Care of the Diabetic Patient

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Diabetes

- Diabetes is a problem with your body that causes blood glucose (sugar) levels to rise higher than normal. This is also called hyperglycemia.
- Type 1 diabetes is usually diagnosed in children and young adults, and was previously known as juvenile diabetes. Only 5% of people with diabetes have this form of the disease.
- Type 2 diabetes is the most common form of diabetes.

Diabetic Foot

- Nerve damage - Neuropathy
- Poor circulation

Diabetic Footwear Requirements

- Appropriate prescription from your Podiatrist or Primary care Physician
- Certifying statement from Primary care physician stating that you are diabetic and that you meet certain criteria
- Mostly Medicare / Medical will cover one pair of Diabetic shoes and diabetic inserts in one year, if ……

Physician Certification of Medical Necessity

- Foot ulcers
- Previous amputation of the contralateral foot, or part of either foot, due to a micro-vascular disease secondary to diabetes
- History of previous ulceration of either foot
- Peripheral neuropathy with evidence of callous formation of either foot
- Deformity of either foot, that is, rocker bottom foot or Charcot foot
- Documentation of compromised vascular disease in either foot
- Positive monofilament examination indicating diabetic neuropathy

Custom shoe/orthotic requirement

Atleast one criteria needs to be met

- Diabetes mellitus with neurological manifestations
- Diabetes mellitus with peripheral circulatory disorders
- Diabetes mellitus with other specified disorders (amputations, significant deformities and/or pre-ulcerations)

Diabetic shoes

Additional Features

Velcro closer

High Top

Stretchable for Bunion & Hammertoes

Edema

Diabetic shoe Characteristics

- Material
- Toe Box
- Shoe width
- Seamless lining
- Extra depth
- Rocker Bottom

Diabetic inserts

Off-the-shelf orthotics
- Provides cushion
- Reduces impact

Custom Orthotics
- Provides cushion
- Redistributes plantar pressure
- Offloads undue pressure from pre-ulcerative areas

Foot ulcers

There are many factors that can cause a wound to become chronic enough to lead to amputation, however the majority of lower limb amputations are due to foot ulcers that are a result of complications from diabetes, including:

- Neuropathy
- Poor circulation
- Charcot foot
- Gangrene
- Infections

Statistics

- A diabetic foot ulcer is an open sore or wound that occurs in approximately 15 percent of patients with diabetes and is commonly located on the bottom of the foot.

- Of those who develop a foot ulcer, 6 percent will be hospitalized due to infection or other ulcer-related complication.

- Diabetes is the leading cause of non-traumatic lower extremity amputations in the United States, and approximately 14-24 percent of patients with diabetes who develop a foot ulcer will require an amputation.

- Foot ulceration precedes 85 percent of diabetes-related amputations.

Orthotic Options for Wound Care

Goals with Orthotics

- Weight distribution
- Offloading pressure sensitive / wound area
- Contracture prevention
- Appropriate alignment

Wound Healing of the Foot

Forefoot Offloading shoes

Hindfoot Offloading shoes

+ Complete offloading of the desired specific area of the foot
- Balance and stability issues
- Patient compliance

Wound Healing of the Foot

Pressure relief shoe with peg insert

+ good support and stability for entire foot
+ rocker bottom
+ open and closed toe options
+ instant adjustability with peg removal to offload a localized area
- Durability of shoe & insert becomes a issue for long-term users

Multipodus boot

+ Ulcer prevention in bed
+ Sufficiently padded with lambswool
+ Bar in the posterior to prevent internal and external rotation
+ Contracture prevention
+ Minimal ambulation with treaded sole
- No weight bearing advantage

PFS AFO

+ Immediate post-op option for partial foot amputation to prevent equinus contracture
+ Fracture / Partial foot amputation support
+ Easily accommodates Ex Fix
+ bendable to accommodate PF contracture
+ easy access for wound vac, drains
- doesn't have "kickstand"

CROW – Charcot Restraint Orthotic Walker

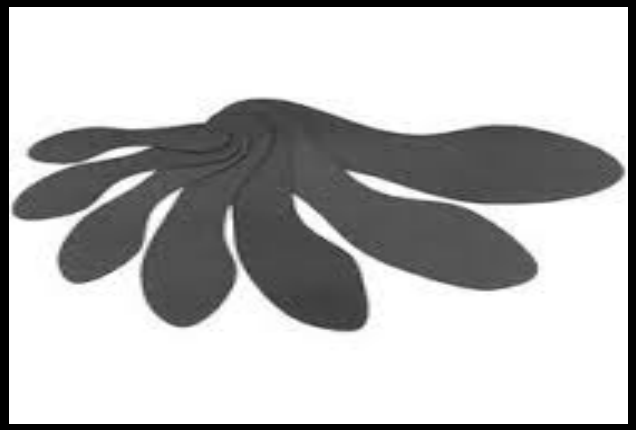
+ Charcot neuropathy
+ anterior and posterior shell overlap provide total contact
+ completely padded with a multidensity insert for possible further adjustment
+ heel and sole rocker bottom
+ PTB option can be done to completely offload the foot
-Difficult for volume adjustments
-Could need frequent adjustment depending on changes in the foot

Prosthetic options for Foot Amputations

Prosthetic Goals

- Minimize likelihood of ulceration and skin breakdown
- Restore effective foot length
- Reduce pressure from the sensitive distal end of the residual limb
- Redistribute body weight to other pressure tolerant areas

Transmetatarsal amputation



+ Partial foot insert with filler
+ arch support and foot alignment maintained
+ carbon fiber footplate improves gait efficiency and comfortable rollover characteristics through the control of excessive mobility or flexion limitation.
+ Redistributes pressure forces to less sensitive areas.
- Footplates are not covered by insurance

Lisfranc / Chopart Amputation

Tarsometatarsal and Transtarsal amputation with preserved plantar soft tissue to make the flap

+ Insert with partial foot filler to accommodate for the missing foot

+ multidensity insert provides good padding and cushion

+ Carbon AFO allows easier forward propulsion without undue stress on the distal end of the residual limb

+ easy fitting into existing shoes

- Potential equinus deformity could cause excessive pressure on the plantar distal end

Post-Operative Care

- Bed Positioning
- encourage prone, side lying

- Wound care
- keep suture line clean, dry

- Limb Protection
- shrinker
- reduce swelling, pain
- limb guard

Skin Management

- Skin above suture line
- Clean & moisturize daily, when applicable
- Skin at closure line
- Keep dry until suture removal
- Monitor for signs of infection
- Daily skin checks of residual limb and Intact side
- Especially in lack of sensation

http://www.amputee-coalition.org/resources/after-amputation-surgery/

Prosthetic Considerations

- Prevention of edema
- Protection of residual limb
- Volume management – proper fit

Stump Shrinker

- Prevents edema
- Reduces stump sensitivity

Socket Interface

Cushion or locking gel liner rolled against the residual limb -
- Provides cushion for the skin against pressures
- Protects the skin against pistoning or rubbing

Volume Management

Size of limb directly affects fit of socket

Atrophy

Most significant in first six months

Plateau around 1 year

Volume changes throughout day

3 wks → 8 months

Volume Management

- Factors affecting volume change
- Diet
- Alcohol
- High activity such as prolonged walking or standing
- Weight gain or loss (10 pounds +/-)
- Hydration / salt intake
- Medication

Accommodating Volume Change

- Socks
- Between 1-5 ply
- May need to add throughout day
- May need wear shrinker overnight after certain activities
- Padding by Prosthetist
- Once socket requires 10 ply or socks or more need assessment for new socket

Thank You