

## **Roundtable: Pedorthics and Podiatry**

Although the relationship of the shoe and the foot are a close fit, the same cannot always be said of the professions of podiatry and pedorthics. Chiropodists, podiatry's predecessors, received extensive training in shoe modification and fitting. This area has been virtually eliminated in today's podiatric curriculum and replaced with surgical and biomechanical courses.

When podiatrists left this area of specialization, the profession of pedorthics evolved to fill in this void. In recent years, many DPM's have discovered the benefits of becoming certified in pedorthics. This roundtable was organized by Thomas Schedler, Executive Director of the American College of Foot and Ankle Surgeons, and was conducted at the ACFAS 2002 Annual Meeting.

The following practitioners participated in this fascinating and informative discussion:

David Levine, DPM, C.Ped, is a member of the ACFAS and also a member of the Pedorthic Foot Association, where he serves on the Board of Directors. He practices in Frederick, Maryland.

Don Haynes is a practicing pedorthist in Nashville, Tennessee. He's a past president of PFA.

John Giurini, DPM, is currently a board of director member of the ACFAS. He is also Chief of the Division of Podiatry of the Beth Israel Deaconess Medical Center in Boston, MA.

Nathan Schwartz, DPM, C.Ped, has been a podiatrist for 30 years and is a member of the American College of Foot and Ankle Surgeons. He has been a pedorthist for about six years.

Podiatry Management: Tell us a little bit about pedorthics. How did it begin?

Haynes: Pedorthics is the design, manufacture, modification and fit of footwear, including foot orthotics, to relieve foot problems caused by disease, overuse, congenital defect or injury. It's footwear carefully fitted to relieve or accommodate temporary or permanent foot problems. It can look so mainstream that others don't realize a foot problem exists and it costs a lot less than people expect. And it can help people stay healthy.

We have 1,500 certified pedorthists now in the world. We are not just America anymore, we are international. The Pedorthic Footwear Association actually began to certify pedorthists in about 1973. PFA was started by a group of what you would consider shoe fitters -cobblers- and they wanted to elevate the profession. So they got together and formed an organization to set standards and to begin educating. That's how the PFA began.

PM: How does one become certified as a pedorthist?

Haynes: The standards are changing all the time so the best thing for me to do is to refer you to the Board for Certification in Pedorthics. You can reach them by going to the web site, [www.pedorthics.org](http://www.pedorthics.org). For the podiatrist it's a reasonably simple process because of your educational background. I think that this is an excellent time to become certified because the standards are going to change over the next few months.

PM: And how are the standards going to change?

Haynes: It's going to be much more difficult to create some time away from your practice. The clinical hours required will be increased.

PM: Let's talk about the general feel of cooperation between podiatrists and pedorthists. The pedorthist and podiatrist have different perspectives when it comes to biomechanics and the fabrication of orthotic devices. What differences do you see between podiatrist and pedorthist?

Schwartz: The biggest difference that I can see is that pedorthists tend to use softer devices whereas podiatrists tend to use more rigid orthoses that are probably a little bit less forgiving.

Giurini: I think that from my experience with pedorthists, they lean towards the softer appliances, maybe more accommodative, whereas with podiatrists we tend to use more functional devices, the polypropylenes and the rigid devices. In my own practice I tend to shy away from these devices because I deal with a lot of diabetic patients with insensitivity and so I tend to actually practice more like a pedorthist than I do a podiatrist in that regard.

Haynes: As a certified pedorthist, I look at the foot orthotic, the shoe, and the foot as working together, so I think most pedorthists also look at it being a unit and the shoe being an integral part of what goes on. You take the best foot orthotic in the world and put it in a shoe that is worn out or misaligned, and it cannot operate. It's just like a glass. If you fill the glass with water and leave it on this table, it's fine. You take the same glass and put it on a bed and sit down beside it, it turns over. There's nothing at all wrong with the glass. It's just that it can't operate in that environment. So that's why a pedorthist considers the shoe so important.

