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Michelle Butterworth, DPM


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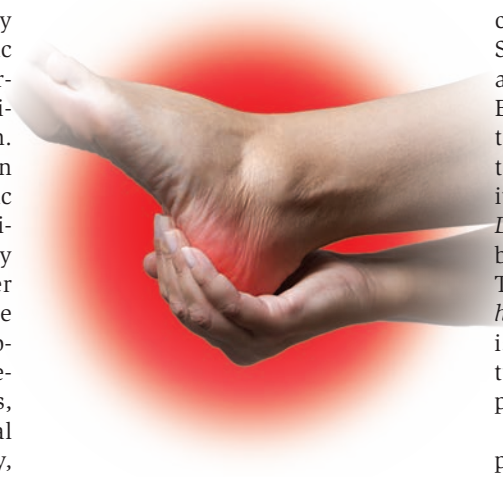
Pain Management and Podiatric Medicine

Our experts provide their insights on this vital topic.

BY MARC HASPEL, DPM

Pain management is nearly synonymous with podiatric medicine. Patients, generally, visit podiatric physicians to relieve their pain. And, likewise, diminishing their pain is the primary goal of their podiatric physicians. Although excessive opioid use has today become justifiably scrutinized, there are many other modalities that can work to mitigate pain, such as injection therapies, topical pain relief compounds, non-steroid anti-inflammatory medications, physical therapies, biomechanical appliances, lasers, red light therapy, electronic signal treatment, and podiatric surgery.



Podiatry Management Magazine has invited an experienced panel of podiatric physicians dedicated to helping patients with their pain complaints. They recently took some time to offer insights on this inherently integral part of podiatric medical practice.

Joining this panel are:

Stephen Barrett, DPM is the CEO of US Neuropathy Centers and the host of the podcast *Pod of Inquiry*. He is a highly regarded expert in heel pain, pain management, peripheral nerve surgery, and diabetic peripheral neuropathy. Dr. Barrett has published more than 60 peer-reviewed articles, several textbooks, and numerous book chapters. He lectures and teaches innovative surgical techniques throughout the world.

Michelle Butterworth, DPM is a past president of the American College of Foot and Ankle Surgeons. She is currently the secretary/treasurer for the American Board of Foot and Ankle Surgery (ABFAS). She is a past president of the South Carolina Podiatric Medical Association and is the chairman of the SC annual conference. She serves as a member of the Legislative and Education Committees. She has authored numerous manuscripts and textbook chapters. She is the co-editor of *The Pediatric Foot and Ankle: Diagnosis and Management* textbook and she is also an editor for The McGlamry *Textbook of Comprehensive Foot and Ankle Surgery*. She is a member of the Podiatry Institute and is currently the immediate past chairman of the Board.

Allen Jacobs, DPM is in private practice in St. Louis, Missouri. He is board certified in reconstructive surgery of the foot and ankle by the American Board of Podiatric Surgery, and is a Fellow of the American College of Foot and Ankle Surgeons. Dr. Jacobs has also served as a contributing editor to the *Journal of Foot Surgery, Foot and Ankle Quarterly* and *Clinics in Podiatric Medicine and Surgery*.

William Long, DPM graduated from Temple University School of Podiatric Medicine in 2009. He attended Penn Presbyterian Podiatric Foot and Ankle Reconstructive Surgery

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Residency. After residency Dr. Long returned to South Carolina and purchased a practice. He has been in private practice for nine years and presently serves on the APMA Board of Trustees.

Robert Smith, DPM is a podiatrist, pharmacist, researcher, and author. His newly founded company STOP—Studying Opioid's Harm Inc. is a charitable educational company with the purposes to explore, research, and study opioid prescribing and opioid use disorder, and develop strategies to identify and mitigate inappropriate opioid prescribing. The company's objective is to produce written manuscripts, video educational, and web-based tools to assist providers and the public to mitigate the opioid crisis by identifying risk factors, healthcare inequities, and other factors that may contribute to the opioid crisis.

