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## Diabetic Foot – Treatment and Prevention

Edward Wąsiewicz

CENTRUM MEDYCZNE W ŁAŃCUCIE SP. Z O.O. ul. Paderewskiego 5, 37-100 Łańcut.

<https://orcid.org/0000-0002-0339-6202>

[edward.wasiewicz@op.pl](mailto:edward.wasiewicz@op.pl)

Aleksandra Kuźniar

Kolegium Nauk Medycznych, Uniwersytet Rzeszowski, al. mjr. W. Kopisto 2a, 35-959 Rzeszów.

<https://orcid.org/0009-0007-8759-2633>

[kuzniar.aleksandra1@gmail.com](mailto:kuzniar.aleksandra1@gmail.com)

Dominik Szawica

CENTRUM MEDYCZNE W ŁAŃCUCIE SP. Z O.O. ul. Paderewskiego 5, 37-100 Łańcut.

<https://orcid.org/0009-0004-7089-9266>

[dominik.szawica@gmail.com](mailto:dominik.szawica@gmail.com)

Kamila Fularska

CENTRUM MEDYCZNE W ŁAŃCUCIE SP. Z O.O. ul. Paderewskiego 5, 37-100 Łańcut.

<https://orcid.org/0000-0002-1338-3982>

[ka.larska@wp.pl](mailto:ka.larska@wp.pl)

Michał Oleszko

Kolegium Nauk Medycznych, Uniwersytet Rzeszowski, al. mjr. W. Kopisto 2a, 35-959 Rzeszów.

<https://orcid.org/0000-0002-2635-0856>

[michaloleszkoole@gmail.com](mailto:michaloleszkoole@gmail.com)

Radosław Bernacki

Uniwersytet Medyczny w Lublinie Aleje Raławickie 1, 20-059 Lublin

<https://orcid.org/0009-0000-1554-2724>

[rbernacki97@gmail.com](mailto:rbernacki97@gmail.com)

Piotr Bernacki

Uniwersytet Medyczny w Lublinie Aleje Raławickie 1, 20-059 Lublin

<https://orcid.org/0009-0002-9324-9632>

[pbernacki73@gmail.com](mailto:pbernacki73@gmail.com)

Martyna Dutka

Uniwersytet Medyczny w Lublinie Aleje Raławickie 1, 20-059 Lublin

<https://orcid.org/0009-0006-4747-677X>

[martynadutka810@gmail.com](mailto:martynadutka810@gmail.com)

Witold Zardzewiały  
Uniwersytet Medyczny w Lublinie Aleje Raławickie 1, 20-059 Lublin  
<https://orcid.org/0000-0003-4459-0535>  
[witold.zardzewialy@gmail.com](mailto:witold.zardzewialy@gmail.com)

Fryderyk Sobczak  
Kolegium Nauk Medycznych, Uniwersytet Rzeszowski, al. mjr. W. Kopisto 2a, 35-959 Rzeszów.  
<https://orcid.org/0009-0001-7746-5821>  
[fsobczak270@gmail.com](mailto:fsobczak270@gmail.com)

**Abstract:**

**Introduction:** Diabetic foot is a serious condition affecting large percentage of long term diabetics .

Proper diabetic foot treatment, education and prevention can greatly influence quality of life of many diabetics who are at risk of developing this condition.

**Aim of study:** The purpose of the study was to review the latest literature on the most recent diabetic foot treatment, education and prevention.

**Matherials and methods:** A systemic review was conducted using Google Scholar, PubMed and ScienceDirect databases and the search was limited to studies published between 2000 and 2023. The search strategy was based on following terms: diabetic foot, diabetic neuropathy, diabetic ulcer, diabetic foot treatment.

**Results:** We found many different studies which show importance of gut microflora in various different ailments and diseases, we have also found many showing factors that influence intestinal microbiota composition.

**Conclusions:** diabetic foot is a severe complication of diabetes that requires a multidisciplinary approach to treatment. Prevention is essential, and patients should be educated on the importance of foot care and blood sugar control. With proper treatment and management, diabetic foot can be prevented and effectively treated.