Levine: I think one of the differences lies in our education. I think as podiatrists, going through school, we learn about the human body. We start at the head and work our way down to the foot and stop at the orthotic device. Pedorthists start at the ground and work their way up to the foot. I think that the perspectives that we have about how things work should come down to the shoe and making things work together.

PM: What is the best way to establish a relationship between DPM's and C.Ped's so that neither group feels as if the other is "stealing" patients or infringing on each other's territory?

Schwartz: I feel that the biggest, most important thing is communication. And not trying to infringe on another person's area of expertise. If a podiatrist wishes to make the device that goes within the shoe, this should be communicated to the pedorthist and the pedorthist then can take the device and fit the appropriate shoe to the device, and the patient. Without that communication, I think that potentially adversarial situations can arise and the relationship could be lost.

Giurini: Communication is clearly key here. I use pedorthists very frequently. Most of the time when I send the patient to the pedorthist, whether it's for bracing, orthoses, or shoe modifications, I tell the patient to have the pedorthist call me if there are any questions or concerns about my prescription and vice versa. If there is something that I specifically am concerned about or I have questions about or need assistance with, I will call the pedorthist personally and we will discuss it over the phone.

I think if you can do that, issues about who does what or infringing on people's territories tend to go away and you have a much more amicable working relationship. This has never been a major issue in my practice. If situations arise where I feel that a certain device may not be appropriate for a particular patient or certain modifications weren't made the way I thought they might have been made, I will pick up the phone and discuss it with the pedorthist. He may have a very good reason why he did what he did, but that has to be discussed. As long as we can maintain the lines of communication, I don't see that to be an issue.

Haynes: I agree that communication is probably the most important thing that we do. In my practice obviously my involvement comes from a prescription and if I have a question, I call and get a clarification. The other thing that I do is I have people who come into my office because they now have a foot problem. I don't start any type of thing, I just refer that patient to the podiatrist. I have a very good relationship and we just

refer back and forth. And so my job as a pedorthist never begins unless I have a prescription.

The other thing that I do in my practice is when I deliver and do a follow-up, I prepare a report to the physician that I send out which tells the physician what I did and if I saw anything that I considered unique. I include the diagnosis that was on the original prescription and note that the patient has been referred back to the physician for further follow-up if he or she needs it.

Levine: I think each community is different. I think each podiatrist is different as far as what the needs of a pedorthist might be. And I think that's probably where some of the issues of stealing patients comes up. I think one way around that is to focus on the least common denominator, and that is the shoe. Because there certainly are more podiatrists that don't deal with shoes than do. Start with the shoe and then that makes bridges for what comes after the shoe, whether it's the orthotic, surgery or whatever is necessary .

PM: When should a podiatrist use a pedorthist? How can a pedorthist help a podiatrist?

Schwartz: I think in most instances podiatrists do not dispense shoes. As Don Haynes has brought out, it's extremely important to have a shoe that the orthotic will fit in along with the patient's foot. The pedorthist is definitely in the best position to recommend and dispense that type of shoe.

Giurini: I know that at the podiatric medical school level, there is very little discussion about shoe modifications and conservative management. I learned more in my residency program. I was fortunate that when I went through school we still had a few chiropodists who knew how to make pads and shoe modifications. In my residency there were one or two individuals that I worked with who still imparted that knowledge to me.

I think today that art has gone away and the pedorthists are much better at shoe modifications and understanding how to fit shoes than many podiatrists. Using the pedorthist is a valuable resource, especially consulting with them in some of the more difficult problems that we deal with. They are much more on top of the shoe materials, the modifications, the terminology and I think consulting with them is a smart thing to do in those groups of patients.

Haynes: This is a fashion driven world and the shoe that exists in January many times does not exist in September. We have a new type of shoe now called Euro Comfort. Some of our shoes are very appropriate for comfortable feet and for maintaining whatever we want with an orthotic. A pedorthist spends a great deal of time shopping for shoes. Every time I see a foot, I'm automatically matching up a shoe and that foot. I don't think a podiatrist can do that to the extent that we do.

