



Everything for the well-being of the feet.

When Feet Have Sugar



Important Information regarding foot care for Diabetics

A compilation of articles about diabetic foot care by GEHWOL

Article	Page #
Diabetics in the Foot Care Practice	3
Fissuring and hyperkeratosis on the diabetic foot	10
Foot Care for Diabetics	20
Foot Care in Diabetics	5
Foot Complications	29
Forgetting the feet—Diabetes Report	12
Get help	24
Handling the consequences	6
How can Diabetes hurt my feet?	32
How can my Doctor help me take care of my feet?	33
It's the recipe	28
Living with Diabetes—Foot Care	31
More barrier protection for the decreased water loss	13
Myths and truth	15
Obtain advice for product purchases	27
Pay attention to your feet	22
So that the shoe won't be too tight	25
Suitable for Diabetics	8
Suitable for Diabetics—GEHWOL med	17
This is how foot care becomes a simple ritual	26
When feet have sugar	21

Diabetes mellitus – an underestimated, widespread disease

Diabetics in the Footcare practice.

The number of patients suffering from the metabolic disorder, Diabetes mellitus, is on the increase around the globe. There are over six million diabetics in Germany and the estimated number of unreported/undetected cases is around two million. In addition to the personal implications, the disease places dramatically rising costs on health services. Even in Footcare practices, many customers or patients are diabetics and warrant particular attention.

Figures, figures...

The number of diabetics has increased by over three-fold in the last 40 years. Approximately 90% of cases involve type 2 diabetes. Frequency increases with age. Every tenth person over 60 years of age is already suffering from pathologically elevated blood sugar levels. This metabolic disorder is also known as age-related diabetes. In recent years, however, type 2 diabetes has been increasingly detected in younger people including children. It is a generally well-known fact that the high outbreak of this disease can be substantially reduced with adequate preventive measures including adequate mobility and a change in dietary habits.

What is Diabetes mellitus?

Diabetes, also known as sugar disease, is a chronic disorder that affects the metabolic system. Diabetics have too much sugar in their blood. In the case of type 2 diabetes, the pancreas still produces insulin but the body does not react accordingly. The glucose absorbed with food is no longer available to the body cells for the purposes of energy. This results in two problems: Cells do not have enough energy to function properly and, at the same time, the blood has an elevated glucose concentration, which, in the long term, will damage organs, blood vessels and nerves.

Those affected are often unaware of these events for many years. Diabetes is frequently diagnosed for the first time when the person affected seeks medical advice due to the sequelae of diabetes. Despite extremely high medical standards, the length of time between the onset of diabetes and the medical diagnosis of this condition is still five to eight years. By this time, the vessels are, however, often already damaged. Early diagnosis of the disease is, therefore, of paramount importance since, at this point, it is generally still possible to make the body cells insulin-sensitive through movement and by altering the diet. In the later stages, blood sugar-lowering medicinal products and/or insulin administration are/is essential.

The sequelae of Diabetes mellitus Most diabetics die from the diseases that develop as a result of diabetes. The most common causes of death are myocardial infarction and stroke. Unfortunately, diabetics often suffer from high blood pressure and their kidneys are overloaded – this can result in kidney failure. In addition, years of elevated blood-sugar levels lead to the destruction of nerve tissue – thus resulting in diabetic polyneuropathy.

Effects on the feet

■ Lack of sensitivity to pain and temperature

Diabetic polyneuropathy is the main cause of diabetic foot syndrome (DFS). This condition develops due to a lack of sensitivity to pain and temperature and triggers the main problem of diabetics: Since the early warning system to detect pain is not working, diabetics do not feel their damaged, mistreated feet. Small stones, paper clips and even keys go unnoticed in their shoes. Moreover, footwear that is too small is, nevertheless, worn because of the lack of sensitivity. Smaller lesions provide an ideal nutrient medium for ulcers and infection, which, in the worst-case scenario, may lead to amputation.

■ Rough, chapped skin on the feet.

Neuropathy also reduces sweat secretion. The skin becomes sensitive, chapped and rough as a result. These clinical signs are even more marked with diabetic polyneuropathy in elderly subjects who, even without diabetes, present with dry, chapped skin as a result of naturally reduced gland secretion.

■ Foot deformities

Damaged nerve function shortens the small foot muscles, resulting in foot deformities with splay foot, Pes cavus, claw toe and **Hallux valgus, tendon shortening and Hallux rigidus. The patient no longer walks “properly”** – the roll-off processes involved in

walking are altered. This means that the weight is no longer evenly distributed. Extremely high pressure is placed on the top of the metatarsus and on the heel.

■ Impaired wound healing

Wounds take a long time to heal in diabetics. A small lesion can often take six months to heal. The greatest risk arises if a small opening is initially formed. For this reason, great store is set by Footcare measures such as pressure relief and foot skin care preparations as well as on correctly fitting footwear in diabetes.

Footcare for diabetics

Several people keep a close eye on the feet of diabetics. In addition to regular contact with the treating physician, regular visits to Footcare specialists and daily inspections of the feet by the patients themselves (if a patient is no longer capable of doing this due to a disability such as impaired vision, relatives or a member of the care team should carry out this procedure instead) are vitally important. Even minor injuries should not be overlooked.

■ Ask new clients or patients who have not been with you long if they are diabetics and record this in your patient records.

■ Always look in your patient records before commencing treatment. The fact that you are treating a diabetic will not, then, escape your notice.

■ Pay even greater attention to hygiene when treating the feet of diabetics:

– Always wear disposable gloves.

– Use entirely hygienic instruments (= a set of instruments that has been hygienically prepared for this particular patient).

■ Point out the importance of correctly fitting footwear if you note any pressure points, and recommend GEHWOL pressure relief items made from polymer gel.

■ Give your patients Foot care tips that they can use between appointments. Regular Foot care with preparations suitable for diabetics is important, i.e. the tolerance and soothing properties of which have also been tested on the skin of diabetics. No special range of diabetic preparations is required! GEHWOL med Lipidro Cream, GEHWOL med Rhagade Ointment, GEHWOL FUSSKRAFT BLUE and GEHWOL FUSSKRAFT Hydrolipid Lotion are ideal for the particular requirements of sensitive, dry, diabetic skin – as indeed are most other GEHWOL-, GEHWOL med- and GEHWOL FUSSKRAFT preparations. These products passed the relevant tests with flying colors and the following statement is given on the packaging, “Also suitable for diabetics”(see also Page 24).

■ Thoroughly document your treatment procedures (using photos) as closely as you can to treatment. The “MS Business-CLASS für Footcare and Podology Practices” computer program, which is available exclusively from GERLACH, is an excellent tool for this purpose. Keep the data for at least 5 years.

How to proceed against dry skin

Foot care in diabetics

Approximately 80 percent of all diabetics suffer from dry foot skin. The skin may tear and loses its barrier function. Careful foot care at home may prevent this.

Diabetics should always receive care from professionals of various disciplines. Aside from treatment by the responsible physician, regular visits to your practice are a must. However, point out to the patient that only his own action will allow you and the physician to provide successful treatment. Therefore provide your patients with tips on how to look after their feet. Diabetic foot care does not require a special product series. Only the right selection is important. Therefore recommend products which contribute to effective avoidance of the specific problems that are associated with diabetic foot skin. For instance one problem lies in that diabetics very often tend to have dry, cracked, strongly callused skin. The dry skin loses its barrier function against infectious, ulcer-causing pathogens. Callus weals potentiate the pressure on the subcutaneous fatty tissues which can also cause foot lesions.

To care for dry skin and avoid excess callus on the feet, GEHWOL med Lipidro- Cream or GEHWOL FUSSKRAFT BLUE can be used – and for foot and leg care, GEHWOL FUSSKRAFT Hydrolipid Lotion is a better choice, since it distributes more easily. Extremely dry skin with formation of primary lesions (rhagades) can be effectively treated with panthenol-containing GEHWOL med Salve for cracked skin. The listed products have the advantage that their galenic composition helps to provide protection against fungal infections. Skin and nail mycosis which, according to one study, occur in approximately 85 percent of diabetics, increase the risk of developing diabetic foot syndrome. Special nail protection products such as GEHWOL med Protective Nail and Skin Oil or GEHWOL FUSSKRAFT Protective Nail and Skin Spray serve to protect against nail fungi, or if you are on the go, use the practical GEHWOL med Nail protection pen. Consistent pressure relief is important to avoid diabetic foot damage. Pressure protection gels which are made from polymer gel are suitable for this – such as GEHWOL Metatarsal Cushion G or Heel Cushion G.

What matters in the care of dry foot skin?

Typical signs of dry skin include reduced moisture in the callus layer and increased trans-epidermal moisture loss due to a disturbance in the qualitative and quantitative composition of the epidermal lipids. Therefore the goal of caring for dry skin must be to increase hydration of the callus layer and regenerate the disturbed skin barrier.

The Association for Dermopharmacy e.V. specified in its guideline for the cleansing and care of dry skin that the utilized care products should balance the skin's lack of moisture and lipids while also improving its barrier functions. Therefore external care products which are rich in lipids with moisture binding additives as well as an emulsifier system which is favorable in terms of absorption capacity appear to be suitable. Products of this type can be expected to have a certain occlusion effect which leads to reduced trans-epidermal water loss and therefore stronger water enclosure in the callus layer. However the extent of this effect decisively depends on the overall recipe of the respective product. Therefore, when giving advice, products whose effectiveness in dry skin was proven with suitable scientific methods should be in the foreground. A negative effect on natural skin functions through the use of lipid-rich care creams does not have to be expected. This would require complete occlusion, however this generally does not occur after the application of penetrating care creams with a pronounced lipid character. Such products do not completely reduce water loss but only reduce it at a level which is desired in dry foot skin. Unless substances which inhibit transpiration are simultaneously included in the recipe, lipid-rich creams also do not inhibit natural sweat secretion and the related heat regulation.

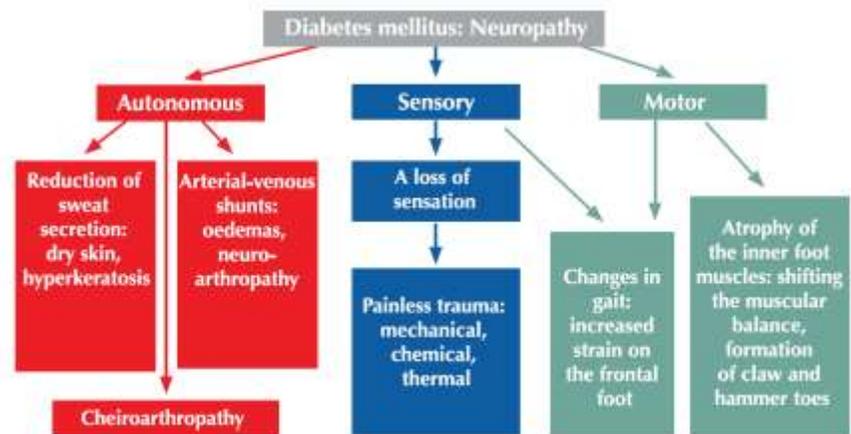
Handling the consequences

At least five percent of the German population have diabetes mellitus [8.3 % within the United States], and their numbers are rising. Aside from the personal effects, the illness is causing rising costs in healthcare. Many patients in foot care practices are also diabetics. They require special attention.

