a hug. She said that I was the only one to believe in her and went the extra mile. She said that I saved her life. That is why I am proud to be a podiatric physician.

Steber: About 12 years ago, I had a 26-year-old patient come into the office with painful peripheral neuropathy. She could not place her sheets on her legs and feet at night without severe discomfort. I agreed with her previous diagnosis of painful diabetic neuropathy. However, I also identified her with nerve entrapments of both extremities. I recommended the Dellon triple neurolysis procedure to her. Although her blood glucose levels were under good control, and there was no contraindication to surgery, her endocrinologist did not agree with the proposed procedure. As a result, the patient declined intervention.

Six months later, she returned to the office with her mother and said that the pain was not improving; it was, in fact, getting worse. She wanted to proceed with the surgery. I performed the surgery, and on her first post-operative visit three days later, she was pain-free and able to sleep with the covers on her extremities. This satisfying outcome reconfirmed my belief that with chronic pain syndromes, podiatric physicians must be good diagnosticians, be able to look outside the box to figure things out because treatment paradigms and technologies change, and that we must share positive and negative outcomes with colleagues so everyone can learn.