All of us have so many clients or patients that are looking for something that looks a little nicer and many manufacturers actually offer that. The problem is they only offer these shoes for a season or two and sometimes the pedorthist can actually pick up on that and supply that product. The other thing is we carry an inventory. so we can fit right there.

Levine: It is very difficult for a podiatrist to actually dispense shoes. I think the reason is the inventory is always changing and it's a very very time-consuming endeavor. Unless the podiatrist is truly committed to it, it's a difficult thing to manage. One reason is that the minor problems that patients complain of may be a real time-drain on the podiatrist. So the podiatrist is certainly better served working with the pedorthist. I think it gets complicated when you go from a foot that can go into a discount shoe store to a foot that needs a medical device. I think that when people cross that line, it's time for a pedorthist to be utilized.

PM: What can podiatric surgeons do to increase their exposure and accessibility to certified pedorthists?

Schwartz: I think refer patients to them. I think that it's a win-win situation from the standpoint that patients would get the best care and it would ingratiate the C-Ped's to also refer patients back.

Giurini: We all deal with patients that are in need of shoes, special shoes or specific modifications. I think identifying certified pedorthists in the community who are knowledgeable in that area and picking up the phone and calling them is important. Just showing that you have an interest in the field and some knowledge and showing the pedorthist that you are willing to refer patients is a good way to start.

Haynes: I agree completely. The referral process is probably the best process. I would hope that every C. Ped would be more than happy to work with the podiatrist.

PM: How does a podiatrist know who is a competent certified pedorthist?

Haynes: I guess you have to try them, let them do some work. We work for a lot of different physicians and I think it would probably amaze you to see the ones who like one thing and don't like another. You would have to learn to work with the physician and give that physician what he or she is looking for.

Speaking as a C.Ped, that's part of my job. I enjoy doing that. If you get something back that's not what you want, that information is of great value to me because, number one, we will change it and make it right, the way you want it. Number two, next time we will know what you want and solve that problem for you.

Levine: I pretty much agree with everything that has been said so far. But, it seems to me that many podiatrists would have a hard time agreeing with everything that is said here. I have the feeling that podiatrists in general, and I might be wrong, really

want more control of the patient. And I think that's where the insecurity lies and I think that's where a lot of podiatrists have a hard time referring people to pedorthists.

PM: What steps can podiatrists take to ensure that they have the control that they need?

Levine: It comes back to communication and understanding what a pedorthist is and what a pedorthist does and the fact that they fill prescriptions. They don't diagnose. They fill the prescription that is written so they are basically an extension of the podiatrist. C.Ped's are technicians for the podiatrist to utilize to meet the goals that DPM's want to achieve with their patients.

PM: Don, What type of conditions do podiatrists frequently refer to you?

Haynes: I see a lot of diabetic feet, a lot of Charcot deformity. I see bunions, hammertoes and Morton's neuromas, and a variety of biomechanical problems.

PM: How do you treat an uncompensated rearfoot?

Haynes: There are two approaches. One is with the shoe and one is with an orthotic. We would use either a wedge on the shoe or we would use a flare. A wedge is something that would come from the bottom, which would be on the plantar surface of the shoe. A flare would be on the side of the shoe to control the rolling. There is the flare right there.

Levine: To treat uncompensated rearfoot varus, I would consider that to be something that would be symptomatic from heel strike to propulsion. With an orthotic device you really have minimal control at heel strike. You control the foot when it's on the ground. What you want to do is control the environment in which the foot functions in as much of the gait cycle as you can. By modifying a shoe to enable the foot to be controlled from heel strike, you can do that by widening the shoe, by adding a flare on it,

or by putting an external lateral counter. There are many ways you can affect the environment in which the foot functions.

Schwartz: I think this is an area that is best treated by pedorthists. As a podiatrist, I don't really think that we have a mechanism, except for surgery, to treat an uncompensated varus. Most of our devices tend to invert the foot, which is exactly what you don't want to do. This lateral buttress, or lateral flare of just the heel, is excellent and it really does work.

