

Diabetes and Skin Health:

The Benefits and Effects of Lanolin for Protecting Diabetic Skin and Preventing Complications



INTRODUCTION

Today, over 29.1 million or 9.3% of Americans suffer from diabetes mellitus, and over 86 million suffer from prediabetes.¹ This problem is even more prevalent among the growing senior population, 25.9% of whom suffer from the condition.² The disease has many far reaching implications that can have a major impact on the patient's life and require costly treatment. Diabetes can lead to fatigue, cardiovascular disease, eye damage, incontinence, and a wide range of skin conditions if not properly managed.^{3,4} Although both type I and type II diabetes present increased risk for a variety of cutaneous conditions, patients suffering from type II diabetes develop dermatological issues relatively more frequently. In both cases, proper management and skin care is key to preventing complications that can result in tragic consequences.

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Diabetes effects on skin integrity

Diabetes can lead to several skin conditions which can be a major source of discomfort for patients and a significant drain on organizational resources for healthcare providers. Many of these conditions arise due to increased skin dryness which frequently accompanies diabetes mellitus. Because diabetic skin has reduced skin lipids and decreased ability to release moisture, patients with diabetes frequently suffer from skin dehydration. This can increase risk for a wide range of complications, including extreme discomfort, infection, and delayed wound healing.⁸ The lack of collagen in diabetic skin leads to reduced skin elasticity which can also make skin more vulnerable to injuries and impair optimal wound healing. In order to prevent these issues and ensure the best outcome for patients, it is important for caregivers to understand best practices for managing diabetic skin.^{8,9}

How products containing lanolin can help

By implementing a specific and routine skin care regimen, those that suffer from diabetes are able to decrease the potential risk of skin breakdown, infections and other complications.^{3,4} A specific skin care regimen using lanolin can go further by maintaining skin integrity and reducing the potential for surrounding skin damage from conditions associated with diabetes such as xerosis, pruritus, infection, ulcers, and delayed wound healing. Maintaining skin integrity is important for preventing these and other complications and one of the many benefits of specially formulated products containing lanolin, as it mimics the human skin lipid functions. It has many similar properties to naturally occurring skin lipids, such as multilamellar vesicles and a crystalline structure, making it an ideal choice for diabetic skin.^{5,6,7}

This paper will provide guidance on skin care best practices and illustrate the benefits of using lanolin-enriched products for patients with diabetes.



DIABETIC SKIN ISSUES

“ Skin diseases are estimated to affect between 30% and 100% of people with diabetes. ”

Skin issues are often one of the earliest warning signs of diabetes and can be a long-lasting and impactful complication of the disease. Skin diseases are estimated to affect between 30% and 100% of people with diabetes.²¹ Increased glucose levels caused by diabetes mellitus reduce skin lipids and cause skin dehydration, often resulting in dry skin that is susceptible to a wide range of issues such as xerosis, pruritis, infection, ulcers, and delayed wound healing. It is important for all healthcare providers and caregivers of patients with diabetes to understand these conditions and how to provide effective skin care.⁸

Xerosis

Diabetes can negatively impact circulation, particularly in the extremities.⁸ This can, in some cases, lead to itching, dryness (xerosis) and cracking. The condition has been found to affect as much as 82% of the population with diabetes.²² High glucose levels are correlated with dry skin, which can also cause itching, discomfort, and increased risk of bacterial infection. Damage to circulation can divert blood from the skin's surface, leading to excessively dry skin that is more prone to bacterial infection.⁹ Diabetes can also cause dehydration, leading to excessive thirst, poorly hydrated skin, and dryness.³⁰



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Ulcers

Up to 25% of all individuals with diabetes will develop a foot ulcer at some point in their life. This can cause many potentially life-threatening complications and even lead to amputation. Costing approximately \$9 billion every year, this makes foot ulcers one of the most costly ramifications associated with diabetes.^{12, 13, 23} These issues generally begin with neuropathy, and can progress to diabetic wounds, infection and in some cases even amputation or death. As nerve damage leads to loss of feeling in the extremities, patients are much less likely to notice uncomfortable pressure or injury. Over time, this can lead to excessive skin breakdown such as blisters and eventual ulcers. Xerosis and other issues associated



Diabetic foot ulcers are one of the most common causes of lower extremity amputation in the western world.

with diabetes can also weaken the skin, making it more prone to ulcer development. Approximately 56% of diabetic foot ulcerations become infected and 20% of those that get infected eventually require some form of amputation.^{3, 29, 31}



Pruritus is more than three times as common in individuals with diabetes as in the general population.

