



# *Healthy Feet For Life*

*A Guide To Healthier Feet*

**Ten most common foot conditions explained in detail.**



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A Guide To Healthier Feet

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## Athlete's Foot

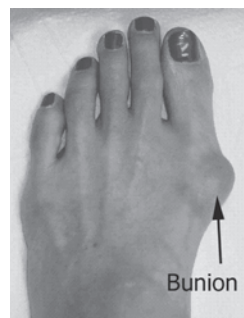
Athlete's foot is caused by a fungal infection of the skin on the foot. The majority of these infections are caused by one or several fungal agents called dermatophytes. The infection most often presents with moist, scaling between the toes with occasional small blisters or fissures. As the blistering breaks, the infection spreads and can involve large areas of the skin on the foot. The burning and itching that accompany the blisters may cause great discomfort that can be relieved by opening and draining the blisters or applying cool water compresses. The infection can also occur as isolated circular lesions on the bottom or top of the foot. As the skin breaks down from the fungal infection, a secondary bacterial infection can ensue.

### *Treatment*

Treatment should be directed at controlling the fungal infection and treating any secondary bacterial infection. Soaking the feet in Epsom salts and warm water is helpful. Wearing open-toe shoes to reduce moisture accumulation will also help in the control and spread of the infection. There are topical and oral medications available for the treatment of athlete's foot. A KOH microscopic exam or skin biopsy may be needed in rare cases.

## Bunions

Bunions are misaligned big toe joints which can become swollen and tender. The deformity causes the big toe joint to slant outward and the big toe to angle toward the other toes. This deformity often presents with a painful protrusion of bone on the foot. Because this joint carries a lot of the body's weight while walking, bunions can cause extreme pain if left untreated. The joint itself may become stiff, causing pain when wearing shoes.



There are conservative steps which can minimize a painful bunion and should always be attempted first. When conservative treatments don't relieve your symptoms, surgery is frequently recommended to correct the problem.

*Conservative Treatment*

- Wear shoes with a wide toe box
- Apply ice packs several times a day
- Oral anti-inflammatory medicines
- Apply non-medicated bunion pads
- Avoid high-heeled shoes

*Surgical Treatment*

When conservative treatment fails to relieve the discomfort, bunion surgery may be necessary to reduce pressure and repair the toe joint. Several types of surgical procedures can be performed. A simple bunionectomy, in which only the bony prominence is removed, may be used for the less severe deformity. Severe bunions may require a more involved procedure, which includes cutting the bone and realigning the joint. Mild swelling and some discomfort are common for several weeks following surgery.

## Diabetes in the United States

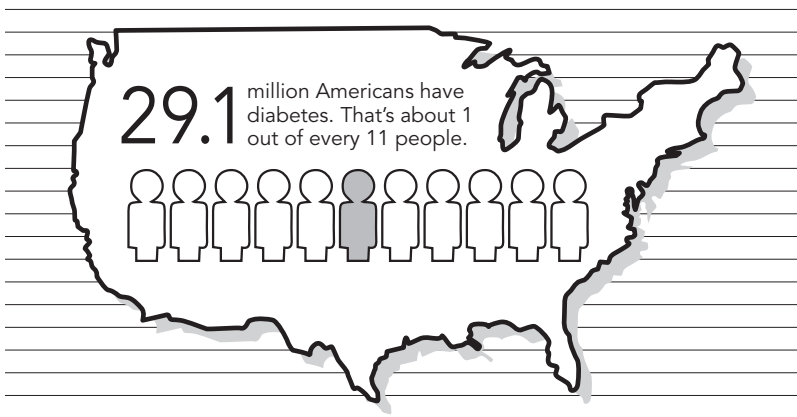


Figure A

## Diabetes

A recent publication by the CDC indicates 29.1 million people or 9.3% of the United States population has diabetes (see figure A). Diabetes is a group of diseases marked by high levels of blood glucose resulting from problems in how insulin works, how insulin is produced, or both. There two types of diabetes, type 1 and type 2 (see figure B).