Keywords: diabetic foot, diabetic neuropathy, diabetic foot ulcer

**Introduction**

Diabetes is a chronic metabolic disease characterized by high blood glucose levels due to either the lack of insulin production or the body's inability to use insulin properly. One of the most common complications of diabetes is diabetic foot, which is a serious condition that can lead to foot ulcers, infections, and even amputations if left untreated.[1] The treatment of diabetic foot requires a multidisciplinary approach that involves a team of healthcare professionals including podiatrists, wound care specialists, endocrinologists, and surgeons.[2]

Prevention of diabetic foot is the first step in treatment. Patients with diabetes should be educated on the importance of foot care, including regular foot inspections, proper footwear, and prompt treatment of any foot problems. Additionally, blood sugar control is essential to prevent the development and progression of diabetic foot.[3]

Diabetic foot affects about 15% of all diabetics[4]

### Methods of diabetic foot treatment and prevention

Wound care[5]	proper assessment of all foot injuries by qualified medical personnel and regular inspection of skin integrity by affected individual
Offloading of pressure[6]	use of custom fitted shoes, soles
Blood sugar control[7]	Educating patient on proper diet and how to use diabetic medication properly
Cessation of smoking[8]	improves blood flow to the foot
Hyperbaric oxygen therapy[9]	Improves oxygen delivery to affected foot
Amputation[10]	Last resort treatment to prevent spreading infection into other bodily systems
Antibiotic treatment [11]	Use of Bacteria targeted antibiotics.

Wound care and infection control are critical aspects of diabetic foot treatment. Wound care may include debridement of dead tissue, dressings to promote healing, and offloading of pressure on the affected area. Infection control involves the use of antibiotics, both topical and systemic, as well as surgical debridement if necessary.

Offloading of pressure is an essential aspect of diabetic foot treatment. Offloading can be achieved through the use of custom-fitted shoes or orthotics, as well as the use of casts or braces to immobilize the affected foot. In severe cases, patients may need to use a wheelchair or crutches to avoid pressure on the affected area.

Hyperbaric oxygen therapy (HBOT) is an alternative treatment for diabetic foot ulcers that has gained popularity in recent years. HBOT involves the inhalation of 100% oxygen in a pressurized chamber, which is believed to increase the delivery of oxygen to the affected tissue, promote healing, and reduce the risk of amputation.[9]

Management of underlying medical conditions that may contribute to the development of diabetic foot, such as high blood pressure or high cholesterol, is also critical. Smoking cessation is also essential, as smoking can impair blood flow to the affected area and delay healing.[12]

In cases where diabetic foot ulcers have progressed to the point where amputation is necessary, surgical intervention may be required. Amputation is a last resort and should only be considered after all other treatment options have been exhausted.[13]

The management of diabetic foot disease primarily focuses on avoiding amputation of the affected foot. The most important factors to allow proper healing are[14]:

a)adequate arterial blood flow

Use of low pressure socks, using of temperature/season adequate footwear which prevents heat loss from lower limbs, cessation of smoking which improves blood flow in peripheral arteries, being regularly physically active – which also improves blood

b)appropriate infection control - diabetic foot ulcer can often become infected which can greatly reduce or stop the process of healing. To prevent this problem it's important to identify the pathogenic factor affecting patients limb and after identification using targeted antibiotic treatment.

Pathogens most commonly infecting diabetic foot[15]:

S. aureus	26.8 %
Ent. faecalis	13.3 %
P. aeruginosa	13.1 %
E. coli	6.8 %

Bacteria most commonly affecting diabetic foot have the least resistance to antibiotics such as: Metronidazole, Linezolid, Teicoplanin, Vancomycin[16]

c)offloading of the wound site – To minimize weight pressure affecting diabetic foot we can use medical equipment ranging from : wheelchairs, orthoses, special shoes to simple interventions such teaching patient to place less weight on the affected foot or to avoid standing for long periods of time.[17]

### Diabetic foot complications

Amputation[10]	untreated diabetic foot can result in amputation of lower limb
Charcot foot[18]	The foot bones break and the joints in the foot or ankle dislocate. If not caught in its earliest stage, the joints in the foot collapse and the foot eventually becomes deformed. A deformed foot can cause pressure sores to develop in the foot or ankle
Deformities[19]	untreated diabetic foot can cause foot deformities e.g. due to necessary toe amputations
Gangrene[20]	diabetic foot when left untreated can causes dry or wet gangrene (which can spread very quickly)
Skin and bone infections[21]	diabetic foot infection can spread to surrounding skin and bone tissue

### Conclusion

In conclusion, diabetic foot is a severe complication of diabetes that requires a multidisciplinary approach to treatment. Prevention is essential, and patients should be educated on the importance of foot care and blood sugar control. Treatment involves wound care and infection control, offloading of pressure, and management of underlying medical conditions. HBOT is an alternative treatment that may be considered in some cases, and surgical intervention should only be considered as a last resort. With proper treatment and management, diabetic foot can be prevented and effectively treated.

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