Giurini: I agree. My usual mode of treatment for an uncompensated varus is to make an orthotic device that supports the foot and not so much try to change the mechanics of the foot. I think the majority of the support or the control comes from the external flare or a lateral Cofferdam, where you have the lateral flare and the support in the heel. I will refer to the pedorthist for that kind of modification.

PM: What considerations do you take for a patient who has undergone a transmetatarsal amputation?

Haynes: On a transmet, if it's a traumatic injury, then you are dealing with basically a healthy foot again. So you would consider a rocker with a steel shank, heel to toe, and an amputation filler. These patients do very well. On a diabetic foot, you are going to have to worry about wounds again and so you are going to use some type of a toe filler. You are going to again do a rigid rocker, probably a heel to toe. You are also going to have to compensate for the non-affected foot. And then you are going to have to worry about the plantar flexion and you are going to have to worry about how you are going to continue to unload any hot spots that will be residual, which they nearly always are.

Levine: With the trans-metatarsal amputation, there are a lot of biomechanical considerations to keep in mind, such as: at what level has the trans-metatarsal amputation

occurred; whether it's with very little metatarsal or whether there is still a fair amount of metatarsal left; and whether there is an equinus deformity that needs to be accounted for with the build-up of the heel.

One of the most important things I think as far as propulsion is concerned is a rocker sole. There are many different variations of a rocker sole. That's something that podiatrists could certainly benefit from having more knowledge about. Take the apex of the rocker. Typically when you think of a rocker sole, you think of adding maybe a half inch of material and then tapering it from the ball of the foot forward. But if the person has an abducted gait, you need to rotate the apex in order to keep the person going in a forward direction. These biomechanical considerations are very important and I think, in many cases, the details aren't really sought after by podiatrists. This is just another way that a podiatrist can rely upon a pedorthist to convey the kind of mechanical considerations that need to be met.

Schwartz: If there is no motion allowed within the filler allowed, then a rocker-edge rocker bottom is necessary, otherwise the filler will abut against the end of the amputated foot. If there is motion, then the rocker bottom may not be necessary if it's in the natural break of the shoe. There is usually either lateral or medial instability and in my experience it is usually lateral. These patients will tend to invert after a trans-med amputation. And along with any other type of rocker bottom modification, I think that a lateral flare is extremely important. Once in a while a patient will excessively pronate and then of course there will be a medial buttress. I think that's an integral part of the follow-up with these transmetatarsal amputations.

Giurini: My approach to transmetatarsal amputation may be a tad bit different. I will usually start out with a conventional shoe with a rocker sole and some type of filler, although the type of filler that I recommend may be something as simple as lamb's wool,

not anything terribly rigid. This is because I'm very concerned about the potential for recurrent ulcerations. We also fabricate a very soft type of appliance: an orthotic device for cushioning and shock absorption in the neuropathic patient.

If patients, however, go on to continued ulcerations, in spite of good shoe therapy and good orthotic devices, then I would go to the fabrication of a short shoe, one that matches the TMA, because I think that the best shoe for a short foot is a short shoe with a rocker sole with the leather carried up above the ankle joint for ankle stability. Clearly going to a short shoe makes people very self-conscious, so I do try to work with the patient and the pedorthist in trying to accommodate the patient.

PM: Don, what steps do you take to avoid recurrence of plantar ulcerations in diabetic patients who are neuropathic or who have vascularly compromised feet?

Haynes: The choice of materials for a pedorthist is really probably the number one thing. I'm going to assume that we have a shoe that has the proper rocker and has the proper depth. A lot of times if it's a diabetic patient, we will have made a custom shoe. You are going to have some bony prominences normally and we watch those. Follow-up is one of the best ways for us, so we will use a combination of plastazote, Poron and some type of a thermocork that will literally mold to each bony prominence.

You can actually shorten a shoe a lot- an inch, and it's still not as cosmetically a big a problem. If you start your rocker proximal to the amputation site, you can unload and you get some of the effects of having a shorter shoe and still address some of the cosmetics that go along with that.