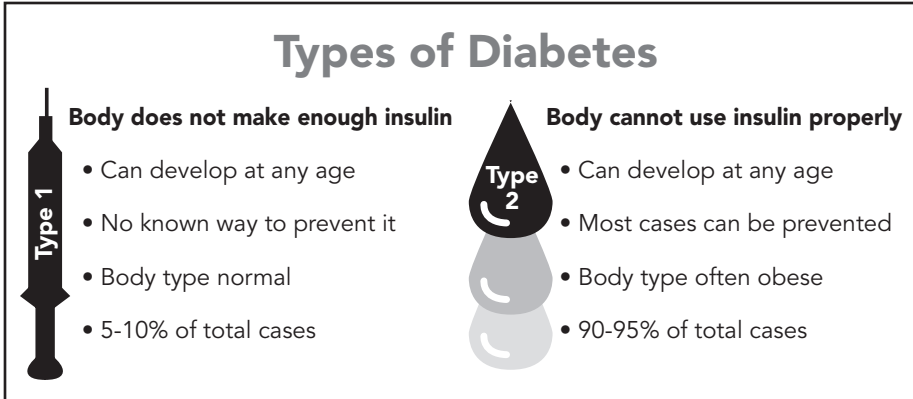


Figure B

Diabetes that is not well-controlled can cause damage to the nervous system, blood vessels and immune system. Damage to the nervous system may lead to the loss of sensation in the feet and hands which is called peripheral neuropathy, and if not treated, may progress to a Charcot foot. Charcot foot is a condition that causes weakening of the foot bones to the point of fracture. As the disorder progresses, the joints collapse and the foot takes on an abnormal shape.

Damage to blood vessels can cause poor blood flow to your feet and may lead to a condition called peripheral artery disease (PAD). Because of PAD, antibiotics cannot get to the site of the infection easily. Often, the only treatment for this is bypass surgery or amputation of the foot or leg. If the infection spreads to the bloodstream, this process can be life-threatening. People with diabetes should learn how to examine their own feet and recognize the early signs and symptoms of diabetic foot problems.

### *Things to do:*

#### **1. Wash Your Feet Every Day**

Wash your feet in warm, NOT HOT, water. Dry your feet well. Be sure to dry between your toes.

#### **2. Keep the Skin Soft and Smooth**

Rub a thin coat of skin lotion or cream on the tops and bottoms of the feet. Do not put lotion between your toes, because this might cause infection.

### 3. Wear Shoes and Socks At All Times

Do not walk barefoot. Always check the insides of your shoes before putting them on. Make sure the lining is smooth and there are no foreign objects in the shoe. Wear shoes that fit well and protect your feet. You may qualify for diabetic shoes and inserts. Ask your podiatrist if you have insurance benefits.

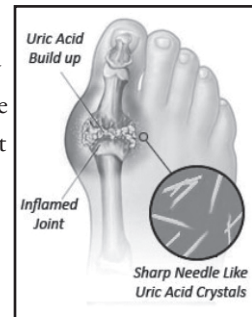
### 4. See Your Podiatrist At Least Once a Year

#### *Things NOT to do:*

- Do not walk barefoot.
- Do not walk on hot sandy beaches or hot pavement.
- Do not apply a heating pad to the feet.
- Do not soak your feet in hot water.
- Do not use chemicals or sharp instruments to trim calluses.
- Do not ignore any foot or toe injury or sore.
- Do not smoke.

## Gout

Gout is a kind of arthritis. It can cause pain, stiffness, and swelling in a joint, usually in the big toe. Typically the onset of gout is sudden and intense. Frequently, the patient will go to bed feeling fine and wake up the next morning in excruciating pain. The attacks can become recurrent, and over time cause permanent damage to the affected joint (arthritis).



Gout is caused by too much uric acid in the blood.

When uric acid levels in your blood are too high, the uric acid may form crystals in your joints. The most common sign of gout is a nighttime attack of swelling, tenderness, redness, and sharp pain often in your big toe. The attacks can last a few days or many weeks before the pain goes away. Another attack may not occur for months or years. The buildup of uric acid that led to your gout attack can still harm your joints so its important you see your podiatrist.

#### *Diagnosis and treatment*

The best way to test for gout is microscopic examination of joint fluid and a blood test to measure the amount of uric acid in your blood.

Gout is often treated with medication to reduce the blood uric acid levels. The most common medication used to prevent gouty attacks are Allopurinol or Colchicine. Recurrent gout should be treated with medication to reduce the blood uric acid levels. This medication should not be started during an acute attack. If this medication is given during an acute attack it will make the condition worse. Acute attacks of gout are treated with a variety of prescription anti-inflammatory drugs. Dietary modifications can decrease the severity or frequency of gout attacks. Foods high in purines should be reduced or eliminated.