Diabetics still have a lower life expectancy than non-diabetics. Their quality of life is clearly reduced. Approximately 90 percent of persons with the illness suffer from the type II diabetes which primarily occurs with increasing age, while five percent suffer from insulin requiring Type I diabetes. While damage to the small blood vessels with consequences for the eyes, kidneys and nerves determine the symptoms in patients with type I diabetes, type II diabetes particularly affects the major blood vessels. Coronary heart disease, stroke and arterial occlusion disease are frequent effects.

Diabetic foot syndrome

One significant complication of diabetes in foot care practices is diabetic foot syndrome (DFS), also known as diabetic foot. The main causes of this complex illness are diabetic polyneuropathy, a nerve disorder, as well as angiopathy, which influences the circulation. Neuropathy usually begins with a loss of function in sensory nerves. The ability to perceive pain and temperature is negatively affected. If the neuropathy also afflicts the so-called autonomous nerve fibers, the circulation of the skin and muscles, sweat secretion as well as tissue nutrition are reduced. The skin becomes dry and cracked. The joints become increasingly unable to move. Finally the nerves which are responsible for movement are also affected. Paralysis and muscle atrophy lead to wrongly applied strain. The small foot muscles shorten, leading to foot deformities such as ball hollow foot with claw toes. The rolling processes during walking change. In particular, the metatarsal protuberances are continuously exposed to tiny injuries, whereby the joints suffer.



Diabetic neuropathy is subdivided into three forms (according to Prof. Reinhard Zick, Diabetes Forum (2007) special issue „Feet“, page 5, Kirchheim-Verlag Mainz).

A trigger of ulcers

The changes in the pressure distribution patterns lead to excess callus formation. The stratum corneum, as the callus layer of the skin, reacts to constant increased pressure and small injuries with callus and weal formation. The excess callus is coarse and hard. It loses its natural protective function and additionally increases the strain from applied pressure. Further developments include bleeding under the callus, melding of tissues and finally, the formation of ulcers. The dryness of the skin with possible tears as well as fungal infections lead to ulceration. Finally outside influences such as wrong shoes or small injuries can cause damage. Since there is no pain sensation, the diabetic usually notices too late that an ulcer is forming. The progression of healing is made more difficult if there is also the occlusion disease of the blood vessels which is typical for diabetes. Approximately 50 percent of patients with diabetic foot suffer from this occlusion disease, which leads to insufficient blood circulation in the foot. Up to ten percent of all diabetics have foot ulcers. Particularly in the presence of added infections, they often lead to amputations. Based on extrapolations, up to 30 000 amputations per year are related to diabetes as a prior illness.

Diabetics in the foot care practice

Diabetics with an elevated risk of foot complications should regularly attend a foot care practice. It is only in joint cooperative effort that the patient, physician, foot care professional and orthopaedic shoemaker can give the best possible care to ill feet. This joint course of action is also recommended in the guidelines for type II diabetes concerning strategies for prevention and treatment.

- Ask new patients whether they are diabetics and note this in the customer file.
- Before starting a treatment, always look in the patient file. In this way you will not miss the fact that you may be treating a diabetic.
- Prior to treatment, discuss the current health status and current questions of the patient.
- Examine the feet for skin and nail changes, pressure spots and callus formation as well as infections. You should also assess nerve function. You can use the tuning fork in accordance with Rydel-Seiffer to recognise at the base joint of the large toe whether the sensation of vibration and consequently depth sensitivity is intact or limited. You can test pain sensation with simple pointed objects which cause no injuries. Pressure sensitivity can be assessed using a monofilament, and the purpose of the so called Tip Therm is to assess hot and cold sensation. Finally, feeling the foot pulses is part of assessing the status of the feet. Weakened foot pulses will also occur, for instance, if there are increased fluids within the tissues, that is in the presence of oedemas. However diabetics often suffer from arterial occlusion disease as a cause of weak pulses. It must be taken into account as an additional risk factor for possible complications.

Greatest care in treatment

Measures such as pressure relief and foot skin care are of greatest importance in the treatment concept for diabetics.

- Also pay special attention to hygiene when treating diabetics. Wear single use gloves. Use hygienically flawless instruments.
- If there are pressure spots, point out the importance of correctly fitting shoes and recommend GEHWOL pressure protection articles of polymer gel.
- Give your patient tips for foot care between treatments. They should clean their feet daily with lukewarm water, rub them with a lipid-rich moisturizing cream and perform blunt nail care.
- Regular care with suitable products is important (see page 27). It is also important to use products which prevent infections such as fungal infections, since this always means complications. For instance a study confirmed skin or nail mycosis in approx. 80 per cent of examined diabetics.
- Excessive callus (or weals) must be removed with the greatest care, since it represents an independent risk factor for the formation of ulcers.
- During treatment, you should only use tools which are suitable for diabetics. Both the form for removing and smoothing callus and the form for working in the nail edge are rounded and their grit size is adapted to the special skin conditions. The extra fine grit size permits work on even very sensitive skin as well as making it possible to polish nails.

Suitable for diabetics

Skin which is low in hydrolipids and the occurrence of callus weals are known risks in the development of diabetic foot lesions. GEHWOL med Lipidro-Cream offers a suitable care option specifically for the requirements of diabetic foot skin. Studies prove its effectiveness against dry skin and excess callus.

GEHWOL med provides foot care professionals with a product series which was developed especially for customers with specific foot problems. GEHWOL med Lipidro-Cream is one suitable product for patients with dry skin and/or excess callus. A current study proves its callus reducing effect on a collective of 24 test subjects, including ten diabetics. Over four weeks with twice daily use, the callus thickness was significantly reduced by an average of 62 μm . This corresponds to a reduction by 23 percent. In the collective with above average callus thickness ($> 283 \mu\text{m}$), it was even 34 percent (fig. 1). In the study which was performed at the proDerm Institute for Applied Dermatological Research, a total of 24 test subjects, among them 10 diabetics, received GEHWOL med Lipidro-Cream twice daily for independent use. On days 1, 15 and 29, the callus thickness was measured at the heels with a special 22-MHz ultrasound unit (Type DUB20). Even after two weeks of use, callus thickness significantly lessened by an average of 42 μm (15%) and after four weeks, it lessened by a further 20 μm (8%). The effectiveness of GEHWOL med Lipidro-Cream to reduce callus was therefore proven even after short term use (two weeks) and more noticeably after four weeks, the study authors concluded.

Keratostatic effect

The effect is produced by an overall recipe with ten percent urea, glycerine, allantoin as well as a special algal extract in a balanced base of skin friendly lipids. In this formulation, GEHWOL med Lipidro-Cream prevents excess callus, ensures a balanced hydrolipid barrier and prevents dry skin. The recipe is dermatologically tested and also suitable for diabetics. Even at moderate concentrations, urea has a strong hydrating effect, softens callus and has a keratostatic action by normalising cell growth. Other ingredients support this process: Glycerine stabilises the skin cells, ensuring an elastic skin surface. Allantoin dissolves excess callus, making the skin smooth and supple. Urea, glycerine and specific components of the algal extract store and bind skin moisture. In a **care base of high quality oils (hawthorn oil, avocado oil), they therefore improve the skin's natural barrier function, among other things protecting the skin against mechanical irritation which accelerates the callusing process.**

Especially suitable for diabetics

Particularly in diabetics with motor and autonomous neuropathy, wrongly applied strain and related continuous pressure on the feet often causes callus build-up (weals). Since these elevate plantar pressure on soft tissues, weals and a disturbed hydrolipid barrier are regarded as causative in the formation of diabetic foot ulcers. According to current scientific knowledge, pressure relief and the treatment and consistent avoidance of callus weals and dry skin are therefore of special preventive importance.

Among the diabetics in the study collective (42 % of participants), the regular use of GEHWOL med Lipidro- Cream was also accompanied by a clear reduction of callus. Keratosis was reduced by 14 percent after two weeks, as well as 29 percent after four weeks and 36 percent in test subjects with above average initial parameters (fig. 1). The product is scent free and well tolerated by diabetics. The care cream can therefore be used effectively for the prophylaxis of diabetic foot lesions.

Balanced recipe

The care base also speaks for this. Approximately 75 to 80 percent of diabetics suffer from low hydrolipid content of the skin. **Untreated, this can limit the skin's own barrier function and therefore also lead to the development of foot lesions.** GEHWOL med Lipidro- Cream contains hawthorn and avocado oil which include skin related fats with high shares of unsaturated fatty acids

which balance the lack of epidermal lipids that is typical for dry foot skin. Hawthorn oil is also rich in linoleic and linolenic acids **which play an important role in the production of the skin's own ceramides. The total lipid content corresponds to the recommended concentration** for products for the care of dry skin at 21 percent. In combination with strongly hydrating urea, glycerine as well as algal extract, the recipe provides a balanced hydrolipid barrier and is therefore optimally suited to the prevention of dry skin (xerosis): In another application study with 31 diabetics and twice daily application for two weeks, skin moisture rose by an average of 40 percent (fig. 2). If the barrier is already damaged, allantoin and the carotinoids and Vitamin E which are contained in the hawthorn oil encourage regeneration. Farnesol has an anti-bacterial and deodorising effect. The overall recipe is also anti-inflammatory and protects against fungal infections.

Rapid action, lasting effect

GEHWOL med Lipidro-Cream ensures a clear increase in skin moisture during long term treatment. But the effect is already provable even after a single application. This was shown by a controlled kinetic study in 17 diabetics of whom nine had to take insulin. In accordance with the generally common standard examination, the test subjects received one cream application on a defined test area on the inside of the underarm. A control field of the same size remained untreated. Skin moisture was capacitatively measured with the corneometer 60, 120 and 360 minutes as well as 24 hours after application and compared to the respective parameters of the untreated control field. GEHWOL med Lipidro-Cream showed a highly significant moisturizing effect only 60 and 120 minutes after application, and this was still provable after 24 hours. The product showed the strongest effect 360 minutes after application. The skin moisturizing tests clearly prove – in the opinion of the participating scientists - that GEHWOL med Lipidro-Cream causes a direct and significant rise in skin moisture after only a single use. This effect lasts for 24 hours. With regular, proper application, meaning twice daily application in the foot region, skin moisture lastingly increases – by 40 percent after two weeks.

Very good skin tolerability

Even the users themselves - diabetics in this case – praise the product attributes, care effect and tolerability of GEHWOL med Lipidro-Cream. This was shown by the results of a four week survey study in which 29 diabetes patients creamed their feet with the product once or twice daily. The test subjects evaluated specific application properties such as whether the cream has a pleasant scent, gives a positive skin feeling, yields well and is nevertheless easily distributed, and whether the cream is rapidly absorbed. To assess the care effect, they verified the refreshing, skin smoothing, deodorizing, moisturizing, callus softening and callus reducing effects. It was shown that practically all participants were clearly able to determine corresponding application and care properties for the cream. Within the context of use, GEHWOL med Lipidro-Cream also showed excellent tolerability. This was also confirmed by an experimental skin test in which 50 test subjects, among them 26 diabetics, had the product applied under a semi-occlusive bandage on the back. The study situation for GEHWOL med Lipidro-Cream therefore proves probate effectiveness with regard to relevant effects which, among other things, play an important role in the care of diabetic foot skin. This includes skin moisturization, prevention of dry skin and the reduction of excess callus. The tests also show that GEHWOL med Lipidro-Cream is an effective and also very well tolerated alternative for diabetics as well as being a care option which finds high levels of product acceptance among users.