Levine: In order to avoid recurrence of plantar ulcerations, one of the best things to do is get a shoe that fits. Depending on how the shoe fits, you can do a multi-density insert of some type. There are some simple things you can do: e.g. inkmat impressions; you can have the person step on the inkmat and see where the areas of high pressure are

or you can certainly become more sophisticated and use pressure-mapping devices to actually see how they are functioning in the shoe. This can be done with and without the inserts, to actually get a good handle on what the foot is doing and how it's functioning.

Schwartz: Along with using multi-density insoles that are accommodative, if the shoe will not allow an insert to be inserted, a "drill and fill" method can be used in which the sole may be split, a large hole can be made into the shoe and it can be filled with a softer substance that will help off-weight that area as well.

Giurini: I think this is probably one of the most important areas where podiatric surgeons and pedorthists can truly work together and where their skills are truly complementary. Don mentioned follow-up and the best way to avoid ulcerations and the recurrence of ulceration is just conscientious care. By conscientious care I mean most of these ulcerations are a result of bony prominences, either on the side of the foot or plantar aspect of the foot, whether it's related to Charcot deformities or prior amputations. It's important for us as podiatrists to take care of those hyperkeratotic lesions but also it's important to examine the orthotic device and make sure that it's in good shape, look at the shoe and have that evaluated on an ongoing regular basis.

PM: What is your treatment approach to posterior tibial dysfunction?

Haynes: Posterior tib can be taken care of in a couple of ways as far as pedorthists are concerned. We can fabricate a UCB device (invented at University of Berkeley at California) or we can do what I call a heel reinforcement, which means we can actually make a buttress all the way around the medial and lateral aspects of the shoe. I let the patient wear the shoe for a couple of weeks and let it begin to take the shape of that foot. Then we come back and put the buttress on. It works pretty well. It depends on the patient. So UCB for the people that are more cosmetic in nature works because it will

go inside of the shoe and most of the deformity won't show. It also depends on whether it's a fixed deformity or whether we can actually accommodate some of these areas.

Levine: Obviously there are a lot of grades of dysfunction present. You can have minor to severe and obviously as you get more severe, the foot becomes more rigid and less forgiving. Some of these external shoe modifications with the rigid deformity probably wouldn't be tolerated very well as the foot hits up against something on the outside of the shoe. You want to know how severe the deformity is. As far as treatment for a mid-range problem with posterior tibial tendon dysfunction, you want to start with the shoe once again. You need a wide base of support. You don't want a shoe that has a real narrow sole, so the foot can hang over. You want a wide base of support. That gives you plenty of room inside the shoe to work with in order to make a device that will have a deep cup, UCBL type or however you want to accomplish that.

Schwartz: I think it's also quite important to have the shoe extend proximal to the ankle joint. Initially when a person comes into my office and I suspect a level one or two posterior tibular dysfunction, I'll put them in an immobilizer. Subsequent to that I would like to see them in an orthotic and some sort of high-top boot for a while. The preference is a hiking boot - that works quite well because it's rigid and it also gives ankle support.

Giurini: This is probably one of the more difficult conditions that we try to manage conservatively for patients who are not surgical candidates for whatever reason. In my hands I find that the UCBL works better than any of the other type of orthotic devices that are available. I also utilize the shoe modifications, such as a medial buttress, and a medial flare. I would like to try to get these patients into high-top shoes as well to give better ankle support and control the entire rear foot.

PM: What should a prescription to a pedorthist contain?

Haynes: A diagnosis and any information that you think that the pedorthist needs to know. A goal. This is what you expect that patient to be able to do once he or she are fit with a shoe or an orthotic or both. As Dr. Schwartz said earlier, I think it's a really good thing for us to know whether or not you want to provide the orthotic or want us to provide the orthotic and then what it is you want to be done. The more time you spend on that, and the clearer you make it, the more accurately you are going to get what you have in mind.

Levine: I agree with what Don said and I think that only serves to help the podiatrist. Having a pedorthist at my office who fabricates the orthotic devices, I know that using him makes me more conscious of the details that I need to fill out on that prescription. I think more about what I want to accomplish, the goal and the treatment.