Pruritus

Pruritus, or severe itching, is one of the most common disorders associated with diabetes and can cause patient discomfort and lead to further skin injury. The condition is caused by neuropathy, dry skin, or medication associated with the condition.¹⁰ The condition is particularly prevalent among the elderly. Recent studies have found that as many as 29% of seniors suffer from the condition and it is more than three times as common in individuals with diabetes as in the general population.^{24, 25}

Delayed Wound Healing

Those impacted by diabetes frequently experience delayed or incomplete wound healing. This occurs due to the condition's effect on circulation. Necessary endothelial progenitor cells are often unable to reach the site of the wound, causing slowed healing.¹¹

Bacterial Infection

Diabetes has a negative effect on skin integrity, which can significantly increase a patient's risk for bacterial infection. These infections can exacerbate already compromised skin causing itching, redness, dryness, and pain.⁸



Although the exact cause of diabetic dermopathy is unknown, it is likely associated with vascular complications caused by diabetes mellitus.

Diabetic Dermopathy

This is a diabetes specific condition that is caused by the disease's effect on small blood vessels. Symptoms include brown scaly patches on the skin, generally found on the legs. Although the condition may cause patient distress, it is only superficial and has no other symptoms.⁸

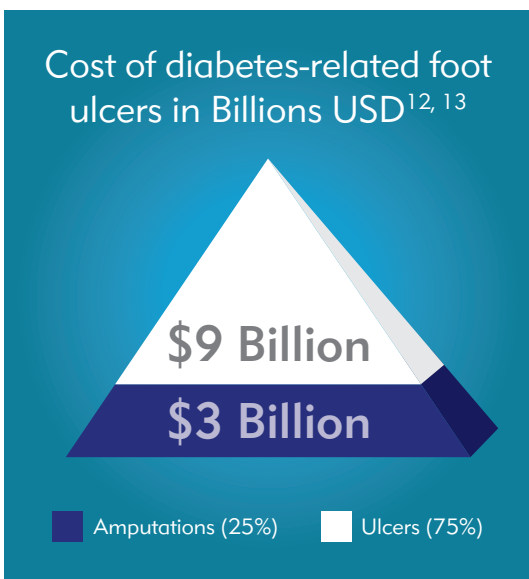
Economic and physical effects of diabetic skin

These problems are extremely uncomfortable and dangerous for patients, time consuming for caregivers, and costly. That's why it's critical that healthcare providers understand how to effectively prevent skin damage for patients with diabetes in order to reduce costs, improve treatment effectiveness, and maintain a good quality of life for patients.

Diabetic skin causes discomfort - Itchiness, pain, unsightly sores, and redness are symptoms of some of the most common skin conditions affecting patients with diabetes. This pain can in some cases be quite severe, requiring analgesic or other palliative care. This can have a significant effect on quality of life and require significant management from healthcare providers. It can also lead to severe disruptions in a patient's sleep schedule, causing them further discomfort and distress.⁸

Diabetic skin can be dangerous - Although discomfort is the most common effect of diabetic skin conditions, the implications can be far more severe. Major non-healing wounds, amputations, and even death can result from some of the most serious conditions. The risk for lower extremity amputation is up to 46 times higher in patients with diabetes than the general population.²⁰ Although treatment methods are improving and serious complications are relatively rare, patients with diabetes still face significant risk because of associated skin conditions and other complications.⁸

Diabetic skin is costly - Managing diabetic skin conditions can be costly for both patients and healthcare providers. These conditions often require expensive, prolonged treatment. Diabetes-related foot ulcers alone cost an estimated \$9 billion annually, and diabetes-related amputations cost an estimated \$3 billion per year.^{12,13}



HOW TO EFFECTIVELY CARE FOR DIABETIC SKIN

“ Skin integrity is a major facet of properly managing diabetes and healthcare providers should be well versed in the key components that comprise an effective skin care regimen. ”

Prevention is key. Effective skin care is critical to preventing and minimizing damage from the skin conditions described above. This is especially true in vulnerable areas such as feet and legs, which are particularly prone to the most dangerous and costly complications, such as ulcers. Skin integrity is a major facet of properly managing diabetes and healthcare providers should be well versed in the key components that comprise an effective skin care regimen.