Experience from the podiatric practice

Fissuring and hyperkeratosis on the diabetic foot

Podiatrist, Andreas Schmidt from the Collm Clinic in Oschatz tells us about a type -2 diabetic patient suffering from pronounced fissuring and hyperkeratosis on painful feet. He explains how he managed to alleviate the problems by means of professional, medicinal foot care and an accompanying, home therapy with GEHWOL med Lipidro Cream.



A 55-year-old patient came to my practice complaining of pain twinges in the calcaneus and flat antetarsal area on both sides. The patient in question works as a metal worker doing shift work. His job has resulted in an irregular lifestyle. He is overweight, and he was diagnosed with type-2 diabetes eight years ago. Since then he has been treated by a diabetologist.

The patient has to stand for several hours during his work wearing uncomfortable shoes, which is increasingly difficult for him due to his foot problems. He described his foot pains as almost unbearable. In response to these statements, I closely examined his work shoes: the shoes exhibit an extremely hard sole on the inside as well as extremely hard toecaps from the inside of the shoes.

Diagnosis

This strain has led to the following changes in the feet of the patient: the hyperkeratosis is bilaterally exhibited in the plantar region. The calcaneus area was more severely affected than the antetarsal area. There is considerable bilateral fissuring in the calcaneus region, accompanied by smaller fissures.

Procedure

First I washed his feet and softened the skin in a foot bath. Then I soaked his feet in a foot bath with urea, to which I also added a

combination of active ingredients from the essential oils of mountain pine, rosemary and lavender (GEHWOL FUSSKRAFT Herbal Bath). Then I removed the hyperkeratotic areas in the plantar areas of both feet, using a scalpel, and filed down the painful fissures. I subsequently treated these areas with a salve containing Bisabolol and panthenol (GEHWOL med Salve for cracked skin).

I recommended that the patient should continue the treatment by using a medicinal foot cream with urea at home, which is Dermatologically tested and suitable for diabetics, as the patient also has a sensitive skin. I thought that the GEHWOL med Lipidro Cream would be suitable for this purpose and instructed the patient to apply this cream everyday in the morning and in the evening until his next appointment in three weeks.

The cream is convincing due to its high fat content as well as the moisturizing effects of its active ingredient complex that strengthen the skin barrier (see information box). The combination softens the hyperkeratosis and inhibits epidermal proliferation (cell growth). Consequently an excessive new formation of hyperkeratosis is reduced. Sallow thorn oil and avocado oil replace the deficient lipids in dry skin with their high content of unsaturated fatty acids.

Situation after 3 weeks

After three weeks, the patient has no more pain in the bilateral plantar region. The skin was now very soft and elastic. Moreover I was unable to detect any fissures. The patient applied the recommended cream regularly and told me about his experience as follows during his next appointment: it is quickly absorbed by the skin. He was very surprised by the short time it took for the horny skin to recede to a normal level. He also told me about the many ointments and foams that he had tried out unsuccessfully. The other products had the drawback that they had a very sticky consistency when applied and did not produce the desired success.

Conclusion

From my view as a therapist, I am very satisfied with the success of the treatment. It has been shown once again that home foot care makes a significant contribution to success. I see it as a great benefit for the patient that the GEHWOL med Lipidro Cream is quickly absorbed and does not have a sticky texture when applied. This encourages the compliance of the patient. After all, it is important that there are products that help the patient if they are used regularly and provide the promised effect with their caring ingredients.

GEHWOL med Lipidro Cream

Foot care is a significant factor in the prevention of diabetic foot lesions. One of the best known brands that fulfils these requirements is GEHWOL. In the course of a survey conducted by INSIGHT Health involving 3.375 diabetics, all patients were familiar with the products from the range, which may only be obtained from specialist dealers. In particular, they praised the good to excellent skin compatibility (100%) and the care (96%). A suitable care option from the chiropody practice is GEHWOL

med Lipidro Cream. Studies conducted by the proDERM Institute for Applied Dermatological Research show: the fragrance-free recipe reduces excessive horny skin (diagram 2). Regular application leads to a considerable improvement in the skin moisturisation (diagram 1). Responsible for the effect of the cream is a recipe containing urea, glycerine, allantoin as well as an algae extract rich in minerals in a balanced foundation of skin friendly lipids that regenerate the skin barrier.

Study: What GEHWOL products do for diabetics

More barrier protection for decreased water loss

Cracked callused skin on the feet is not uncommon in diabetics. The danger in this case is that such skin problems often contribute to the development of ulceration, which is difficult to treat. How do the different urea preparations affect this problem? This question was the subject of a study, which was reported in the International Journal of Cosmetic Science. The complete study report can be read on gehwohl.de.

Within the scope of the study, Dr. med. Claudia Borelli and her colleagues from the Ludwig Maximilian University in Munich compared different foot care products, all containing urea, in relation to their impact on the skin barrier function. The **trans-epidermal** water loss (TEWL) served as a significant standard, the release of moisture, via the stratum corneum of the skin, exceeding the normal extent of perspiration. The focus was on products that use cream or foam as a vehicle and include urea concentrations between two and ten percent: two percent urea content (GEHWOL FUSSKRAFT BLUE), ten percent urea content cream (GEHWOL med Lipidro Cream), ten percent urea content foam, cream with Vaseline content (GEHWOL med Salve for cracked skin) as well as Vaseline as a positive reference control. In further investigations, the effects of the GEHWOL med Lipidro Cream on the skin moisturization (hydration) and on the reduction of excessive horny skin were measured.

Study 1: Barrier regeneration

For the determination of the respective effects on the barrier function, the preparations were applied to a certain area on the insides of the lower arms of a total of 19 healthy test persons. Normal perspiration can be anticipated in healthy test persons, which has the advantage that, at the same time, it can be tested whether the normal ability of the skin to perspire and thus potentially its contribution to heat regulation can be impaired by fatty creams or slaves in any questionable way. This was not the case in any of the tested preparations. Although GEHWOL med Lipidro Cream, GEHWOL FUSSKRAFT BLUE and GEHWOL med Salve for cracked skin reduced the **trans-epidermal** water loss, it did not fulfill the function of complete or permanent occlusion at any time (see diagram).

A somewhat greater reduction in the water loss on application of the GEHWOL med Lipidro Cream was evaluated by the researchers as having a positive influence on the skin barrier. The authors exclude an impairment of the natural perspiration ability of the skin with regard to the products tested. There were no significant differences to foam in this connection. Even the Vaseline, used as a reference product for pure fat salves, only led to a somewhat stronger occlusion during the initial half hour, and the water loss approached its normal starting level after 240 minutes.

Study 2: Skin moisture

In a further investigation, the moisturizing (hydrational) effect of the cream with urea content (GEHWOL med Lipidro Cream) was compared with the corresponding effect of a foam with urea content (same concentration) for a period of 24 hours. The test persons in this case were all diabetics. As opposed to the test persons who received no care, the application of both the cream and the foam led to a statistically relevant improvement in the skin moisturization, whereby the GEHWOL med Lipidro Cream resulted in significantly greater hydration than the foam after a period of six hours. After 24 hours, both products achieved a comparable level, which, however, considerably exceeded the starting level. The differences in the time of the hydration indicated the dependence of the effects on the selected vehicle and the overall recipe of the foot care product, as the urea content was identical in both products.

Study 3: Reduction of callused skin

Albeit, the overall recipe and the vehicle also influence other effects. According to the dose, urea possesses a greater or lesser reducing or normalizing (keratostatic) effect on horny skin. In GEHWOL med Lipidro Cream, this is supported by additional ingredients such as Allantoin and glycerin. In the third part of the study involving 14 healthy test persons and 10 diabetics, it was observed how the thickness of the stratum corneum on the foot sole changes following the application of the cream (twice a day). The positive result was that the thickness of the layer of horny skin was reduced by an average of 22 percent in the course of a month. In the diabetics with an above average thickening of the horny skin, the hyperkeratosis was reduced by 36 percent, as was shown by an evaluation of the data collected by the proDERM Institute for Applied Dermatological research in 2006.

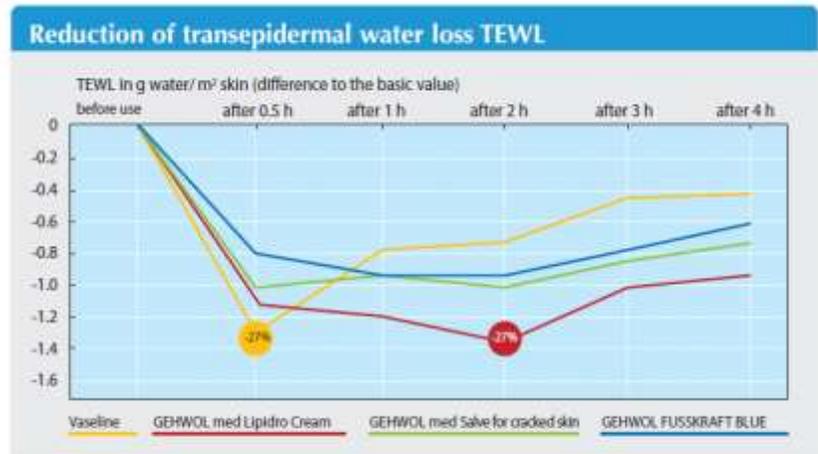
Target: Prevention of callused skin

As a consequence of uneven load distribution, excessive callused skin is a common problem in diabetics with simultaneous neuropathy and the associated motoric deficits. In the case of permanent load, there can be callus formation and the resulting necrosis – the precursor of an ulcer. Therefore the removal of callused skin together with its prevention by means of appropriate foot caring measures is one of the most important prevention targets in the advising of diabetics. The study has shown that a balanced recipe containing fatty and moisturizing ingredients is definitively in the position to prevent even excessively callused skin on a long term basis. If a swift and intensive cure for callused skin is required, the chiropodist can fall back on creams with a high urea content (e.g. GEHWOL med Callus Cream with urea, glycerin, Allantoin, skin smoothing silk extract and barrier stabilizing avocado oil) or recommend these.

Not cream, not foam

A balanced hydrolipid base is essential for the aspired treatment effects that are so important for diabetics. However, this need not be a cream. Creams have the advantage that they allow the user to experience the positive effects of application. This is provided by the ritual: the cream has to be rubbed in, whereby the massage can simultaneously enhance the caring effect or even accelerate it, and consequently is an integral part of the application. In spite of this, patients repeatedly request an alternative that is easily applied and quickly absorbed by the skin.

In this case, a lotion could be the golden rule. GEHWOL FUSSKRAFT Hydrolipid- Lotion offers intensive care products enriched with avocado and jojoba oils, ceramides as well as moisturizing and skin smoothing substances such as urea, glycerin and tapioca starch. However, it combines these ingredients with the advantages of a lotion that is easily distributed and quickly absorbed by the skin – not only for the feet but also to care for the legs. Because this is the combination that is appreciated by many clients of chiropodists, the Hydrolipid-Lotion is one of the products that is only obtainable in the FUSSKRAFT range, an alternative, which chiropodists and podiatrists can exclusively offer their clients and patients.



Fatty emulsions as well as pure fatty salves reduce the water loss in the required manner, this means without causing a complete occlusion.