Giurini: Like David, I have a pedorthist who comes to my office twice a week for bracing, shoe modifications, special orthoses. Just spending time with him and talking with him and seeing what kind of things he can do has helped me, has educated me in terms of how to write a prescription and what I want to accomplish, and being able to communicate that in a much clearer way has been invaluable.

PM: What is the most important detail in a prescription? When you are fitting shoes, what factors do you consider?

Haynes: I don't know that there is one that's more important than the other. You need to know the diagnosis you are working on. A lot of times I get prescriptions that will say posterior tib, evaluate and treat, that kind of thing. Other times I will get a very detailed description saying, for example, "I want a rocker sole or a medial buttress or whatever." I think all of it is important. I think that you are basically going to get what you write on that prescription and if you have got a relationship with the pedorthist,

then they already understand what you want. And if you don't have that relationship, then you have to be clear on what you want.

PM: Explain the basic benefits of the Medicare therapeutic shoe bill.

Giurini: The therapeutic shoe bill was designed for diabetic patients at risk factor for ulceration in an attempt to reduce the risk of ulcerations and reduce the rate of amputations as well. Medicare will reimburse for one pair of shoes and two sets of insoles during the year. For many patients, the inability to purchase shoes or orthotic devices of this type is a barrier to receiving care. The therapeutic shoe bill is a way of assisting those patients that truly need this kind of service. The goal is to try to reduce the risk of ulcerations, hospitalizations, infections, and eventual amputation.

Haynes: This is what Medicare says that a patient can have in a calendar year. Patients can have a depth shoe with three pair of orthotics or inserts; or a custom shoe with two pair of inserts. You can exchange out a shoe modification for an insert if you want to. It's a wonderful benefit and I'm sure that this has prevented amputations and provided footwear and care for people that could not have got it otherwise.

Levine: To expand on that a bit, it is certainly a worthwhile benefit. Many of these people that need this benefit have peripheral neuropathy and I've had countless situations where people will come in and they will be wearing shoes that are the wrong size. They may be off by as much as two sizes sometimes. They say, "I was a size 8 when I was 25, and I'm still a size 8." But although they accept that one's face changes over the years, they don't take into account that their feet might change as well. There are certainly a lot of podiatrists jumping on this Medicare therapeutic shoe bill, but I think the key is to do it for the right reasons. If we do, I think we certainly can save people from needless amputations.

Schwartz: These patients are at risk and I don't feel that they should be subject to the shoe shop employee to fit them for their condition. The size of the shoe is just a starting point because each shoe has different lengths and grading of their sizes. Like a size 7 may be a size 8 in another shoe. Another factor is the materials that are to be used in the shoe. A soft forgiving leather certainly would be a whole lot better than a shoe that is less forgiving like a Corfam shoe or some sort of synthetic. The last of the shoe is a factor as well. It must be consistent with the shape of the foot that is to be treated. This is a complex art and should be left only to a professional and I think Medicare does understand that and in the long run they will save money.

PM: As recent as a few years ago our Podiatry Management Survey showed that only approximately one in four podiatrists were participating in the Medicare Therapeutic Bill. Recently, there has been a significant increase in the number of podiatrists in the program, yet still approximately half the podiatric community is not involved. Can you explain why?

Giurini: When the Medicare Therapeutic Shoe Bill first came out, patients were asking about it. I was very familiar with it, having participated with the ADA Foot Council in sponsoring it. We have had some difficulty in getting patients covered for this service. I think there has been some confusion. Medicare has not been very accommodating to patients. Also, I don't think many doctors understood how to get patients covered for this. In the last several years I have noticed that when I have sent patients to the pedorthist for depth shoes or custom shoes, the pedorthists have been very helpful in working with the physician and the patients. They will send pre-printed forms that have the diagnoses that are covered. It's a check list and they will take care of the paper work for the patient. From our standpoint, that's made our life a lot easier in

utilizing the therapeutic shoe bill. I suspect that that may be part of the reason why you are seeing some increase in the utilization.

I know that I have started using it much more frequently. Still it's not being used as much as it probably could be.