Wenjay Sung, DPM is an active angel investor, fund advisor, and manager. His background as an award-winning top-rated physician gives him a unique perspective on the human connection to technology. He practices podiatry in Arcadia, CA.

PM: *Describe your practice's use of pharmacological compounds (opioids, traditional non-opioids, and newer non-opioids like Zynrelef and Flector patches). What is your protocol when patients request continued pain medication?*

Sung: As an experienced surgeon, I mainly prescribe Norco 5/325mg, one tab by mouth three times daily, 30 tabs total for post-operative pain. Generally, my surgical cases do not engender patients who require longer duration of pain management. For those that do, however, I refill the prescription at their request for up to three months. Once the pain is over three months long, either I need to re-evaluate my surgical results, or I need to send the patient to pain management while continuing regular follow-ups. I am lucky that I have not required pain management services for my post-operative patients.

Long: I typically prescribe five days of narcotics (schedule II) post-surgery. If patients request a refill, a five-day supply is e-scribed to their pharmacy. Surgical patients may be prescribed narcotics up to 90 days; anything beyond that time is referred to pain management or taken back to surgery if needed. Non-surgical patients are not prescribed narcotics.

Butterworth: For my patients who present with pain secondary to inflammatory conditions such as plantar fasciitis and joint pain, my first line of pharmacological therapy includes non-steroidal anti-inflammatory medications, if not contraindicated in these patients. If patients cannot take NSAIDs where they are not effective or causing side-effects, I typically proceed to the use of steroids. I commonly prescribed prednisone or methylprednisolone dose packs, and of course, also offer localized steroid injections. For patients with nerve-type symptoms, I will often prescribe a low dose of gabapentin, 100mg TID. If this medication appears to be effective and improving symptoms, I refer those patients back to their family physicians for titration of these medications and maintenance, explaining to them that this may be a long-term medication.

I will often use compounding creams or topical anti-inflammatory ointments to assist with their pain management. I use opioids sparingly. I limit their used primarily to my post-operative patients and patients with an acute injury. I have not used Zenrelef at this point, but I think it has a clear indication for many of our surgical patients and could be a great benefit to them. It is just not on formulary at my hospital yet. I have used Exparel post-operatively. This is a bupivacaine suspended in liposomes, so it is not released diffusely into the surrounding tissues. It stays more localized, and is slowly released over time. I have had excellent results with pain management post-operatively with this medication.

Jacobs: If a patient requires continuing utilization of analgesics, it is important to re-assess the patient to ensure that a proper diagnosis has been made. It is important to justify continuing use of opioid analgesics in the medical records. Similarly, the use of non-opioid analgesics should be explained. In certain clinical scenarios such as patients suffering from fibromyalgia syndrome, and, or certain psychiatric problems, continued utilization of non-opioid or opioid analgesics may occur. It is never inappropriate to obtain second opinions.

Once the pain is over three months long, either I need to re-evaluate my surgical results, or I need to send the patient to pain management while continuing regular follow-ups.—Sung

PM: *Describe your practice's use of non-pharmacological technologies for intractable pain management (e.g., TENS units, lasers. ESWT, electronic signal equipment, infrared light therapy, etc.).*

Barrett: Utilization of PEMF (pulsed electromagnetic fields), interferential signal modalities, and Remy laser is common in our practice for additional non-pharmacologic management.

Smith: I work and collaborate with tertiary teaching hospitals where patients are referred with intractable pain for management. The majority of these patients receive either a TENS unit or an electronic signal device. An investigator ac-

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cepted one patient for photo biomodulation of the lower extremity because he also had a comorbidity of restless leg syndrome.

Sung: For patients with intractable pain, I have been very sympathetic to patients with neurologic injuries and have used TENS units as a non-pharmacological treatment. I do make patients aware of pacemaker risks, but most patients gladly accept the TENS unit referral. I have also referred patients for spinal stimulator implantation.

Long: I agree. I typically refer patients to pain management or physical therapy for non-pharmacological technologies.