## Hammer Toes

Hammer toes are a contracture of the toes as a result of a muscle imbalance between the tendons on the top and the tendons on the bottom of the toe. They can be flexible or rigid in nature. When they are rigid, it is not possible to straighten the toe out by manipulating it. Frequently, they develop corns on the top of the toe as a result of rubbing on the shoe. They may also cause a bothersome callus on the ball of the foot. This occurs as a result of the toe pressing downward on the bone behind the toe. This area then becomes prominent and the pressure of the bone against the ground causes a callus to form. Hammer toes tend to slowly get worse with time and frequently flexible deformities become rigid. Treatment can be conservative or surgical.



*Conservative treatment* of hammer toes consists of such things as open toed shoes or hammer toe pads. There are over the counter corn removers for temporally reducing the painful callus often seen with the hammer toe. These medications must be used with caution because they contain an acid solution. These medications should never be used for corns or calluses between the toes. Persons with diabetes or bad circulation should never use these products.

*Surgical treatment* of hammer toes varies depending upon the severity of the deformity. When the hammer toe is flexible, a simple tendon release works well. The recovery is rapid often requiring nothing more than a single stitch and an adhesive bandage. Of course if several toes are corrected at the same time, the recovery may take a bit longer. For the surgical correction of a rigid hammer toe, the surgical procedure consists of removing the damaged skin



where the corn is located. Then a small section of bone is removed at the level of the rigid joint. The sutures remain in place for approximately two weeks. During this period of time, it is important to keep the area dry. Most surgeons prefer to leave the bandage in place until the patient's follow-up visit, so there is no need for the patient to change the bandages at home. The patient is returned to a stiff-soled walking shoe in about two weeks. It is important to try and stay off the foot as much as possible during this time. Excessive swelling of the toe is the most common patient complaint. In severe cases of hammer toe deformity a pin may be required to hold the toe in place and the surgeon may elect to fuse the bones in the toe. This requires several weeks of recovery.

## Heel Pain

There are many types of conditions which cause heel pain so its important to seek medical advice to determine the exact cause. Some of the most common causes include:



### SEVER'S DISEASE

Sever's disease or calcaneal appophysitis is associated with children, between the ages of 8 to 14, while running or playing sports. This physical activity irritates the growth centers of the heels. The more active the child the more likely pain will increase. This condition responds well to rest, anti-inflammatories and orthotic therapy.

### TARSAL TUNNEL SYNDROME

Heel pain can also occur when the posterior tibial nerve or its branches to the heel become injured or entrapped with tight ligaments or scar tissue. This condition is called tarsal tunnel syndrome. Foot orthotics, injections, physical therapy or surgery to decompress the nerves may be used to relieve this condition.

### HAGLUND'S DEFORMITY

Also known as "pump bump," is an enlargement of the bone on the heel at the attachment of the Achilles tendon. The bone enlargement typically irritates a bursa, which sits between your heel bone and Achilles tendon and often is referred to as retrocalcaneal bursitis.

*Treatments* include regular applications of ice or another cold source, temporary immobilization of your foot and physical therapy. You can also switch to soft-backed or backless shoes and wear heel lifts. If conservative care does not improve symptoms, surgery may be indicated.

#### CALCANEAL STRESS FRACTURES

The calcaneus (heel bone) can fracture and is usually caused by a fall. The pain of a stress fracture often feels as though it's coming up the sides of the heel rather than on the bottom. Stress fractures often are not seen under normal x-rays. An MRI may be required to diagnose a stress fracture of the heel.

#### PLANTAR FASCIITIS

When plantar fasciitis occurs, the pain is typically in one heel and often most intense during the first steps after getting out of bed or after prolonged periods of sitting. The pain generally subsides during ambulation. Inflammation of the plantar fascia is often the cause of the pain. Heel spurs may be present, however, they are usually not the actual cause of the pain, but rather a finding on the x-ray that is often seen associated with the inflamed ligament.

#### *Diagnosis and Treatment*

X-rays and ultrasound imaging are commonly performed to help diagnosis plantar fasciitis. Treatment for plantar fasciitis is initially conservative and may include night splints, cortisone injections, taping, orthotics, physical therapy and oral anti-inflammatory medicines. Rarely, and only if there is no response to conservative therapy, surgery will be required by releasing the plantar fascia ligament.