High-fat foot care for diabetics

Myths and truths

Foot complications are among the most common consequential complications of diabetes. The associated problems are long known: out of the approx. 60 000 amputations which occur every year in Germany, about 70 percent are in persons with diabetes. FUSSPFLEGE AKTUELL talked to Dr. Johannes Jacobs, head of GEHWOL quality assurance in the medical-scientific department of Eduard Gerlach GmbH, about suitable foot care products for diabetics.

Dr. Jacobs, fat and moisture – is that the care formula for diabetics?

A balanced ratio of fat and moisturizing components – that is, a balanced hydrolipid balance – is required for a stable barrier performance of the skin, since the barrier-forming callus layer consists of fats and bound moisture in addition to the callus cells. However the matter of the care effect depends on numerous factors. Galenic perspectives also play a role – especially the vehicle. Depending on the basis of a recipe, its rheological properties, its polarity and its physical-chemical character, the release of nourishing ingredients to the skin and its penetration into the callus layer also varies.

Depending on the state of the skin, it is therefore primarily the overall formulation which matters?

That's how it is. Depending on the formulation, the ratio of fatty components and moisturizing factors, the product's absorption, hydration and softening of the callus layer will vary. However: as the lipid content of a product decreases and the water content increases, it is also possible – depending on the solubility of the substance – for the active substance penetration and skin moisturization to decrease; and if the skin barrier is disturbed, moisture loss may increase at the same time. This is also the reason why lipid-containing care would be advised for dry skin, which is typical for, although not limited to, many diabetics. It results in stronger occlusion, holding more water in and therefore improving hydration.

One occasionally reads that fatty creams may plug the pores, so that diabetics should allegedly not use them. What do you think of this?

Too much fat being harmful is a rumor perpetuated by manufacturers of foam products. Plugged pores allegedly inhibit the **skin's ability to transpire. And because sweating is important for the body's temperature regulation, this would cause heat build-up.** But the error is already in the blanket statement about fatty creams. As already said, the fat content varies with the type of formulation. In terms of the phase triangle of external bases, creams tend to be more hydrophilic than lipophilic preparation forms. Hydrocarbon gels, lipogels and fatty salves and pastes tend to contain much more fat. Creams commonly refer to two-phase emulsion types with a more or less balanced ratio of fats and moisture, wherein the fat share is slightly higher in a water-in-oil emulsion and – vice versa – the water share is slightly higher in an oil-in-water emulsion. Foot creams such as GEHWOL med Lipidro Cream fit the type of light oil-in-water formulations. They allow rapid active substance penetration whose depth is limited to the upper callus layer, good reduction of water loss through the skin, but without complete occlusion, so that natural transpiration is not impaired.

How can this effect be measured?

For assessing this effect, there is further scientific expertise which was only recently published in the International Journal of Cosmetic Science. An objective value which shows the state of the skin barrier is found in transepidermal water loss – in brief: TEWL. In the GEHWOL med Lipidro Cream, the TEWL drops immediately after application, but by a moderate maximum of 27 percent in comparison to water loss before using the cream (graphic). Consequently, there is only partial, but never complete occlusion, which would be theoretically required to impair natural transpiration. Therefore the skin can continue to sweat and give off heat. Partial occlusion is desired for dry skin, since reduced transepidermal water loss means that skin moisture rises at the same time. In the mentioned study, the dropping TEWL values are evaluated as a positive effect of the GEHWOL med Lipidro Cream on the skin barrier for this reason.

How about pure fatty salves?

In oil-in-water emulsions such as the GEHWOL med Lipidro Cream or FUSSKRAFT BLUE cream, the lipid content is at easily 20 percent. This corresponds to the recommendations for caring for dry skin. For medical treatment of chronic hyperkeratotic dermatoses, pure fatty salves, water-free lipogels or hydrocarbons are also partly used as medications. They have a far stronger occluding effect than two-phase salves, creams or lotions. Nonetheless, complete, long-term occlusion in the sense of plugging skin pores or stopping the natural cutaneous transpiration ability does not occur in their case as well. The mentioned study shows this as well. Even Vaseline as a reference for pure fatty products only led to more noticeable occlusion within the first 30 minutes after use. After four hours, the TEWL had already returned to near normal levels (see graphic).

So... no plugged pores?

To my knowledge, there is no serious scientific data basis for this. However it is scientifically provable that a two-phase, hydrophile cream preparation of the oil-in-water emulsion type with a correspondingly high lipid share, urea and other added moisturizing substances moderately lowers transepidermal water loss and therefore regenerates the skin barrier, which leads to significantly increased hydration of the upper callus layer for 24 hours even after one use.

But even in theory, it is scarcely imaginable that fat-rich care might cause occlusion which might impair the natural skin functions **such as the ability to transpire, temperature regulation or even “skin respiration” to a problematic degree. For the entire skin surface is, in principle, already naturally coated with a fat film.** Aside from the physical lipid barrier of the callus layer which consists of ceramides, cholesterol and free fatty acids, this is the lipid film on the skin surface, which contains various fatty alcohols, waxes and hydrocarbon compounds from the sebum of the sebaceous glands. There is no sebum on the sole of the foot, so that fat content is up to ten times lower here as compared to e.g. facial skin. Even just for this reason, the possibility of overfating the foot skin with lipid-rich foot care products is already excluded.

Accordingly, skin functions such as heat regulation cannot be impaired by fat-rich creams?

The skin of the feet alone barely influences thermoregulation, and so called “skin respiration” practically does not take place at all. Heat is primarily released by conduction (heat conduction) and convection (carrying heat along) through the inner heat flow to the body surface and then by radiation, conduction, convection and evaporation to the surroundings. At room temperature and while at rest, heat is mainly given off as radiation (60%). Only from 35° C onwards, heat can only be given off by evaporating sweat, but this takes place over the entire skin surface, of which the foot skin only accounts for about seven percent, and also through the mucous membranes of the respiratory tract. In turn, the contribution of the skin to body respiration is of no physiological significance in humans, for it lies at only about one percent. With regard to the foot skin, this value is only 0.07 percent.

However, general product acceptance is significant. Is compliance a problem in lipid-containing creams?

Product acceptance is a subjective experience which is difficult to evaluate objectively. Some consumers like the feeling of well cared for feet. But the feeling has to be felt on the skin as well. Other users prefer rapidly absorbed products. As already mentioned, the absorption ability depends not only on the lipid content, but also – just like the effect – on the amount which is applied. Hydrophile products may have an advantage here. In a two-phase oil-in-water emulsion, water forms the outer phase. Moisture rapidly evaporates on the skin surface. The lipids and active substances which remain can be absorbed more rapidly. In this way, creams such as GEHWOL med Lipidro Cream and even more so, lotions such as FUSSKRAFT Hydrolipid- Lotion barely differ from a cream foam.

So how should foot care professionals and podologists advise their customers?

They should particularly sensitize their patients to the need of regular foot care measures, even at home. Provable benefits should be in the foreground in product selection; in other words, skin moisturization, regeneration of the skin barrier and if possible, also the reduction of excess callus. Effective protection against foot fungus is another desirable property. Creams and lotions are generally easily absorbed products which can also be used between the toes. Apart from this, however, it is not wrong if a product is not too rapidly absorbed. Massage with a cream is an important haptic part of foot care. It encourages penetration, circulation and the skin sensation.

Suitable for diabetics

According to the GEHWOL Diabetes Report 2009, approximately one third of all diabetics suffer from dry skin and excess callus formation. These skin problems play an important role in the development of diabetic foot syndrome. Therefore consistent foot care is an important objective in preventive care.

The most common cosmetic problems on diabetic feet include dry skin (xerosis) as well as excess callus (hyperkeratosis). This is partially due to a dysfunction of the motor and sensory nerve functions (neuropathy) which is present in many diabetics as a consequence of diabetes. It influences both the moisture content and the lipid content of the skin, and therefore its protective barrier function against pathogens which may cause wound infections, as well as foot fungus.

Measurements in diabetics suffering from neuropathy showed that the skin lipid content was reduced by 60 percent in the region of the foot pads, and skin moisture content was reduced by 24 percent. Since lipids and among them, ceramides in particular are among the most important components of a strongly resistant outer skin barrier (hydrolipid barrier), the loss of skin lipids unavoidably leads to more severe water loss. Dry skin with its accompanying symptoms such as itchiness and redness are the consequence. In this case, one says that the skin suffers from a hydrolipid deficiency.

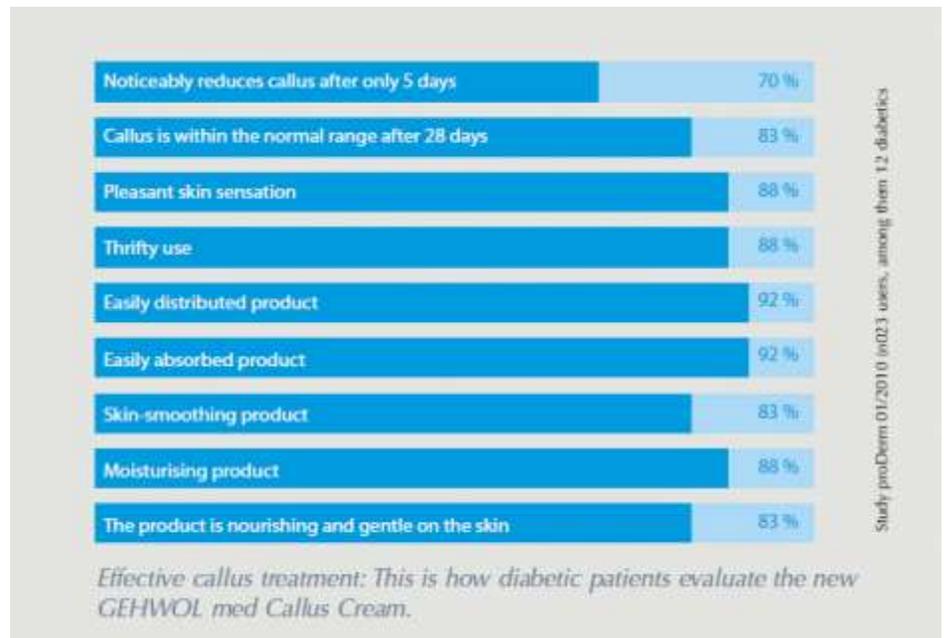
A lack of fats and moisture

The loss of skin fats and moisture also impairs the elasticity of the skin surface. This is problematic because the nerve disorder alone can alter motor functions. It also changes pressure conditions on the foot. Due to the wrongly applied pressure, pressure peaks are formed, particularly in the regions of the heel and frontal foot. Since the hydrolipid-deficient skin cannot compensate for these pressure peaks with appropriate elasticity and suppleness, excess callus is formed in the strained areas.

An example of a suitable care measure is to apply a moisture-providing foot care product to the feet on a daily basis – among other things, this can be read in the joint patient guideline of the Federal Physicians' Chamber, the Federal Association of Health Insurance Funded Physicians, and the Work Group of Scientific Medical Associations. According to the GEHWOL Diabetes Report, the best way for diabetics to obtain advice on the right product selection is from a foot care professional. Foot care practices also have the advantage that they can equip their patients with high quality and partly exclusive quality products for care at home.