PM: *How do you deal with Complex Regional Pain Syndrome (CRPS); and discuss the medical/legal ramifications for diagnosing or failing to diagnose CRPS.*

If patients' pain is out of proportion and not responding to current therapies in addition to physical exam findings, CRPS must be suspected.—Butterworth

Butterworth: I do a lot of medical legal work, and CRPS is very prevalent, and one of the common reasons patients seek legal action. Therefore, I am very aware about this condition. Timely diagnosis is a key factor in not only defending oneself in a lawsuit but contributing to the best treatment and outcome for patients. If patients' pain is out of proportion and not responding to current therapies in addition to physical exam findings, CRPS must be suspected. In these cases, I have them start physical therapy immediately. If their symptoms persist, I then get them referred to pain management. I also think it is paramount to communicate with patients as to what is happening, their prognoses and proposed plans. I will also contact their family physicians and discuss my findings and treatment plan. I have found that communication becomes key in these areas, especially when it could lead to litigation. These patients want to know that doctors are there for them, and that they are going to help them get through this.

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When patients feel abandoned or not cared for, they may seek legal action.

Sung: Having been scared straight since my early days at Scholl College regarding CRPS, I am acutely aware of any lingering pain issues and radiographic changes in my patients' medical history. There is evidence to show vitamin D dosing for patients does reduce likelihood of CRPS developing in type A personalities, so I usually recommend an over-the-counter course of Vitamin D and prescribe topical medication. If symptoms persist, my algorithm consists of increasing strength of the topical medication or recommending CBD oils and oral gabapentin, 300mg three times daily. If symptoms do not improve after two to three months, I would prescribe Lyrica 50mg and refer those patients to pain management.

Complex regional pain syndrome is a diagnosis of exclusion.—Jacobs

Smith: Complex regional pain syndrome for my practice utilizes a team approach. Once I identify a patient with lower extremity CRPS, I contact a pain management team because of the complexity of the disease. I have researched CRPS for twenty-five years and kept abreast of clinically-based evidence and best practice guidelines.

The reality is that those patients who continue to complain of pain and vasomotor symptoms followed by a physical injury have CRPS. The complex interaction between the peripheral, autonomic, and central nervous system in this condition makes it challenging to diagnose, treat, and prognosticate.

It must be acknowledged that most patients encounter delay in diagnosis and treatment and legal obstacles, owing to the lack of typical objective signs of CRPS, owing to the patients' symptoms fluctuating at different times of the day. Treatment modalities administered in most patients may be essentially ineffective. Further, it has been my experience that patient symptoms persist regardless of the outcome of their legal claims. Moreover, I have written and published a narrative describing my hypothesis for the use of amantadine as an adjunctive medication for treating CRPS.

If symptoms persist, my algorithm consists of increasing strength of the topical medication or recommending CBD oils and oral gabapentin, 300mg three times daily.—Sung

Jacobs: The diagnosis of complex regional pain syndrome requires referral to pain management, physiatry, or neurology. The biggest problem with the diagnosis of complex regional pain syndrome is that the signs and symptoms representative of complex regional pain syndrome are not specific. Complex regional pain syndrome is a diagnosis of exclusion. Unfortunately, established criteria for the diagnosis of complex regional pain syndrome such as the Budapest criteria contained essentially non-specific signs and symptoms which may be encountered in a variety of pathologic conditions.

Barrett: The first thing to do is diagnose it quickly. Then I refer to pain management and other specialists such as physical therapy, as CRPS needs to be aggressively managed as soon as possible. What causes medicolegal issues is not that a patient develops CRPS after a procedure, it is the failure to timely diagnose it or, even worse, a failure to diagnose it at all. I think the Budapest criteria is what needs to be followed to make an accurate diagnosis of this condition.

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PM: *What is your feeling about the use of nerve blocks for neuromas and other conditions where nerve injuries are involved? What about the use of alcohol injections for those conditions?*

Long: I typically give a cortisone injection as a first line treatment for neuroma. If the injection resolves the patient's pain for greater than three to six months, I may continue with conservative treatment. I never give more than three cortisone injections in a 12-month period. I do give sclerosing injections. When cortisone injections fail, I normally excise the neuroma.

