Diabetic Foot Care

Summary
This skill describes the steps for performing foot care for patients diagnosed with diabetes mellitus.

ALERT
Refer patients with signs and symptoms of a wound infection, nonhealing cuts, newly acquired bruising, or significant vascular compromise for immediate medical care.

OVERVIEW
Patients with diabetes are at high risk for foot ulcers. Ulcers can be caused by trauma to the feet, ranging from breaks in skin integrity caused by fungal infections to wounds caused by foreign objects. Patients with diabetes may not be aware of these injuries due to nerve damage or neuropathy related to diabetes. About 60% to 70% of people with diabetes have some form of neuropathy.[3] Other risk factors for foot infections or amputation are peripheral vascular disease, cigarette smoking, poor glycemic control, visual impairment, foot deformity, and previous ulcer or amputation.[1,4]

Daily foot care, including inspecting and washing the feet, can identify issues before they become problematic.[2] Observations of the skin, such as hair loss on the legs, can indicate underlying vascular changes that may indicate poor circulation. Impaired circulation reduces the blood flow needed to heal wounds, placing the patient at risk for nonhealing wounds and possible amputation.

The nurse can identify risk factors for wounds and infections and can provide education to patients and caregivers while assisting with proper foot care and inspection.

EDUCATION
- Provide developmentally and culturally appropriate education based on the desire for knowledge, readiness to learn, and overall neurologic and psychosocial state.
- Instruct the patient and caregivers to inspect the patient's feet daily after washing, using a mirror to visualize all surfaces of the feet.
- Encourage the caregivers to assist the patient with daily foot care.
- Instruct the patient and caregivers on the importance of not soaking the feet because this can lead to increased dryness.[3]
- Instruct the patient and caregivers that lotion may be applied as prescribed by the practitioner, but that it should not be applied between the patient's toes. Foot powder may be used to reduce moisture, as needed.
- Instruct the patient to wear properly fitting shoes with a padded tongue and broad, square toe box, along with clean, dry, and lightly padded socks without seams; not to walk barefoot; and to examine the interior of footwear for foreign objects or rough spots before wearing.[1]
- Instruct the patient and caregivers to contact the practitioner if there are wounds that do not heal within a few days.
- Explain the foot care procedure to the patient.
- Encourage questions and answer them as they arise.

PROCEDURE

1. Perform hand hygiene and don gloves. Don additional personal protective equipment (PPE) based on the patient's need for isolation precautions or the risk of exposure to bodily fluids.
2. Introduce yourself to the patient.
3. Verify the correct patient using two identifiers.
4. Explain the procedure to the patient, family, and caregivers and ensure that the patient agrees to treatment.
5. Verify the practitioner's order and assess the patient for pain.
6. Prepare an area in a clean, convenient location and assemble the necessary supplies.
7. Assist the patient into a comfortable position.
8. Fill the wash basin with warm, soapy water. Demonstrate to the patient and caregivers how to test the water temperature using the elbow or fingers.
9. Place the wash basin on a towel or other barrier to protect the floor from spills.
10. Wash the patient's feet, observing the skin's integrity and looking for any open areas or deformities (Figure 1). Instruct the patient to report any changes to the feet (Table 1).

Report any open areas, wounds, or blisters to the practitioner.

11. Thoroughly dry the patient's feet, including the skin between the toes.

Rationale: Moisture left between the toes may cause skin breakdown and may lead to infection.

12. File or trim the patient's nails with toenail clippers straight across the toe (if ordered by the practitioner and permitted by the organization's practice). A podiatrist may need to cut hard-to-trim toenails.

Rationale: A straight cut prevents ingrown nails and infections.

13. Feel nail edges and smooth any rough edges with a file or pumice stone.

Rationale: Pointed or sharp edges may cause trauma.

14. If the patient's skin is accidentally cut during nail care, cleanse the open area well and cover it with a bandage. Report the incident to the practitioner and reassess the injury at the next visit.
15. Apply a moisturizer to all surfaces of the patient's feet except between the toes.[3]

Rationale: Moisture between the toes may cause skin breakdown and infection.

16. Assess the patient's footwear for foreign objects and proper fit to prevent rubbing and blisters.
17. Assist the patient with donning clean, dry socks and shoes.

Reinforce the importance of not going barefoot.

Rationale: Clean, dry socks help reduce moisture to prevent skin breakdown. Shoes help reduce accidental trauma to the feet.