Well known and popular

For instance, according to the Diabetes Report 2009, the exclusive specialized products of the GEHWOL brand are not only the best known, but also one of the most popular foot care product ranges. 97 percent of the 3375 diabetics surveyed in the Diabetes Report were familiar with GEHWOL and had already used the products. 96 percent of users praised their care performance and 100 percent commented favorably on their skin tolerability. Within the GEHWOL product range, examples of care products which meet the special needs of diabetic foot skin are e.g. the new GEHWOL med Callus Cream and – for base care – either GEHWOL FUSSKRAFT Hydrolipid Lotion or – alternatively and depending on preferences – GEHWOL med Lipidro Cream.



Cream or lotion is usually a matter of personal preference. According to the Diabetes Report, they are by far the most popular forms at 48 percent, wherein half would prefer lotion and the other half would prefer a cream. The listed Gehwol products are dermatologically tested and have each shown their suitability for diabetes patients in several studies by the pro- Derm Institute for Applied Dermatological Research.

Systematic callus care

The new GEHWOL med Callus Cream can be recommended to reduce excess callus. The one month treatment with highly concentrated urea which is boosted further by glycerin, Allantoin, silk extract and lipids already reduces excess callus noticeably within the first five days. After 28 days, the foot skin has returned to a normally smooth, supple appearance. 80 to 90 percent of users, half of them diabetics, confirm this property and simultaneously praise its easy and gentle intensive care and good skin tolerability.

Following a one month callus treatment, diabetics can continue foot care with a lipid and moisture providing cream or lotion. Both GEHWOL FUSSKRAFT Hydrolipid Lotion and GEHWOL med Lipidro Cream ensure effective hydration of the outer callus layer, owing to a balanced ratio of moisturizing substances and lipids. According to dermatological testing performed solely with diabetics, the moisture content already shows a significant increase after only one application and remains noticeably above the initial parameter even after 24 hours. With regular use, this leads to up to 40 percent more skin moisture in the callus layer.

Long-term care success

With improved skin plasticity, a normal callusing process is guaranteed, and excess callus formation permanently avoided. The surveyed diabetics also confirm that both the cream and the lotion provide a positive skin sensation, are easily distributed, rapidly absorbed, very skin tolerable and result in a smooth, supple skin surface.

Care objective	Product recommendation, effects	Ingredients
Removal of excess callus	GEHWOL med Callus Cream softens and reduces callus, smooths the skin	<ul style="list-style-type: none"> ■ highly concentrated urea ■ glycerine, allantoin, silk extract ■ lipids (avocado oil)
Care of dry skin and avoidance of new, excess callus formation	GEHWOL med Lipidro Cream moisturises, equalises the barrier, binds water, normalises callus, inhibits inflammation, antimycotic, protects against foot odour	<ul style="list-style-type: none"> ■ urea ■ glycerine, allantoin, algae extract ■ avocado oil, sea buckthorn oil
	GEHWOL FUSSKRAFT Hydrolipid Lotion moisturises, stabilises the barrier, normalises callus, smooths the skin, soothes itchiness, inhibits inflammation, antimycotic, protects against foot odour	<ul style="list-style-type: none"> ■ urea ■ glycerin, tapioca starch, ceramides ■ oat extract ■ avocado oil, jojoba oil

Foot care for diabetics

Approximately 5 million diabetics live in Germany and this number is on the increase. Every fourth hospital referral of a diabetic patient is associated with diabetic foot syndrome. Nerve and circulatory disorders are the most common causes of foot problems. However, symptoms are often recognized too late and up to 30,000 amputations can be carried out in Germany every year. At least half of these could have been prevented through correct foot care. Prevention and appropriate patient advice are therefore extremely important.

Diabetes – causes and risks

Diabetes mellitus is a metabolic disorder manifested by elevated blood sugar levels. This is triggered by insulin deficiency caused by depleted insulin production or a limited insulin effect. The condition is frequently linked with obesity. Diabetes patients are particularly at risk of organ damage, especially affecting the eyes, kidneys, nerves, heart and blood vessels. In over 70% of all cases, the patients have problems with their feet.

Many people know nothing about their disease or the potential effects of diabetes on the feet. Very often, foot experts are the first people to see the feet of diabetics. It is, therefore, particularly important that you look for specific features during foot care procedures and give patients sound advice.

Diabetic feet – the primary causes and the cardinal symptoms

of this condition associated with a diabetic foot are nerve damage (diabetic polyneuropathy) – every third diabetes patient suffers from this – and circulatory problems (diabetic angiopathy).

A distinction is made between:

- **Sensory neuropathy:** pain in the feet is no longer properly perceived with this sensitivity disorder (sensory nerve impairment). Those patients affected often notice pressure points caused by ill-fitting footwear. They also fail to notice wounds or stones in their shoes, which would generate pain or discomfort in non-diabetics. As sensitivity to temperature is impaired, diabetics scald their feet in excessively hot foot baths or burn them on heat pads and hot-water bottles.

The first signs of neuropathy are “feet that have fallen asleep” and a sensation of numbness.

- **Motor neuropathy:** this nerve disorder causes the muscles needed to walk and stand to crumble. This often results in foot deformities such as claw- or hammer toes. Charcot foot syndrome, which causes substantial deformities and even damages the bones in the feet, is a less common occurrence.

- **Autonomous neuropathy:** this is where the unconsciously controlling nerves are affected such that perspiration is no longer correctly controlled and is thus reduced. As a result, the skin dries out and cracks. The feet feel extremely warm.

- **Angiopathy:** unlike neuropathy, the feet are cold and look blue because of the circulatory disorder. The skin is permanently thin. Another difference compared with neuropathy is that, in this case, the pain is generally well perceived, even with the most minor of injuries. The patients often experience calf pain when walking. This can be alleviated by standing still and taking a break (“shop window disorder”). **Defective circulation (ischaemia) can cause the skin to perish and turn dark because of haemoglobin decomposition.** This inevitably results in amputation.

Angiopathy disrupts the wound-healing process whereby even minor injuries can develop into a foot ulcer (Ulcus cruris), leading to amputation in extreme cases. Poorly adjusted sugar values will have an additional adverse impact on wound healing. Affected patients often suffer from foot or nail fungal infections due to an increased tendency to infection and an inadequate defense system. A combination of neuropathy and angiopathy generally occur with diabetic foot syndrome.

The key points in the treatment of diabetic foot:

Primary factor: Hygiene!

Pay particular attention to hygiene when treating diabetics. Even the smallest of wounds can trigger severe sequelae as the patients are especially prone to infection.

- Always wear gloves.
- Use disinfected instruments (disinfect, cleanse and sterilize, and store under conditions where micro-organisms are less likely to proliferate).

Prevent injuries

Work with high-quality, reliable tools that promote the feeling of safety even with arduous tasks. A specially designed diabetic set with rotating instruments is available from GERLACH for this purpose. The particularly rounded design of these tools will help you to avoid injuries.

Dry skin needs an intensive care routine

The dry skin of diabetics warrants intensive care to compensate for a lack of moisture and lipid deficiency. You do not necessarily need to purchase an additional, special set rather expensive. Most GEHWOL, GEHWOL med and GEHWOL FUSSKRAFT products are thoroughly tested by a dermatological testing institute to ensure that they are entirely suitable for dealing with the demanding foot care routine needed by diabetics. Pay particular attention to the claim on the packaging, i.e. "Also suitable for diabetics". This GEHWOL cream bestows the skin with essential moisture, strengthens it and, at the same time, affords protection against fungal foot infections to which diabetic patients are particularly prone.

You know your patients, their skin problems and what is required of a foot cream. Use the standard preparation you use in routine treatments for these patients. You can then refer to home appointments in your patient discussions.

Questions and recording information

Record the details of those patients who are diabetic. Do not be afraid to ask long-term patients or those who have not attended your practice for a considerable length of time. The patient file contained in the MSBusinessCLASS software for podology & cosmetics available from GERLACH is an invaluable aid in this respect (see information under www.ms-winsoft.de). Here you can record your treatments perfectly (and even include treatment photographs).

Always look in your patient card index before commencing.

Advice regarding home appointments between practice appointments

Your patients should not overlook their feet even between appointments. This is why sound advice from you is so important.

- Examine the feet every day for any wounds, possibly using a mirror. Never go barefoot and thus avoid injuries.
- Wear comfortable shoes with soft inserts that fit properly to avoid pressure points.
- Check the footwear for any signs such as small stones.
- GEHWOL polymer gel anti-pressure products are recommended for pressure points.
- The temperature of footbaths should not exceed 30°C to 35°C. Check the temperature using a thermometer. Moreover, diabetics should not bathe their feet for more than three minutes to prevent their skin from becoming too soft, which then makes it easy for foot fungal pathogens to penetrate. The skin should then be dried properly, but not rubbed so as to prevent cracking.
- Do not use heat pads or hot-water bottles as these may lead to burning.
- Do not use any sharp or pointed objects such as scissors to remove hard skin. Do not cut toenails too short
- Corns should always be removed by foot care specialists.
- Dry skin must be treated on a daily basis with intensely moisture-replenishing foot creams such as GEHWOL FUSSKRAFT BLUE. This protects the feet from drying out and also guards against fungal infections in the feet and nails.

When feet have sugar

About eight million federal citizens suffer from the people's disease of diabetes. Common accompanying signs of diabetes are dry skin and excess callus on the feet. They are partly responsible for severe foot complications such as diabetic foot syndrome. In the worst case, these complications and wounds may lead to amputation. However this doesn't have to happen with the right care.

Diabetes is a chronic metabolic disorder which is marked by elevated blood sugar levels. There are two types of diabetes. About 90 percent of those who are ill have type 2 diabetes. Other diabetics have the insulin-requiring type 1. The symptoms of "sugar disease", as diabetes is commonly referred to, are not always clear, so that some time often passes before it is discovered. The earlier the illness is found, the easier it is to help patients. This also applies to the illnesses which accompany diabetes.

From foot problems...

Diabetic foot syndrome is one of the most common consequential disorders. It is sometimes also called diabetic foot. All diabetics should be well informed about it. The consequential disorder mainly affects the skin of the feet. Its circulation is not as good as normal. The skin nerves show disorders. Consequently the skin forms fewer fats and moisture. But fat in particular is an important component of the skin barrier. A lack of skin fats means that the moisture which is stored in the skin evaporates more easily. The skin quickly dehydrates and starts to itch. Strong scaling and cracks occur. These cracks are painful. They also allow fungi and bacteria to enter, which further impairs the skin's defenses.

... to problem feet

During these inflammations, ulcers form – usually on the soles – which may extend to the bones. Such wounds can also form easily under callus weals. If the function of the skin nerves is impaired, the gait may change. Certain areas of the foot sole are more strongly strained. The skin reacts to this strain with a natural protective mechanism: the callus in the affected places thickens. Untreated, however, the weal intensifies the pressure effect on the underlying tissues until a wound forms. In the worst case, such wounds or ulcers may lead to amputation. About 70 percent of all amputations in Germany are done in diabetics. There are about 42 000 annually. It is especially problematic that due to a nerve disorder, many diabetics feel no pain and don't even notice the foot problems or wounds. This makes it impossible to treat them early.