Butterworth: I use nerve blocks and therapeutic steroid injections routinely in my practice. I find they can assist me with making the diagnosis. They also resolve many of the problems I see on a daily basis. I have used alcohol sclerosing injections in the past for neuromas, with mixed results. I would say about fifty percent of my patients improve with this treatment. I use it for those patients that have failed conservative treatments including steroid injection therapy, but who are not ready to proceed with surgery. I have not used this treatment method for a couple of years, primarily because once the pandemic hit, I could not find the alcohol, and then reimbursements for this treatment became significantly difficult.

Barrett: Nerve blocks are essential in determining what is the true pain generator, and with judicious use of lidocaine and ultrasound guidance, a very specific map can be determined as to what nerves are involved. Alcohol injections, in my opinion, should not be implemented for nerves that are simply entrapped, as alcohol injections are neuro-destructive, which can hurt a nerve that is simply compressed. If the ethyl alcohol injection does not work, now you have a nerve with a nerve injury. Even bench science in rats showed not much histological effect with 30% concentrations.

Nerve blocks are essential in determining what is the true pain generator, and with judicious use of lidocaine and ultrasound guidance, a very specific map can be determined as to what nerves are involved.—Barrett

Smith: Relying on Greenfield, et al. (1987), I adopted the use of nerve blocks for the treatment of neuromas in my practice. My understanding is that successful and efficient results have been reported with the use of ultrasound-guided radiofrequency ablation for treatment of symptomatic Morton's neuroma. Unfortunately, I have no experience with this technique. Finally, I have never used dehydrated alcohol injections for any nerve condition.

Sung: The evidence for alcohol sclerosing injections is not the best. Unless there's an ultrasound present during the injection, I agree, it may cause more harm than good. Nerve blocks are well-known and are common procedures for diagnosing neuromas and other neurological conditions. I think they should be utilized by all practitioners.

PM: *How do you determine the type and dosage of steroid injection therapy for osteo-arthropathies and other painful inflammations?*

Jacobs: The type and dosage of corticosteroid utilization for injection therapy is case-dependent. I personally do not have a routine corticosteroid or dosage which I employ for all patients.

Sung: There's not much evidence to suggest increasing dosage for steroid injections increase pain relief and

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longevity of the anti-inflammatory effect, so I usually approach it as a practice management issue. I prefer mixing Kenalog 0.25ml and dexamethasone 0.25ml and 0.5ml of lidocaine 1% plain for small joints. I will double it for moderate-sized joints.

Butterworth: My standard cocktail consists of a local anesthetic, typically one cc of 0.5% Marcaine plain. I will then add one cc of dexamethasone phosphate. I will use this in small joints, such as the second MTPJ, and in bursas such as around the first metatarsal head and Achilles tendon. I will also immobilize these areas if I am injecting them. For larger joints, plantar fascia, nerves, and entities like this, I will add an acetate to my cocktail such as Kenalog-40. This is usually about a one-half cc. For patients that require multiple injections, I decrease the amount of acetate and frequency used.

Barrett: Steroid injections are used very cautiously for our patients, and when we use them, the dosage is very small. More frequently, if we are addressing a chronic inflammatory situation, we utilize Medrol Dosepaks, usually 4mg, and every other day prednisone at 10mg per day, for four to eight weeks.

With specific reference to plantar fasciitis with Achilles tendinitis/tendinosis, I utilize stretching, weight loss when indicated, appropriate footwear selection, topical or oral steroids or anti-inflammatories, when indicated, and nighttime splinting.—Jacobs

Q ***PM:*** *Describe your protocol for treating painful biomechanical conditions such as plantar fasciitis and Achilles tendinitis.*

Smith: The core approach consists of my best evidence-based interventions of plantar fascia stretching. Dependent upon the patient, I prefer towel stretching prior to the patient's first step in the morning and a low-Dye taping (with the application of a felt arch pad) complemented by an educational approach where I discuss ice application and cooled can or frozen bottle of water rolling on the floor for 10, 15, and then 20 minutes at least daily. The patient and I have a discussion centered on the use of a selective NSAID like meloxicam daily, as long as there are no contra-indications.