## Ingrown Toenails

Ingrown toenails are due to the penetration of the edges of the nail plate into the soft tissue of the toe. It begins with a painful irritation that often becomes infected. With bacterial invasion, the nail margin becomes red, swollen and often demonstrating drainage or pus. In people who have diabetes or poor circulation, this relatively minor problem can become



severe. In this instance, a simple ingrown toenail can result in gangrene of the toe. Patients with joint replacements or pacemakers are at risk of bacterial spread through the blood stream resulting in the spread of infection to these sites. These patients should seek medical attention at the earliest sign of an ingrown toenail. There are several causes of ingrown toenails: a hereditary tendency to form ingrown toenails, improperly cutting the toenails either too short or cutting into the side of the nail, and ill-fitting shoes. Children will often develop ingrown toenails as a result of peeling or tearing their toenails off instead of trimming them with a nail clipper. Once an ingrown toenail starts, they will often reoccur. Many people perform “bathroom” surgery to cut the nail margin out only to have it reoccur months later as the nail grows out.

### *Treatment*

Treatment for ingrown toenails is relatively painless. An injection is used to numb the toe which may hurt some, but a skilled doctor has techniques to minimize this discomfort. Once the toe is numb, the nail margin is removed and the nail root in this area is destroyed. Most commonly, the doctor will use an acid to kill the root of the nail, but other techniques are also available. Once the numbness wears off, there may be some very mild discomfort but rarely does this require pain medicine. It may take a few weeks for the nail margin to completely heal, but there are generally no restrictions in activity, bathing, or wearing shoes after 24 hours. A resumption of sports activities and exercise is generally permitted the following day.

There are very few complications associated with this procedure. An ingrown toenail can reoccur a small percentage of the time. Continuation of the infection is possible which can be controlled easily with oral antibiotics. On occasion, the remaining nail may become loose from the nail bed and fall off. A new nail will grow out to replace it over several months. With removal of the nail margin, the nail will be narrower.

## **Morton's Neuroma**

Neuromas are the enlargement or thickening of a nerve in the foot, usually in the interspace between the third and fourth toes, followed by the second interspace. They are caused by bones and other tissue rubbing against and irritating the

nerves, which can result in burning, pain, tingling or numbness. As the nerve swells, it can be felt as a popping sensation when walking.

A Morton's neuroma is usually diagnosed based on the history and physical exam findings; occasionally other tests such as an x- ray, ultrasound or an MRI may be needed. These are generally taken to rule out a possible stress fracture, plantar plate tear or arthritis.

Rubbing the ball of the foot helps to ease the pain. Conservative treatment may include padding, taping, cortisone injections, chemical destruction of the nerve and orthotics. If conservative therapy fails, surgical removal may be necessary.

## Peripheral Neuropathy

Peripheral neuropathy is the result of nerve damage, often causing weakness, numbness and pain, usually this occurs in the hands and feet, but may also occur in other areas of the body. There are many types of peripheral neuropathy, each with its own characteristic presentation. They are caused by traumatic injuries, infections, metabolic problems and exposure to toxins (pesticides and heavy metals). Three of the most common causes of peripheral neuropathy are alcoholic peripheral neuropathy, entrapment neuropathy and diabetic neuropathy.

### ALCOHOLIC NEUROPATHY

Alcohol can have a toxic effect on nerve tissue and is often associated with malnutrition, vitamin deficiencies, including folate, B12 and other B vitamins. People suffering from alcoholic neuropathy may alleviate their current symptoms and prevent further nerve deterioration by limiting alcohol consumption. Unfortunately damage to nerves caused by alcoholic neuropathy is often permanent.

### ENTRAPMENT NEUROPATHY

Entrapment neuropathy, also referred to as nerve compression syndrome or compression neuropathy, is often caused by mechanical pressure on a peripheral nerve.

There are different forms of compression neuropathies depending on the nerve

that is affected, such as carpal tunnel syndrome in the hand, cubital tunnel syndrome in the arm, and tarsal tunnel in the foot.

Tarsal tunnel is the most common entrapment neuropathy in the foot. Tarsal tunnel syndrome is a condition that occurs when the posterior tibial nerve is compressed. This nerve passes behind the medial malleolus (inside ankle) and down to the plantar aspect of the foot. Before entering the foot, the nerve passes through an area called the tarsal tunnel. The roof of the tunnel is a thick ligament called the flexor retinaculum which often compresses the nerve causing inflammation. Symptoms may include burning, aching, radiating “pins and needles,” throbbing, or tingling like an electrical shock.