Pay attention to your feet

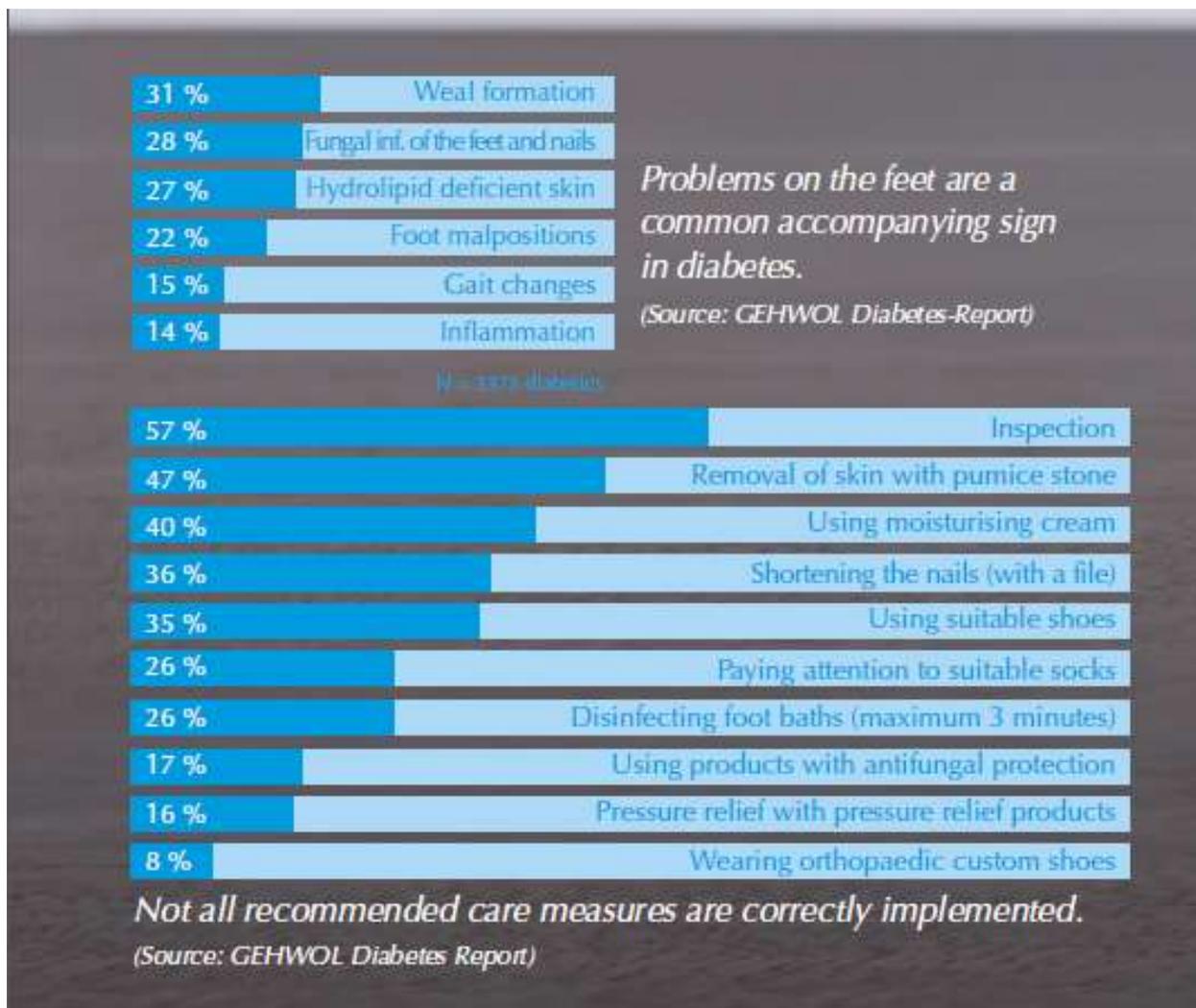
Preventive measures concern all persons with diabetes and patients with impaired pain sensation or circulation disorders. It's important to consistently avoid dry skin and excess callus on the feet, discover problems early and treat them, and ensure sufficient pressure relief on the feet. Diabetics should use qualified help for this and regularly have the feet inspected by a professional foot caregiver or podologist. Foot fungi, foot inflammation on the feet or between the toes and first signs of a wound must be immediately treated by a specialist such as a dermatologist, in a diabetological specialty clinic or in the outpatient foot department of a hospital.

Pay attention to your feet

Diabetes is becoming the number 1 disease of the people. More and more people are suffering from elevated blood sugar levels. The feet are also frequently affected as a consequence. However their care is often insufficient. This is shown by a current survey among 3375 diabetics.

There are about 55 million diabetics in Europe. About 285 million people are currently affected worldwide. Foot problems such as excess callus, foot and toe deformities, dry skin, changes in gait as well as foot and nail fungus are among the most common **consequential complications of diabetes**. According to the recommendations by the Federal Physicians' Chamber and the Federal Association of Health Insurance Funded Physicians, regular foot care can prevent this.

However, many diabetics do not even know that they need to do something for the health of their feet. This is shown by current results of the GEHWOL Diabetes Report. For this investigation, the research institution INSIGHT Health surveyed 3375 diabetics from a treatment pool of 376 doctors' practices together with IDS GmbH. Two thirds of patients (69 %) are not at all aware that they have to pay attention to their feet. Nearly half of them (42 %) practice foot care only rarely or occasionally, if at all. And less than half of them (43 %) regularly seek care from a foot specialist. One third (31 %) do not see a foot care professional at all, or only rarely.



Know-how builds trust

As far as the right foot care is concerned, diabetics trust in the expertise of physicians, diabetes consultants and foot care professionals. The majority also follow the recommendations of a foot care professional (22 %), physician (18 %) or pharmacist (16 %) in the selection of suitable foot care products. Those surveyed particularly valued the exclusive availability of high quality foot care products in foot care practices and pharmacies (31 %). However important care measures are only partly implemented correctly. This includes daily inspection of the feet. Only a little more than half (57 %) does this. And by far not all diabetics use a file for nail care. Instead, they use shears or clippers with which they can easily injure themselves.

Finding the right measure

When cleaning their feet, many questioned persons exceed the duration of the foot bath (recommended: three minutes with a water temperature of max. 35 °C). Only 16 % of diabetics bathe their feet at all, mostly longer than three minutes. Creaming the feet and legs with a foot care product is also part of the care ritual in only 40 % of diabetics. Some patients simply lack the mobility and endurance for such a procedure. If a foot care product is used at all, most patients (48 %) therefore prefer creams and lotions which are easily applied and absorbed.

Get help

Dry skin, cracked callus or foot fungus – the problem is easily recognized as soon as the first itching is noticed on the feet. This is different in diabetics. Since diabetes may also impair pain perception, **alarm signals are frequently not noticed initially. Therefore foot problems often don't get attention.**

Diabetes mellitus is fundamentally well treated only if regular foot examinations also take place. A professional medical foot care provider or podologist is the first contact for this. They will have well-founded medical knowledge and work together closely with the treating doctor or an outpatient foot department. The foot specialist is especially able to develop treatment concepts jointly with the family doctor, diabetologist, orthopaedist or internist. This cooperation provides the basis for optimal patient care. Since 2002, podological care is therefore part of the regular services in diabetic care. That is, doctors can also issue certain prescriptions for diabetic foot.

Early recognition and treatment

Foot care providers and podologists can provide competent advice to their patients and recognize even the smallest changes at an early time. In this way, foot problems can usually be corrected at an early time or at least greatly reduced. A foot inspection or treatment of the feet should take place at least every four to six weeks. If it is not possible to visit the foot care practice, many foot care professionals visit patients at home upon request. During these routine check-ups, foot specialists check whether there are e.g. fungal disorders, ingrown toenails, pressure spots, weals, corns or other changes of the feet and toenails. Finally, they are treated with suitable care.

For instance, if there are ingrown nails, the professional makes a nail brace and applies it to correct nail growth. He or she removes weals or painful corns with the greatest of care and using modern foot care equipment which guarantees high hygiene standards. Foot care pros can also reduce pressure load on the foot with pressure relief articles made from polymer gel or with a special orthotic (custom made pressure relief article). This measure is suitable for preventing further weals or corns. A pressure measurement or gait analysis can also be done for this purpose to check whether strain is being wrongly applied to the feet. This is often responsible for weals or corns recurring after a short time. In this case or if it is shown that the patient wears unsuitable shoes, podologists can also initiate care with an orthopedic shoe.

Competent advice and care tips

Luckily most foot problems pass more or less quickly if they are detected early and treated correctly – in other words, **professionally. Trust a specialist here. But also trust yourself. If you don't take care of your feet, the work of a foot care pro will not be successful in the long run.** You can find out from your foot care pro how to look after the well-being of your feet, and what care and exercises make sense.

So that the shoe won't be too tight

Wrongly fitting shoes are often the cause of foot injuries. Therefore orthopaedic shoe technology is very important both in prevention and in therapy for diabetics. With consistent pressure relief, it contributes to avoiding tissue damage. Mobility without risk is the objective.

For this purpose, the orthopaedic shoemaker first determines the stress zones. This is done with a computer guided, electronic pressure measurement on the soles of the feet while walking (dynamic pedography). During this procedure, the patient wears flexible measuring insoles or steps on a measuring plate with many integrated sensors which record the pressure load on the feet.

Gait analysis can be used to find out whether body statics are altered. Each step is directed by a complex interplay of bones, joints, muscles, ligaments, tendons and nerves which is distributed along the body axis via the hips, knees, feet and toes. Each change along this axis – such as an angled hip or stiffened joints (e.g. in arthritis) may disturb the natural progression of movement while walking. The foot arch suffers from this. Pressure weals form, and the foot and toes lose their natural shape.

Reducing strain

Orthopaedic shoemakers use various measures to correct these disorders and ensure sufficient, comfortable pressure relief. Care includes:

- Individual insoles (diabetes-adapted foot beds): Several soft layers evenly distribute pressure under the foot sole, reducing pressure in especially strained areas.
- Orthopaedic shoe adjustments: The shoe technologist adapts the desired confection shoe individually so that there are no pressure and friction spots. For this purpose, he may make changes to the walking sole, heel, front and/or back caps and the tab.
- Made-to-measure orthopaedic shoes: In pronounced foot deformities or if there is a high risk of wounds due to a nerve or circulation disorder, special shoes can be made. They have a raised heel cap, spacious interior, soft upper leather with no hard front cap and a seamless inner lining. The sole is stiffened or flexible as needed.
- Confectioned therapy shoes: They are used if there is already a foot wound or infection. Usually the frontal foot is affected. The relief shoe therefore has a raised and lengthened heel. This means that the frontal foot does not make ground contact during rolling, relieving the wound area.

If you do not require special orthopaedic shoes, you should still pay attention to quality and fit precision which is right for diabetics when buying confection shoes (also see the box).

Tips for choosing the right shoes

Make sure that the shoe is sufficiently wide and long and has a wide entry. There should be enough room for insoles. The following applies to heels: maximum 4 cm for women and 3 cm for men. A stiff sole is good to allow later adjustments. The material should be actively breathing leather and have no sharp edges. Test new shoes: walking in them for 10 – 15 minutes is enough. Then check your feet for pressure spots. Never walk without shoes, not even at home, and best of all with cotton socks. Look for foreign

particles before and after every use, and change your shoes in the course of the day (take out insoles to air out). Don't use chemical cleaners. Worn inner liners, soles or heels which are worn off at an angle and traces of secretions are signs that the shoe does not fit correctly. Therefore, regularly have your shoes inspected by a doctor or orthopaedic shoemaker.