In some cases, depending on the patient, I use low dose, over-the-counter Naproxen or two x 325 mg tablets of acetaminophen for pain relief for a trial period. On the other hand, the patient may elect to use the application of a counter-irritant (terpene) with menthol, like Biofreeze™ for a week to avoid systemic adverse effects. All recommended core approach components are to be used simultaneously for approximately four–six weeks. I follow up after a week to determine if the initial objective numerical pain description at presentation has been relieved by 50%, then wait another four-six weeks before I select another adjunctive intervention such as off-the-shelf orthoses or functional custom orthoses. A similar approach is taken for Achilles tendinitis initially with a directed padding, and then a surgical consult if the patient desires.

I will discuss the use of a cortisone injection for plantar fasciitis, but I will administer no more than three within a twelve-month period.—Long

Barrett: For plantar fasciopathy, diagnostic ultrasound is foundational as I can assess the level of degeneration from which that the patient suffers and match the treatment with the level of the condition. In most cases, I am now utilizing a peptide, BPC-157 intralesionally. It is infiltrated under real-time ultrasound guidance. Tendinopathy treatment follows the same protocol. When there is no optimal outcome with this, I implement endoscopic plantar fasciotomy.

Long: For plantar fasciitis and Achilles tendinitis, patients always begin with conservative treatment consistent with stretching exercises, icing, avoiding ambulating barefooted, avoiding thin-soled flat shoes, NSAIDs, prednisone, taping, and orthotics (custom or over-the-counter). I will discuss the use of a cortisone injection for plantar fasciitis, but I will administer no more than three within a twelve-month period.

Jacobs: When treating any painful or extremity pathology of biomechanical origin, it is obviously necessary to address the biomechanics and reverse any abnormalities when possible. With specific reference to plantar fasciitis with Achilles tendinitis/tendinosis, I utilize stretching, weight loss when indicated, appropriate footwear selection, topical or oral steroids or anti-inflammatories, when indicated, and nighttime splinting. If there is no improvement in one month, then I will refer the patient for physical therapy. I initially utilized rigid OTC supports. For some patients, I do recommend custom orthotics if appropriate.

Sung: Likewise, following the ACFAS-recommended protocol guidelines, I start with the cause of each condition and attempt to address the etiology while prescribing pain-re-

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lieving remedies. My practice sends a lot of patients to physical therapy for these conditions; I tend to send patients after their first visit. Depending on pain levels, I also offer injectables, strapping, taping, and over-the-counter orthotics, but if the pain persists beyond six weeks, I move to more advanced therapies as long as the pain is not out of proportion. If pain is out of proportion, I do refer for an MRI without contrast, but otherwise, my next level of treatment protocol consists of custom orthotics and advanced modalities including PRP and ESWT. Lastly, if pain is intractable and all other causes are ruled out, I do offer surgical options, with the reminder that pain may continue even after surgical intervention.

PM: *In what clinical situations would you use topical pain compound medications? How about the newer hemp- and CBD-related types?*

Jacobs: I utilize topical compound pain medications frequently. My major indication for use of a compounded analgesic is when there are relative contraindications for the use of oral medications, particularly oral anti-inflammatory pain medications. This might include patients with a history of gastrointestinal ulceration, renal disease, anti-coagulation therapy, with a history of heart failure or coronary artery disease. Similarly, I will frequently apply compounded medications for treatment of paresthesia and dysesthesia in the treatment of neuropathy.

Butterworth: I commonly offer topical compounding creams to patients to help with inflammatory conditions, and for burning neuropathic type of pain. I also think they are very helpful in patients that cannot take an anti-inflammatory due to medical conditions or who are on chronic anticoagulation therapy. I do not have experience with the hemp- or CBD-related products and have not prescribed them. In reviewing some of the literature available, they appear to be promising in some patients to aid in adequate pain control.