In order to effectively improve quality of life for patients, reduce risk, and limit liability, healthcare providers must take a multifaceted approach to diabetes management. Nurses and other caregivers must be properly educated on the risks associated with these conditions and effective diabetic skin care. It is important that healthcare providers take a proactive approach in order to limit complications before they become serious and costly.

Keep skin clean - Diabetic skin is susceptible to bacterial infections and should be regularly cleansed using a pH-balanced product specifically created for at-risk skin. It is important to use a gentle cleanser and avoid damaging skin that is in danger of developing an ulcer. Long or hot baths or showers should be avoided, as this can aggravate skin conditions.⁸

Moisturize - Patients with dry skin caused by diabetes are more susceptible to bacterial infection and irritation. Moisturizing helps reduce this risk and provide a palliative reduction in irritation for the patient. It is also important to avoid harsh soaps that may overdry the skin and exacerbate the issue.^{8, 14} Emollients are known to be effective for the management of dry skin and may help prevent further complications associated with the disorder.^{26, 27} Avoid moisturizing between toes, as this may encourage the growth of bacteria or fungus.

Protect skin - The skin's primary function is to provide a barrier, protecting the body from infection, injury, incontinence and other hazards. Conditions associated with diabetes may weaken and dry the skin, significantly compromising this key function. That's why it's important for healthcare providers to use products specially formulated to protect skin from excessive moisture, irritants, or other damaging elements. By cleansing, hydrating and protecting skin, healthcare providers can reduce many of the skin-related complications of diabetes mellitus.^{8, 14}

Position to avoid damage - Healthcare providers working with patients with diabetes confined to the bed should make particular efforts to avoid positioning the patient on an area of damaged or irritated skin whenever possible. These areas may be highly susceptible to damage and must be treated accordingly. Pay particular attention to the feet, which are especially affected by poor circulation and at risk of developing ulcers in patients impacted by diabetes.^{8, 14}



HOW LANOLIN CAN PROTECT AND REPAIR DIABETIC SKIN

“ Lanolin can be used to prevent and treat many complications resulting from diabetic skin. ”

Lanolin is a naturally occurring substance, produced by the sebaceous gland of wool covered animals. It has many characteristics that make it an extremely effective skin care agent for patients with diabetes. It is a natural emollient that moisturizes and has barrier repair properties, which can help protect and in some cases heal minor skin irritations caused by conditions associated with diabetes.^{15, 16} Lanolin is gentle and can be used to prevent and treat many complications resulting from diabetic skin. This makes it one of the best options for use in diabetic skin care.

Cleansing - Effectively cleaning the skin with a gentle but powerful emulsifying agent helps prevent infection and irritation for patients with diabetes. Lanolin is an ideal choice for this as it is made up of polar compounds that can effectively remove dirt and debris, reducing the risk of infection or irritation. Lanolin's polarity also allows it to more effectively moisturize the skin and distribute it evenly into the intercellular space of the stratum corneum.^{15, 16}

Moisturization - Because lanolin can prevent transepidermal water loss (TEWL), it can help prevent xerosis associated with diabetes. Like human stratum corneum lipids, Lanolin is a crystalline material with multilamellar vesicles giving it the ability to hold up to 200% of its own weight in water. This water retention helps prevent conditions that cause skin to be more susceptible to dryness, irritation, and ulcers while providing long-lasting moisturization benefits that keep skin healthier.^{16, 17, 18} Emollients may also aid in reducing the effects of pruritis. They can help downregulate cytokines responsible for itching, helping to alleviate discomfort.²⁸