Haynes: In order to get a coverage under Medicare, you have to have a prescription and you have to have a certificate of medical necessity. The prescription has to come from the referring physician and the medical necessity has to come from the certifying physician, who is the one that is actually treating the systemic disease. It gets to be a complicated bout with the paperwork. But it's really important. In terms of medical necessity, just because you are diabetic you don't automatically qualify for a pair of shoes and inserts. You have to meet certain conditions, which the certifying physician has to attest to. Most of the time it takes two physicians, one prescribing the necessity of the shoe and then one attesting to the disease and the process that is going on.

Levine: An interesting point along those lines is qualifying. Maybe it's the way I read the regulations, but it seems to me a patient may not be qualified for foot care by a podiatrist but qualified for shoes.

There are more podiatrists taking advantage of this program, but I think it's a difficult thing to take advantage of because the podiatrist would have to have the shoes. There are, however, different levels of involvement. The podiatrist may only choose to get involved with the inserts and not deal with the shoe, or deal with the shoe and not the inserts. I think the podiatrists are probably feeling their way through the level of involvement they are comfortable with.

Schwartz: I think it's pretty difficult for the average podiatrist to be involved in this program successfully because of the difficulty in fitting the diabetic. You have to find the right shoe for the right foot, and that's not a length/width issue. It's a matter of

having the right shoe for the right foot. If a person has a Charcot foot, you are going to have to have a very specific shoe to accommodate that type of deformity. Even if you know the right shoe, then you are going to have to have some sort of fitting stock to appreciate what exact size would work best for that patient. It's not just a matter of looking in a brochure and seeing a shoe and asking the patient what size foot they have. It's much more involved than that.

Giurini: Just because someone has diabetes it doesn't necessarily mean that the shoes are a covered service. I have patients who happen to have diabetes and who ask me about the Therapeutic Shoe Bill. Because they lack the necessary risk factors, the shoes and orthoses are not covered services.

PM: What is the difference between a depth inlay shoe and a custom shoe?

Haynes: The depth inlay shoe is a manufactured shoe, a shoe company actually makes different types of shoes. There are two or three things that a depth inlay shoe has to be, but the number one thing is that it has what we call depth in the shoe, meaning vertical depth. Normally that's 3/16ths of an inch, or more, built into the shoe so that there is room for the foot and room for the insert.

A custom shoe is a shoe that is made from a positive cast, made especially for that foot, so that it wouldn't fit anyone else. It's only made for that foot. Usually a custom shoe is made for some type of deformity and it will only fit the foot that it's made for.

Levine: I think there is another category that can be added to those two and that would be a customized shoe. Many times people have asymmetric appearing feet and they might be able to fit in a conventional shoe on one foot, but not the other foot. Sometimes that shoe can be adapted to fit the deformity present in the other foot, such as re-lasting a shoe. A shoe can be taken apart. There are any number of creative modifications that can be done to accommodate a foot. In many cases people are

probably better off in a shoe that is customized rather than making a custom shoe.

Certainly from an economic standpoint, it's easy to reproduce and it's cheaper for the person to have a shoe that is customized.

Schwartz: Custom shoes that are extremely expensive, and I'm talking about ones that range over \$1,000, probably would perform quite well, but there isn't any insurance that will pay for such a shoe.

Giurini: I prescribe added-depth shoes quite a bit. I also use custom molded shoes quite a bit. From the standpoint of the patient, there is a little bit more patient acceptance of added-depth shoes. I'm not a real big fan of a custom shoe. It takes a lot for me to prescribe a custom shoe because I find that they are not very functional. There is also patient resistance to it. If you can customize a shoe they have, if that works for the clinical situation, that's probably the better alternative.

PM: How do you use elevations in shoes?

Haynes: When you have a leg length discrepancy. Normally we correct 75% of the length discrepancy. My standard is if it's an inch or more, then you are going to find that we will actually put a medial and a lateral flare on it and we will also include a rocker so you are getting more than one modification when you put an elevation on a shoe.