This is how foot care becomes a simple ritual

Everyone can contribute a lot to making sure that diabetes will not cause further complications. Since the most common problems occur on the feet, this area requires your special attention.

Regular visits to a foot specialist are a mandatory measure. It's also necessary for you to do regular, intensive home foot care. Pedicure errors often cause dangerous foot injuries – such as working with shears and sharp planes or clippers. Turn foot care into a daily ritual. Measures recommended by diabetes experts quickly become routine. They help you to avoid dry skin, excess callus, foot fungus, inflammation and similar risks. It is best to obtain advice from your foot care specialist. Special trainings with a diabetes consultant are also helpful for learning to take diabetes into account every day.

What you should note

- you should examine your feet and soles with a mirror at least once daily to check for redness, pressure spots, blisters, cracks, foreign bodies and injuries. Do this after long walks as well, or after breaking in new shoes.
- File your nails off straight once a week with a sandpaper or diamond file. The nails should end parallel to the tip of the toe. Extremely rounded nail corners encourage nail bed inflammation and painful ingrown toenail edges. Absolutely avoid sharp instruments such as clippers, nippers, shears or pointed files. They are always associated with a risk of injury.
- Sharp tools are also absolutely taboo when removing excess callus. Especially avoid callus planes, metal rasps, knives or shaver blades. Sandpaper callus files, natural pumice stone or a fine callus sponge are much more suitable. If you prefer a callus cream, pay attention to choosing foot care products with no skin-irritating salicylic acids.
- Foot baths are allowed when the skin is intact, however not longer than three minutes and with a maximum water temperature of 35 °C to avoid risk of scalds. You should always measure the temperature with a bath thermometer. Clean your feet with your hands or a soft washcloth – never with a hand brush or massage gloves. After the bath, dry the skin with a soft towel and the spaces between the toes with a cotton swab.
- Dry skin must be creamed once and very dry skin twice per day with a foot care product which has a sufficiently high content of fats and moisturizing substances (but not in the spaces between the toes).
- Use socks with no seams on the inside, preferably cotton. Synthetic socks are unsuitable, since they barely allow body sweat to evaporate.
- Disinfection and a sterile bandage are required for small injuries. You should immediately see a doctor for larger injuries, signs of inflammation, fever or chills.
- You can encourage your foot circulation with mild home foot exercises and also strengthen the musculature. The old principle also applies to diabetes: Exercise brings mobility.

Nail care - before



Nail care - afterwards



File your nails off straight so that they do not grow in.

Obtain advice for product purchases

Dry, brittle skin which tends to callus is a frequent accompanying symptom of diabetes. The cracked skin barrier allows moisture to escape. Pathogenic agents also gain easy entry. Care must be oriented to preserving the protective functions of the skin.

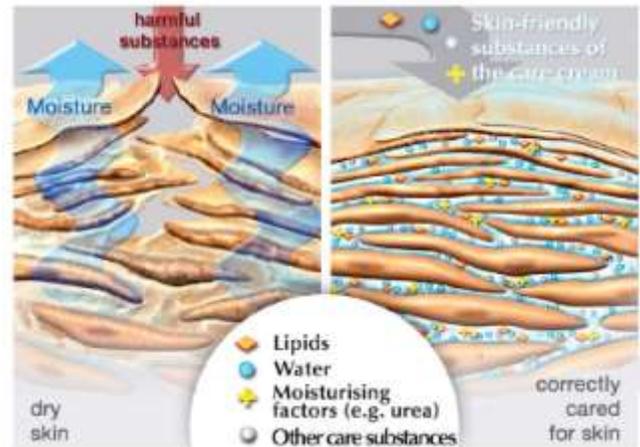
When the skin is dry, the uppermost skin layer – also called the callus layer – lacks moisture and fatty substances (lipids). The skin feels rough, is scaly, lacks shine and elasticity, and tends to form more callus. Itching is another symptom, and a major problem for diabetics. Itchy skin leads to scratching. This can injure the skin, allowing it to become infected with pathogens. This may cause deep foot wounds – diabetic foot syndrome.

How does dry skin form?

The outermost skin layer forms a kind of protective barrier. It keeps pathogens out, but also ensures that the amount of skin moisture which is evaporated out is not more than what is needed to regulate body temperature. The barrier consists of various skin fats, dead skin cells (callus cells) and moisturizing substances which store water in the callus cells. Due to its composition from various fats (lipids) and bound moisture, this outer protective layer is also called the hydrolipid barrier. The barrier function fails when there are insufficient fats and moisture. Then more moisture evaporates, and the skin dehydrates (also see the graphic).

What is care about?

Consequently, the goal of caring for dry foot skin must be to increase skin moisture. The Association for Dermopharmacy recommends care products for this purpose which equalize dry skin's lack of moisture and fats, improving its barrier function. Suitable products are well absorbed for users, but should absolutely have a sufficiently high fat content and may need to contain additional moisturizing substances. Suitable products intensify the barrier effect, leading to better water inclusion into the upper callus layer. **It's also important for diabetics that the products do not contain allergy- triggering scents and preservatives.**



Choices, choices...

Advertising often tells us that certain active substances are good for skin moisture. Of course there are such substances. However this should not distract us from the fact that a substance alone is never responsible for its efficacy – **it's the entire recipe.** The recipe should be composed according to pharmaceutical and dermatological perspectives so that its individual **ingredients are of high quality and optimally complement each other's effects.** The recipe should at least fulfil statutory requirements, but should ideally also be oriented to the recommendations and guidelines of science. At the same time, this means that the efficacy of the products should be proven by suitable scientific processes insofar as possible. This means better security for users. Choosing the right products by these criteria requires a certain amount of expert knowledge which e.g. the dermatologist, consulting pharmacy personnel and well trained foot care professionals and podologists possess.

It's the recipe

Foot care products have to do a lot. Removing excess callus, providing protection against callus and foot fungi and returning lost moisture to dry skin are important care goals.

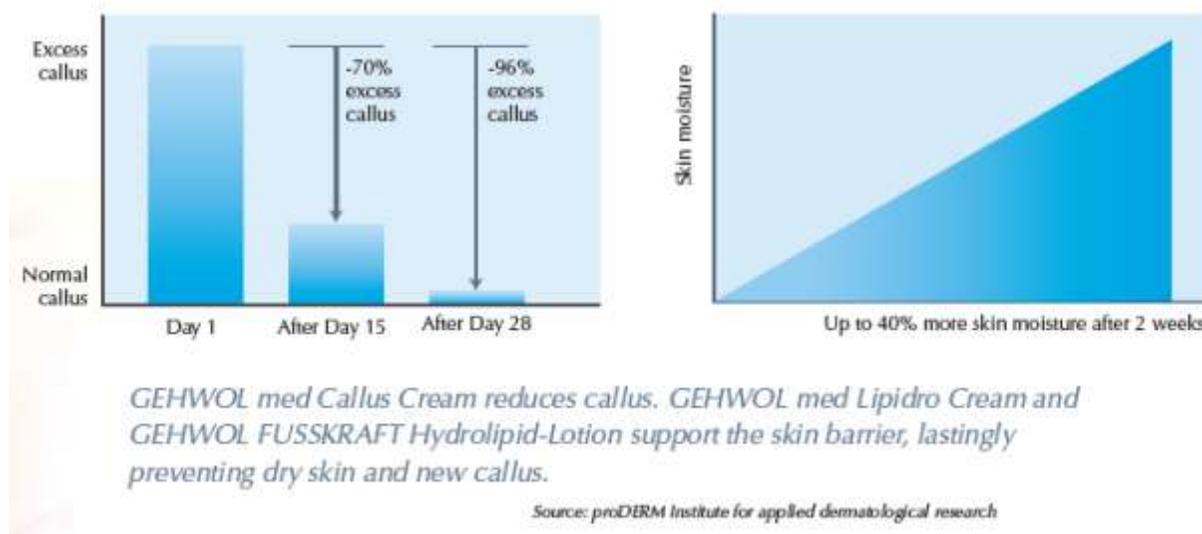
Products of the GEHWOL brand are available exclusively in foot care practices, cosmetics institutes and pharmacies. There are good reasons for this. Each foot care cream is developed strictly by dermatological and pharmaceutical criteria. That is, the ingredients are selected so that their effects complement each other as well as possible. However this leads to complex recipes which require explanation. Well trained expert personnel can assess whether a product is suited to your needs. This expertise is available in pharmacies, foot care practices and cosmetics institutes. Consequently GEHWOL has always been available only in such outlets.

Reducing callus

For instance, you can remove excess callus with the GEHWOL med Callus Cream. Among other things, it contains urea. This natural substance which was discovered in 1773 and repeatedly proven in cosmetics is one of the most important moisturizing factors of the skin. In high concentrations, urea softens callus and loosens the compound of the callus cells. They are able to scale off normally again. Allantoin – a substance which occurs in horse chestnuts among other things – and silk extract also have skin smoothing properties. The combination of these ingredients reduces excess callus after a few days. After about 28 days, the foot skin has returned to a normally smooth, supple appearance.

Preventing callus

To avoid callus in the long term, though, the feet require long term care. GEHWOL med Lipidro Cream is suitable for this. It supports the barrier function of the skin. Since the barrier is formed by a special mixture of lipid and moisture components between the callus cells, the Lipidro Cream provides the skin specifically with these components: skin-friendly, rapidly absorbed fats of sea buckthorn and avocado oil, urea and other moisturizing substances from a special algal extract. If you prefer a light lotion for daily foot and leg care instead of a cream, GEHWOL FUSSKRAFT Hydrolipid-Lotion is a suitable alternative. It is available solely from foot specialists and also supports the fat and moisture content of the skin. For instance, the ceramides which it contains in addition to urea are the main ingredient of natural skin fats and give the skin particularly effective protection against dryness and pathogens. Tapioca starch is another active substance. It is deposited in the skin relief in the form of very small particles. This gives brittle skin a pleasantly smooth appearance again. Also, the itching which is typical for dry skin is relieved with a special oat extract.



Foot Complications

People with diabetes can develop many different foot problems. Even ordinary problems can get worse and lead to serious complications. Foot problems most often happen when there is nerve damage, also called neuropathy, which results in loss of feeling in your feet. Poor blood flow or changes in the shape of your feet or toes may also cause problems.

Neuropathy

Although it can hurt, diabetic nerve damage can also lessen your ability to feel pain, heat, and cold. Loss of feeling often means you may not feel a foot injury. You could have a tack or stone in your shoe and walk on it all day without knowing. You could get a blister and not feel it. You might not notice a foot injury until the skin breaks down and becomes infected. Nerve damage can also lead to changes in the shape of your feet and toes. Ask your health care provider about special therapeutic shoes, rather than forcing deformed feet and toes into regular shoes.

Skin Changes

Diabetes can cause changes in the skin of your foot. At times your foot may become very dry. The skin may peel and crack. The problem is that the nerves that control the oil and moisture in your foot no longer work.

After bathing, dry your feet and seal in the remaining moisture with a thin coat of plain petroleum jelly, an unscented hand cream, or other such products.

Do not put oils or creams between your toes. The extra moisture can lead to infection. Also, don't soak your feet — that can dry your skin.

Calluses

Calluses occur more often and build up faster on the feet of people with diabetes. This is because there are high-pressure areas under the foot. Too much callus may mean that you will need therapeutic shoes and inserts.