Treatment may include corticosteroid or anesthetic injections, orthotics, NSAIDs (Non-Steroidal Anti-Inflammatory Drugs), and Vitamin B supplements. If conservative therapy fails, surgery is indicated. The surgery is called nerve decompression, and is intended to release the pressure off the nerve by freeing the soft tissue structures around the nerve as it passes through the tarsal tunnel.

#### DIABETIC PERIPHERAL NEUROPATHY

Diabetic peripheral neuropathy is the most common of the peripheral neuropathies and is caused by chronically high blood sugar and diabetes. Symptoms may include burning, numbness, loss of sensation, and sometimes pain in your feet, legs, or hands. These damaged nerves cannot effectively transmit messages and malfunction. This means you may not feel heat, cold, or pain in your feet, legs, or hands. If you get a cut or sore, you may not know it, which is why it's so important to inspect your shoes and feet daily. You may experience muscle weakness, balance problems, touch sensitivity or slow healing and non-healing wounds. The consequences can be life-threatening. An infection that will not heal can lead to amputation, even death.

Treatment for diabetic peripheral neuropathy is directed at the cause and symptoms. The most successful way to prevent diabetic neuropathy from occurring is to control the diabetes. It is important to maintain blood sugars at normal levels. Dietary treatment constitutes the basis for management of most patients. However some patients may require the use of exogenous insulin or oral hypoglycemic therapy to control blood glucose levels. Symptomatic

treatment with medications that act on the central nervous system such as Amitriptyline, Gabapentin, Cymbalta and Lyrica may be helpful at controlling burning, numbness and pain.

## Plantar Warts

The common wart is known as *verruca vulgaris*. Warts are caused by a viral infection of the skin. This occurs as a result of direct contact with the virus. They do not spread through the blood stream. They occur more commonly in children than adults. When they occur on the bottom of the foot, they are called plantar warts. This name is derived from the location of the foot on which they are found; the bottom of the foot is called the plantar aspect of the foot. A common misconception is that plantar warts have seeds or roots that grow through the skin and can attach to the bone. The wart may appear to have a root or seeds, but these are in fact small clusters of the wart just beneath the top layer of the skin. The wart cannot live in any tissue except the skin. Moist, sweaty feet can predispose to infection by the wart virus. Warts can be contracted in showers and around swimming pools. They are not highly contagious, but being exposed in just the right situation will lead to the development of the wart. If a member of the family has the infection, care should be taken to keep shower and tile floor clean. The bathroom floors and shower area should be cleaned with diluted bleach. Children should wear water shoes at public pools or showers.

### *Treatment*

There are a variety of ways to treat warts. The over-the-counter medications have a difficult time penetrating the thick skin on the bottom of the foot, so they do not work well in this area. Professional treatment consists of burning the wart with topical acids, freezing with liquid nitrogen, laser surgery or cutting them out. All methods have the possibility of the wart coming back. Surgical excision of the wart has the highest success rate with a relatively low rate of recurrence. There is some mild discomfort with this procedure and it takes several weeks for the area to completely heal. Normal activity can generally be resumed in a few days depending on the size and number of warts that have been removed. The risks associated with surgical removal of warts are the possibility of infection, or the formation of a scar, which can be painful when weight is applied while walking.



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In his new book, *Healthy Feet For Life*, Dr. Brian Middleton explains the ten most common foot and ankle problems and the steps to reduce pain in these areas.

## Get answers to these common foot problems:

- Athlete's Foot
- Bunions
- Diabetes
- Gout
- Hammer Toes
- Heel Pain
- Ingrown Toenails
- Morton's Neuroma
- Peripheral Neuropathy
- Plantar Warts

Having the information you need will help you make sound decisions about your foot health.



Dr. Brian Middleton is a Podiatrist, and Foot & Ankle Surgeon. He has been the Director of Medical Foot Care Center in Rome, Georgia for 21 years.

He is an active member of many medical specialty organizations. Dr. Middleton is available for speaking at community events and health fairs.

Local residents can order a *free* copy of this book.

Please visit our website [www.medicalfootcare.com](http://www.medicalfootcare.com) and click the request information tab on the right.

*If you would like more information about foot and ankle conditions not covered inside, please visit our website.*