I commonly offer topical compounding creams to patients to help with inflammatory conditions, and for burning neuropathic type of pain.—Butterworth

Sung: I also do not use compounded topical medications as I've learned over my practicing years, it's just too much of a hassle for little effects. Since CBD is over-the-counter in my state, I recommend CBD oils and creams, depending on their skin type along with other over-the-counter topical pain relievers.

Barrett: Topical pain creams can work well in some patients, and in cases with small fiber neuropathy, with the chief complaint of burning pain, I have found applications with ketamine to be most efficacious.

The benefits associated with the use of topical pain medications include avoiding issues related to gastrointestinal problems such as swallowing difficulties, nausea, and vomiting.—Smith

Smith: The benefits associated with the use of topical pain medications include avoiding issues related to gastrointestinal problems such as swallowing difficulties, nausea, and vomiting. Secondly, there is no need for absorption from the gastrointestinal tract while eliminating the hepatic first pass effect. At the site of application, there is greater tissue concentration when compared to systemic concentration. Moreover, topical application of pain medications minimizes plasma concentrations and is associated with fewer adverse effects. Topical pain management allows patients to lower consumption of oral analgesics, thus are opioid sparing. Finally, the nature of topical analgesics' simplicity and convenience of administration may increase compliance and quality of life.

Counter-irritants with ingredients such as menthol, methyl salicylate (oil of evergreen), and camphor are called such because they create a burning or cooling sensation that distracts one's mind from the pain. As for salicylates, the same ingredients that give aspirin its pain-relieving quality are found in some creams. When absorbed into the skin, they may help with pain, particularly in joints close to the skin. Topical forms of nonsteroidal anti-inflammatory drugs have fewer of the typical NSAID side-effects like stomach upset and bleeding. Further, the main ingredient of hot chili peppers, capsaicin, is also one of the most effective ingredients for topical pain relief. It can be helpful for joint pain and for diabetic nerve pain. Lastly, lidocaine numbs pain. It can come as a gel or a patch that is simply applied to the painful area.

I do not recommend hemp- and CBD-related topical products. Though there is limited research confirming the purported topical benefits of cannabinoids, it is certain that cutaneous biology is modulated by the human endocannabinoid system. Cannabidiol, a non-psychoactive compound from the cannabis plant, has garnered significant attention in recent years for its anecdotal therapeutic potential for various pathologies, including skin and cosmetic disorders.

I would have to be able to state

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why I want to utilize the CBD product. Moreover, I would have to consider the amount of THC in the product. I would want to ask for lab testing results and frequency/amount or data from the manufacturer. I would, however, avoid any CBD products making sweeping health benefit claims. At this time, I am not comfortable in prescribing or dispensing a CBD product to my patient population, as well as I believe my patients cannot afford these products.

PM: *How do you treat diabetic neuropathy (e.g., nerve blocks, oral and/or topical medication, lasers, PT modalities, etc.)?*

Butterworth: This is one of the most challenging and frustrating problems I deal with in my practice, primarily because this entity just can't be cured and the best outcome we can hope for is improvement in most of these patients. I offer dietary supplements to all these patients. Although these don't eliminate their pain, I find many times they do help. I then offer anti-inflammatory medications to take, including both oral and topical. I find that compounding creams with gabapentin can be very effective for these patients. I believe gabapentin and Lyrica are the mainstay of treatment for these patients. I refer these patients back to their primary care physician for management of these medications since they are long-term medications.

I also offer injections for trigger point type of pain to assist in their pain management. Injections have been effective in my practice and, in many times, keep these patients walking and able to do their daily activities. In my experience, other modalities, such as lasers and light therapy, have had limited effectiveness. I have had a couple of patients who have received Qutenza with decent pain reduction. This modality has to be re-applied and given every few months, however. I am unsure of long-term results at this point since it is relatively new.

If there are super-imposed focal nerve compressions, then neurolysis/decompression has worked very well.—Barrett

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Smith: To begin, I like to assess my patients with diabetes for peripheral neuropathic pain and its effect on these patients' function and quality of life.