Protection - Studies show that lanolin can help prevent skin irritation and damage. Lanolin can speed the repair of the barrier function in skin that has been acutely damaged. Its composition is similar to human skin lipids, allowing it to perform a similar function. Skin that is subject to low blood flow is naturally less resilient. This can lead to significant damage, including irritation and ulcers. Lanolin helps to repair this barrier and reduce symptoms such as dryness, cracking, scaling, itching, and pain. This can slow or stop the degradation of skin integrity, possibly preventing ulcers from forming, and reduce the patient's incidence of uncomfortable symptoms.^{8, 16}

Antimicrobial & anti-inflammatory properties - Areas suffering from xerosis or cracked skin are more susceptible to infection. Although it has not been proven, lanolin may help reduce this risk, as it has been shown to have antimicrobial properties.¹⁶ Lanolin has also been shown to have anti-inflammatory properties, helping to reduce discomfort.^{8, 16, 32}

Low sensitization - In recent years, the substance has shown reduced sensitization rates compared to other leading topical treatments for ulcers and skin damage. A recent study showed that allergies occurred in less than 0.001% of individuals.¹⁹



The benefits of using Lantiseptic® skin care products for diabetic skin

“Lantiseptic® is a versatile skin care line formulated with lanolin, a natural emollient that provides a moisture barrier to help maintain skin integrity and reduce breakdown.”

Lantiseptic® is a versatile skin care line formulated with lanolin, a natural emollient that provides a moisture barrier to help maintain skin integrity and reduce breakdown. This lanolin-enriched line supports the body's natural healing process by encouraging the proper balance of the skin. Ideal for prevention and treatment of xerosis, ulcer prevention, reddened or cracked skin, incontinent skin, chafing and other complications. Each product is formulated to fill a unique role in an effective skin care regimen, including cleansing, moisturizing, protecting and treating. Lantiseptic® offers a variety of products to help promote skin health, making it an effective solution for healthcare providers looking to manage diabetic skin.

Clean - Lantiseptic® products include cleansers that are no-rinse and pH-balanced, so they can gently clean, revitalize, and protect the skin while removing irritants that may damage sensitive skin. The 3-in-1 Wash Cream and No-Rinse Cleansing Foam are both strong enough to clean, yet gentle enough to moisturize.

Moisturize - For patients with diabetes suffering from mild xerosis, Lantiseptic® moisturizing creams are ideal for targeted use or everyday care. Cracked skin or minor irritation can be treated with Lantiseptic® Dry Skin Therapy, which is uniquely suited for severely dry skin. The 30% lanolin formula is ideal for heels, elbows, legs, and other areas. The Nourishing Skin Cream with dimethicone can temporarily protect and provide nutrients that condition the skin, leaving skin feeling smooth and soft.

Protect - Lantiseptic® Original Skin Protectant and Protective Ointment can also help prevent irritation that may lead to ulcers, such as those related to diabetes. The unique Lantiseptic® barrier products provide long-lasting protection and help maintain skin integrity.



The Original Skin Protectant, with its 50% lanolin formulation, provides a moisture barrier that helps prevent minor skin irritations. This formula provides long-lasting protection from chafed skin due to incontinence and excessive moisture, which helps limit exposure that can significantly weaken skin. The Protective Ointment temporarily protects and helps relieve chafed, chapped or cracked skin and lips. It also helps treat and prevent incontinence associated dermatitis, frequently seen in patients with diabetes.

Treat - Lantiseptic® CaldaZinc Ointment provides a moisture barrier that prevents and helps treat minor skin irritation from urine, diarrhea, hemorrhoids, cuts, itching and others. The additional menthol and calamine ingredients help promote relief by temporarily alleviating pain and itch.²⁵

Lanolin-based products

Every Lantiseptic® product is enriched with lanolin and is formulated to encourage the proper moisture balance of the skin, thereby supporting the body's natural healing process. This can help improve skin cleanliness, keep skin moisturized longer, provide proper protection and maintain skin integrity for patients impacted by diabetes-related skin conditions.



SERIOUS SKIN CARE SOLUTIONS

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