Levine: I'm a big proponent of shoe modifications. I'm fortunate enough to have a gentleman who works for me who does only that. We do a lot in the way of lifts. I think that is an area that is often undiagnosed. I think as podiatrists, we see a lot of people that have asymmetric pathologies such as hallux limitus on one foot that could be the result of a leg length discrepancy. My general feeling is if it's an eighth-inch, I will put a heel lift inside the shoe but if it's anything above that, I will put it on the sole. It can be done in a skilled fashion so that it's barely perceptible to anybody looking. It's

modified so it's in a rocker shape so that it's not going to affect the flexibility of the shoe or the ability of the person to ambulate efficiently.

Schwartz: I think that it's extremely important if a shoe is to be modified to accommodate limb length discrepancy, that the shoe be made light with a durable sole. This can easily be done with a material called air crepe. The medial lateral flare is extremely important because as the build-up increases, you need more surface contact to avoid instability. I feel that in most instances, rather than just a heel lift, there should be a heel and sole lift. I feel that sometimes even with the best calculations, there still may be the need for adjustments.

One way I judge the appropriate size of the lift is to get a telephone book and keep adding or subtracting pages until the patient feels comfortable, and then I measure that thickness of pages and then use that as my starting point for a filler, or a lift modification.

Giurini: I think shoe modifications are clearly worthwhile in treating podiatric patients. We are podiatric surgeons, but not everybody is a surgical candidate. You have to be able to understand and recognize the modifications that can be made to a shoe to help your patients achieve pain-free ambulation and that includes rocker soles, elevations, flares and medial and lateral buttresses. These are all modifications that can be helpful in treating these patients for a variety of conditions.

PM: When fabricating orthotic devices, do you see the shoe as an integral or a separate issue in making orthotics as effective as possible?

Haynes: You know how I'm going to answer that. It's an integral part of the patient's care.

Levine: I think it's obvious to all of us that it is an integral part in making the orthotic devices effective as possible, but I think many times we all see that that's not the

case. We see orthotic devices being dispensed that might be three-quarters in length.

The person has to go out and find a shoe to fit the orthotic instead of fitting the foot. The patient is left on their own for these devices and I think that's a real problem. I think when a device is made, it needs to be made for the type of shoe the person wears most commonly, so that it can fit.

Schwartz: I feel that if a shoe is tilted because of wear or not adequate in size to accommodate the device, this further compromises the effectiveness of the device.

Giurini: This is a very interesting question. I think it's obvious to all of us that the shoe and the orthotic device must work together. I can't tell you the number of times a patient comes in after I have made an orthotic device or someone else has made an orthotic device and tells me, "well, it's not working" or "it doesn't feel comfortable." I will then look at the shoe they are wearing and find that the heel is broken down, the outer sole is worn out, or they are wearing it in a canvas sneaker with no heel counter support. It's not that the orthotic device isn't working, it's that the shoe is inappropriate, outdated, or worn out. The two clearly have to work together to assist the patient.

PM: What are the advantages to a podiatrist to become certified as a pedorthist?

Haynes: To me it's a natural thing that a podiatrist and a C. Ped work together. The biggest reason that I see that you might want to become a certified pedorthist is to understand what the certified pedorthist can do for your practice. I don't expect every podiatrist to practice pedorthics, but we have all talked about communication and that might be the greatest communicator that we have: that you understand what we do.

Levine: I think it certainly makes sense to have as much education as possible and that certainly includes becoming a certified pedorthist. I think from a podiatric standpoint, it just adds another tool. It's like these external fixation devices that are extremely popular now.

Shoe modifications are just another tool; whether people need surgery or not, they are still going to need to wear shoes. They may still need an orthotic device. The surgery is not the end-all or the be-all, it's part of the overall treatment and shoes fit in perfectly with that.

Schwartz: Understanding what can be done to a shoe will allow you to develop a customized prescription for a given condition, and if you didn't have that knowledge, you may not be able to formulate.

Giurini: The main advantage as I see it for podiatrists becoming certified as pedorthists is to give you another level of understanding, so you have the basis and the information to discuss intelligently with a pedorthist. You may not necessarily be the one to make those modifications, but at least you know what you are talking about. You speak the same language.