Then, when initiating pharmacologic intervention for diabetic peripheral neuropathy, I counsel my patients that the goal of therapy is to reduce and not necessarily to eliminate pain. This way, I have an open dialogue with them, setting my expectations, and listening and acknowledging and repeating back their expectations.

Next, I assess the patients with diabetes peripheral neuropathy for the presence of concurrent mood and sleep disorders. I also look for a multi-disciplinary team approach to treat them as appropriately as possible through other professionals that may have an enhanced scope of practice.

The patient preferences for effective oral, topical, non-traditional, and non-pharmacologic interventions for diabetic peripheral neuropathy will be openly discussed with them to best direct the plan of treatment.

As a reminder, it is acknowledged that only four FDA approved medications are labeled for diabetes peripheral neuropathy: these are pregabalin, duloxetine, tapentadol, and topical capsaicin 8% patches.

I do not suggest or use other opioids for the treatment of diabetic peripheral neuropathy.

Barrett: A large percentage of our practice is dedicated to diabetic peripheral neuropathy, which is complex and multi-factorial. If there are super-imposed focal nerve compressions, then neurolysis/decompression has worked very well. Everything is on the table for many of these patients because of the complexity of the individual cases. To achieve the ultimate outcome for patients, I need to look at them from a metabolic perspective and not just treat the symptoms. There is always neuro-inflammation present and, in most cases, a degree of microvascular impairment, so I have found that implementation of nitric oxide supplementation is highly beneficial. Treatments range from simple pharmacotherapy with agents such as gabapentin, pregabalin and duloxetine to recommendation for 10KHz spinal cord stimulation. I am also seeing very positive benefits with peripheral nerve stimulation.

I treat diabetic neuropathy with oral vitamins; i.e., Metanx, gabapentin, Lyrica, and topical neuropathy creams.—Long

Long: I treat diabetic neuropathy with oral vitamins; i.e., Metanx, gabapentin, Lyrica, and topical neuropathy creams. I always get an epidermal nerve fiber density biopsy prior to prescribing gabapentin or Lyrica.

Jacobs: My treatment of diabetic neuropathy is to emphasize better control of diabetes when appropriate, and recommend increased activity and exercise levels. I rule out concurrent entrapment neuropathies such as spinal stenosis, or more distal entrapment neuropathy in the foot or leg. Typically, I utilize traditional medications such as pregabalin or gabapentin, amitriptyline or nortriptyline. Less commonly, I will utilize drugs such as tapentadol. It is always important to rule out the presence of concurrent vascular disease, as the symptoms of both vascular disease and neuropathy may present in a similar manner. I also employ nutritional therapies such as alpha lipoic acid, L-carnitine, L-methylfolate, methylcobalamin, vitamin D, and pyridoxal 5 phosphate. More recently, spinal cord modulators are available for recalcitrant symptomatology associated with diabetic neuropathy paresthesia and dysesthesia. I do not utilize nerve blocks or unproven physical therapy modalities for the treatment of diabetic neuropathy.

Sung: Most patients who present with diabetic neuropathy in my practice usually have side effects from their metformin, so I recommend a vitamin B oral supplement. I also call their primary physicians or endocrinologists to see if those patients could be switched to a different medication in order to rule out metformin as the cause of their neuropathy. Depending on the severity of symptoms, I do recommend over-the-counter topical medications including CBD oils and creams prior to recommending oral medications including Lyrica 50mg. Generally, I do coordinate with their primary or endocrinologist. For intractable severe cases, I have referred for spinal stimulator implantation as my highest level of treatment.

Q ***PM:*** *What is your feeling about non-traditional pain therapies like acupuncture, exercise and movement, biofeedback, mind/body practices (yoga, tai-chi)?*

Long: I have nothing against non-traditional medicine. Some modalities may work for a certain population of patients better than others. I just expect them to be safe and not cause injury to my patients physically or financially. I will usually help my patients gather information about any treatments they are considering.