18. Discard or store supplies, remove PPE, and perform hand hygiene.
19. Document the procedure in the patient's record.

Table 1 Common Foot and Nail Problems

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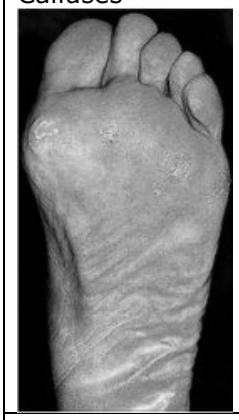
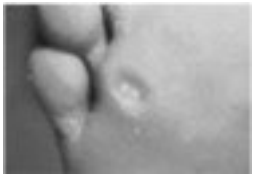
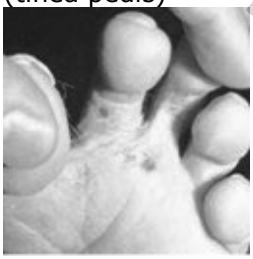
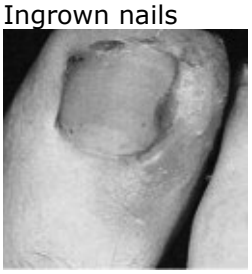
Condition	**Characteristics**	**Implications**	**Interventions**
Calluses 	Thickened part of epidermis, consisting of mass of horny, keratotic cells; usually flat, painless, and found on undersurface of foot or on palm of hand; caused by local friction or pressure	Foot calluses may cause discomfort when wearing tight-fitting shoes.	• Refer patient to podiatrist; do not self-treat. • Use of orthotic devices cushions and redistributes weight and pressure off calluses.
Corns 	Keratosis caused by friction and pressure from shoes; mainly on toes, over bony prominence; usually cone-shaped, round, and raised; calluses with painful core	Conical shape compresses underlying dermis, making it thin and tender. Pain is aggravated by tight-fitting shoes. Patients may suffer alteration in gait because of pain.	• Refer patient to podiatrist. • Avoid use of oval corn pads, which increase pressure on toes. • Use wider, softer shoes.
Plantar warts 	Fungating lesions on sole of foot caused by papillomavirus	Warts may be contagious, are painful, and make walking difficult.	Refer patient to podiatrist.
Athlete's foot (tinea pedis) 	Fungal infection of foot; scaliness and cracking of skin between toes and on soles of feet; small blisters containing fluid may appear, apparently induced by constricting footwear	Athlete's foot can spread to other body parts, especially hands. It is contagious and frequently recurs.	• Feet should be well ventilated. • Drying feet well after bathing and applying powder helps prevent infection. • Wearing clean, dry socks or stockings reduces incidence. • Contact practitioner for treatment orders.

Ingrown nails 	Toenail or fingernail growing inward into soft tissue around nail; results from improper nail trimming, poor shoe fit, or heredity	Ingrown nails can cause localized pain when pressure is applied.	• Treatment is frequent warm soaks *(exception: patient with diabetes mellitus)* in antiseptic solution and removal of part of nail that has grown into skin. • Teach patient proper nail-trimming techniques. • Refer patient to podiatrist.
Paronychia 	Inflammation of tissue surrounding nail after hangnail or other injury; occurs in people who frequently have their hands in water; common in patients with diabetes mellitus	Area can become infected.	Treatment is warm compresses or soaks *(exception: patient with diabetes mellitus)* and local application of antibiotic ointments. Paronychia can be prevented by careful manicuring.
Foot odors	Result of excess perspiration promoting microorganism growth and possibly faulty foot hygiene or improper footwear	Excess perspiration causes discomfort.	Frequent washing, use of foot deodorants and powders, and clean footwear prevent or reduce this problem.

(From Perry, A.G. and others [Eds.]. [2022]. *Clinical nursing skills and techniques* [10th ed.]. St. Louis: Elsevier.)

Supplies

Ensure that all necessary supplies and durable medical equipment are available.

- Basin for water
- Soap, lotion, toenail clippers, foot powder, nail file, pumice stone
- Bath towel and washcloth
- Towel or other covering for the floor
- Clean, dry socks
- Shoes or slippers
- Gloves and additional PPE, as indicated
- Mirror

REFERENCES

1. American Diabetes Association. (2021). 11. Microvascular complications and foot care: Standards of Medical Care in Diabetes—2021. *Diabetes Care, 44*(Suppl. 1), S151-S167. doi:10.2337/dc21-S011

2. Centers for Disease Control and Prevention (CDC). (2024). Diabetes and your feet. Retrieved January 13, 2025, from https://www.cdc.gov/diabetes/diabetes-complications/diabetes-and-your-feet.html?CDC_AAref_Val=https://www.cdc.gov/diabetes/library/features/healthy-feet.html

3. National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). (n.d.). Diabetic neuropathy. Retrieved January 13, 2025, from https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/nerve-damage-diabetic-neuropathies

4. National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). (2017). Diabetes & foot problems. Retrieved January 13, 2025, from https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/foot-problems

ADDITIONAL READINGS

Centers for Disease Control and Prevention (CDC). (2024). Diabetes complications. Retrieved January 13, 2025, from https://www.cdc.gov/diabetes/complications/?CDC_AAref_Val=https://www.cdc.gov/diabetes/managing/problems.html