Calluses, if not trimmed, get very thick, break down, and turn into ulcers (open sores). Never try to cut calluses or corns yourself - this can lead to ulcers and infection. Let your health care provider cut your calluses. Also, do not try to remove calluses and corns with chemical agents. These products can burn your skin.

Using a pumice stone every day will help keep calluses under control. It is best to use the pumice stone on wet skin. Put on lotion right after you use the pumice stone.

Foot Ulcers

Ulcers occur most often on the ball of the foot or on the bottom of the big toe. Ulcers on the sides of the foot are usually due to poorly fitting shoes. Remember, even though some ulcers do not hurt, every ulcer should be seen by your health care provider right away. Neglecting ulcers can result in infections, which in turn can lead to loss of a limb.

What your health care provider will do varies with your ulcer. Your health care provider may take x-rays of your foot to make sure the bone is not infected. The health care provider may clean out any dead and infected tissue. You may need to go into the hospital for this. Also, the health care provider may culture the wound to find out what type of infection you have, and which antibiotic will work best.

Keeping off your feet is very important. Walking on an ulcer can make it get larger and force the infection deeper into your foot. Your health care provider may put a special shoe, brace, or cast on your foot to protect it.

If your ulcer is not healing and your circulation is poor, your health care provider may need to refer you to a vascular surgeon. Good diabetes control is important. High blood glucose levels make it hard to fight infection.

After the foot ulcer heals, treat your foot carefully. Scar tissue under the healed wound will break down easily. You may need to wear special shoes after the ulcer is healed to protect this area and to prevent the ulcer from returning.

Poor Circulation

Poor circulation (blood flow) can make your foot less able to fight infection and to heal. Diabetes causes blood vessels of the foot and leg to narrow and harden. You can control some of the things that cause poor blood flow. Don't smoke; smoking makes arteries harden faster. Also, follow your health care provider's advice for keeping your blood pressure and cholesterol under control.

If your feet are cold, you may be tempted to warm them. Unfortunately, if your feet cannot feel heat, it is easy for you to burn them with hot water, hot water bottles, or heating pads. The best way to help cold feet is to wear warm socks.

Some people feel pain in their calves when walking fast, up a hill, or on a hard surface. This condition is called *intermittent claudication*. Stopping to rest for a few moments should end the pain. If you have these symptoms, you must stop smoking. Work with your health care provider to get started on a walking program. Some people can be helped with medication to improve circulation.

Exercise is good for poor circulation. It stimulates blood flow in the legs and feet. Walk in sturdy, good-fitting, comfortable shoes, but don't walk when you have open sores.

Amputation

People with diabetes are far more likely to have a foot or leg amputated than other people. The problem? Many of them have peripheral arterial disease (PAD), which reduces blood flow to the feet. Also, many people with diabetes have nerve disease, which reduces sensation. Together, these problems make it easy to get ulcers and infections that may lead to amputation. Most amputations are preventable with regular care and proper footwear.

For these reasons, take good care of your feet and see your health care provider right away about foot problems. Ask about prescription shoes that are covered by Medicare and other insurance. Always follow your health care provider's advice when caring for ulcers or other foot problems.

One of the biggest threats to your feet is smoking. Smoking affects small blood vessels. It can cause decreased blood flow to the feet and make wounds heal slowly. A lot of people with diabetes who need amputations are smokers.

Source: <http://www.diabetes.org/living-with-diabetes/complications/foot-complications/>

Living with Diabetes - Foot Care

Inspect your feet every day, and seek care early if you do get a foot injury. Make sure your health care provider checks your feet at least once a year - more often if you have foot problems. Your health care provider should also give you a list and explain the do's and don'ts of foot care. Most people can prevent any serious foot problem by following some simple steps. So let's begin taking care of your feet today.

Prevention

Your health care provider should perform a complete foot exam at least annually - more often if you have foot problems. Remember to take off your socks and shoes while you wait for your physical examination.

Call or see your health care provider if you have cuts or breaks in the skin, or have an ingrown nail. Also, tell your health care provider if your foot changes color, shape, or just feels different (for example, becomes less sensitive or hurts).

If you have corns or calluses, your health care provider can trim them for you. Your health care provider can also trim your toenails if you cannot do so safely.

Because people with diabetes are more prone to foot problems, a foot care specialist may be on your health care team.

Caring for Your Feet

There are many things you can do to keep your feet healthy.

- Take care of your diabetes. Work with your health care team to keep your blood glucose in your target range.
- Check your feet every day. Look at your bare feet for red spots, cuts, swelling, and blisters. If you cannot see the bottoms of your feet, use a mirror or ask someone for help.
- Be more active. Plan your physical activity program with your health team.
- Ask your doctor about Medicare coverage for special shoes.
- Wash your feet every day. Dry them carefully, especially between the toes.
- Keep your skin soft and smooth. Rub a thin coat of skin lotion over the tops and bottoms of your feet, but not between your toes. Read more about [skin care](#).
- If you can see and reach your toenails, trim them when needed. Trim your toenails straight across and file the edges with an emery board or nail file.
- Wear shoes and socks at all times. Never walk barefoot. Wear comfortable shoes that fit well and protect your feet. Check inside your shoes before wearing them. Make sure the lining is smooth and there are no objects inside.
- Protect your feet from hot and cold. Wear shoes at the beach or on hot pavement. Don't put your feet into hot water. Test water before putting your feet in it just as you would before bathing a baby. Never use hot water bottles, heating pads, or electric blankets. You can burn your feet without realizing it.
- Keep the blood flowing to your feet. Put your feet up when sitting. Wiggle your toes and move your ankles up and down for 5 minutes, two (2) or three (3) times a day. Don't cross your legs for long periods of time. Don't smoke.
- Get started now. Begin taking good care of your feet today. Set a time every day to check your feet.

Source: <http://www.diabetes.org/living-with-diabetes/complications/foot-complications/foot-care.html>

How can diabetes hurt my feet?

High blood glucose from diabetes causes two problems that can hurt your feet:

- **Nerve damage.** One problem is damage to nerves in your legs and feet. With damaged nerves, you might not feel pain, heat, or cold in your legs and feet. A sore or cut on your foot may get worse because you do not know it is there. This lack of feeling is caused by nerve damage, also called diabetic neuropathy. Nerve damage can lead to a sore or an infection.
- **Poor blood flow.** The second problem happens when not enough blood flows to your legs and feet. Poor blood flow makes it hard for a sore or infection to heal. This problem is called peripheral vascular disease, also called PVD. Smoking when you have diabetes makes blood flow problems much worse.

These two problems can work together to cause a foot problem.

For example, you get a blister from shoes that do not fit. You do not feel the pain from the blister because you have nerve damage in your foot. Next, the blister gets infected. If blood glucose is high, the extra glucose feeds the germs. Germs grow and the infection gets worse. Poor blood flow to your legs and feet can slow down healing. Once in a while a bad infection never heals. The infection might cause gangrene. If a person has gangrene, the skin and tissue around the sore die. The area becomes black and smelly.

To keep gangrene from spreading, a doctor may have to do surgery to cut off a toe, foot, or part of a leg. Cutting off a body part is called an amputation.

What can I do to take care of my feet?

- Wash your feet in warm water every day. Make sure the water is not too hot by testing the temperature with your elbow. Do not soak your feet. Dry your feet well, especially between your toes.
- Look at your feet every day to check for cuts, sores, blisters, redness, calluses, or other problems. Checking every day is even more important if you have nerve damage or poor blood flow. If you cannot bend over or pull your feet up to check them, use a mirror. If you cannot see well, ask someone else to check your feet.
- If your skin is dry, rub lotion on your feet after you wash and dry them. Do not put lotion between your toes.
- File corns and calluses gently with an emery board or pumice stone. Do this after your bath or shower.
- Cut your toenails once a week or when needed. Cut toenails when they are soft from washing. Cut them to the shape of the toe and not too short. File the edges with an emery board.
- Always wear slippers or shoes to protect your feet from injuries.
- Always wear socks or stockings to avoid blisters. Do not wear socks or knee-high stockings that are too tight below your knee.
- Wear shoes that fit well. Shop for shoes at the end of the day when your feet are bigger. Break in shoes slowly. Wear them 1 to 2 hours each day for the first few weeks.
- Before putting your shoes on, feel the insides to make sure they have no sharp edges or objects that might injure your feet.

How can my doctor help me take care of my feet?

- Tell your doctor right away about any foot problems.
- Your doctor should do a complete foot exam every year.
- Ask your doctor to look at your feet at each diabetes checkup. To make sure your doctor checks your feet, take off your shoes and socks before your doctor comes into the room.
- Ask your doctor to check how well the nerves in your feet sense feeling.
- Ask your doctor to check how well blood is flowing to your legs and feet.
- Ask your doctor to show you the best way to trim your toenails. Ask what lotion or cream to use on your legs and feet.
- If you cannot cut your toenails or you have a foot problem, ask your doctor to send you to a foot doctor. A doctor who cares for feet is called a podiatrist.

What are common diabetes foot problems?



Corn and callus

Corns and calluses are thick layers of skin caused by too much rubbing or pressure on the same spot. Corns and calluses can become infected.



Blister

Blisters can form if shoes always rub the same spot. Wearing shoes that do not fit or wearing shoes without socks can cause blisters. Blisters can become infected.



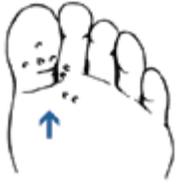
Ingrown toenail

Ingrown toenails happen when an edge of the nail grows into the skin. The skin can get red and infected. Ingrown toenails can happen if you cut into the corners of your toenails when you trim them. You can also get an ingrown toenail if your shoes are too tight. If toenail edges are sharp, smooth them with an emery board.



Bunion

A bunion forms when your big toe slants toward the small toes and the place between the bones near the base of your big toe grows big. This spot can get red, sore, and infected. Bunions can form on one or both feet. Pointed shoes may cause bunions. Bunions often run in the family. Surgery can remove bunions.



Plantar warts

Plantar warts are caused by a virus. The warts usually form on the bottoms of the feet.



Hammertoe

Hammertoes form when a foot muscle gets weak. Diabetic nerve damage may cause the weakness. The weakened muscle makes the tendons in the foot shorter and makes the toes curl under the feet. You may get sores on the bottoms of your feet and on the tops of your toes. The feet can change their shape. Hammertoes can cause problems with walking and finding shoes that fit well. Hammertoes can run in the family. Wearing shoes that are too short can also cause hammertoes.



Dry and cracked skin

Dry and cracked skin can happen because the nerves in your legs and feet do not get the message to keep your skin soft and moist. Dry skin can become cracked. Cracks allow germs to enter and cause infection. If your blood glucose is high, it feeds the germs and makes the infection worse.



Athlete's foot

Athlete's foot is a fungus that causes itchiness, redness, and cracking of the skin. The cracks between the toes allow germs to get under the skin and cause infection. If your blood glucose is high, it feeds the germs and makes the infection worse. The infection can spread to the toenails and make them thick, yellow, and hard to cut.

Source: http://diabetes.niddk.nih.gov/dm/pubs/complications_feet/

www.gehwolfootcare.com



Benestar Corp. 2001 W Main Street, Suite 275. Stamford, CT 06902
Toll Free: 1-877-373-7899. Tel: 1-203-541-8940. Fax: 1-866-280-5576
E-mail: Corporate@gehwolfootcare.com