Smith: As a multimodal approach, I feel that non-traditional or other pain therapies have a place in relieving pain and provide a body-centered approach with chronic pain management. Some of my patients elect yoga or chair yoga. The local YMCA and libraries offer free classes of tai-chi and yoga or swimming. In residency, I was able to shadow medical acupuncture of the upper extremities and large joints. I did not witness, however, success with lower extremity chronic pain syndromes.

Sung: Usually, patients request these non-traditional pain therapies. Although there is some evidence for

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acupuncture decreasing headaches and hypertension, I do not regularly recommend it without patient initiation.

Barrett: Exercise is the most powerful drug which we have to treat patients. I have seen some success in patients with acupuncture, biofeedback, and mind/body practices. Nothing is off the table for these unfortunate folks.

Butterworth: I do not have a lot of experience with these therapies, but I tell my patients that I am for anything that works for them. I do think a lot of patients with pain and neuropathy have a psychological aspect to them so I do believe that mind and body practices can be beneficial in certain patients. I personally underwent acupuncture for a medical condition several years ago and can say that it was successful. I don't know whether it was the actual modality itself, or the mind and mental control, but I will say it helped.

Exercise is the most powerful drug which we have to treat patients.—Barrett

As a multimodal approach, I feel that non-traditional or other pain therapies have a place in relieving pain and provide a body-centered approach with chronic pain management.—Smith

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

Butterworth: I had a very frustrating patient with significant pain in her right foot and ankle for five years duration when she presented to me. She related a traumatic event when her pain was initiated, but x-rays and MRIs and further testing were always negative. She had seen many doctors prior to me, who stated that they could not help her. She was referred to pain management. She was on narcotics, NSAIDs, gabapentin, and had exhausted physical therapy modalities when she presented to me. I tried immobilization and further physical therapy. I tried injection therapy. I tried oral and topical medications, but I could not improve her pain either.

I then opted for a surgical intervention. I found a linear tear in her peroneal tendon which I repaired, and then to my surprise, I found her sural nerve had been "ruptured" and had developed a neuroma over the lateral calcaneus. I excised the nerve and wrapped it an amniotic graft and tucked it away into the fat behind the lateral malleolus. The patient related immediate relief, and all resolution of her pain. She is now well, healed, and back to normal activities. She tells me I have given her life back to her.

Long: My most memorable pain management moment occurred a couple years after residency. My patient came in with pain out of control; her foot was a bluish purple. I diagnosed her immediately with CRPS, as my heart paused for a couple of seconds. It was my first post-operative complication.

Smith: Early in my career, I had a 32-year-old female patient who presented to the office crying, upset, and in a distraught state. She explained that she worked 12 to 14 hours daily at the local boat manufacturer.. She used up all her sick days. She was on probation, and she could not lose her job. Both her feet were killing her for more than six months. She saw the company insurance general doctor who referred her to the bone doctor. She said she did see a foot doctor. The pain was ten out of ten. Frustrated, she had nowhere to turn. To make matters worse, she confessed that she had no funds to pay me for my service because her baby was sick.

She was my last patient of the day, so I sat and listened to her. I took bilateral anterior-posterior and lateral weight-bearing x-rays. My differential diagnosis was bilateral plantar fasciitis. I went to work with my protocol, utilizing both my podiatric and pedorthist skill sets. I manufactured two sets of simple Poron/Plastazote inserts in my makeshift laboratory. I taped her with felt padding, along with dispensing two days of over-the-counter NSAIDs, acetaminophen, and written instructions for towel stretching and ice application.

After taking her foot measurements, I searched for a pair of shoes for her after from my supply of shoes I donate to my homeless clinic. I dispensed them to her. She dug through her purse and asked if she could give me 75 cents for my time. I accepted the payment to spare her embarrassment.

Two weeks later, she came into the clinic excited, stating that her feet no longer hurt her, and she could do her job. She no long felt bad, and was very happy. Six months later, her husband presented to clinic and asked: if I could make his wife two more pairs of what she calls her magic slippers? I did just that. She returned on and off for an additional five years—happy and carefree. **PM**

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