

Diabetic Foot Ulcer and Wound Care

A plain-English guide for you and your family

WHAT IS HAPPENING

Your feet stay healthy when three shields work together: you feel pain (so you shift weight away from hot spots), blood flows well (so skin gets food and oxygen), and skin stays tough (so germs stay out). In diabetes, high sugar over years damages the nerves in your feet—this is called neuropathy (nerve damage). When the nerves stop working, you lose the alarm bell: you cannot feel a pebble in your shoe, a blister, or a sore spot. At the same time, blood vessels get narrow and stiff (peripheral artery disease or PAD), so less blood reaches your toes and heels. Without enough blood, skin cannot heal even tiny cracks. Add pressure—from walking, tight shoes, or just the bone pressing on skin from the inside—and you get a wound (an ulcer). Because you cannot feel it, you keep walking on it. Because blood flow is poor, the wound does not close. Germs sneak in through the open skin, and your immune army cannot reach the site fast enough to fight them off. The infection can tunnel down to the bone (osteomyelitis, or bone infection). The wound may look dry or have drainage; it may smell bad; the skin around it may be red, swollen, or strangely cool. The real danger is that all of this can happen with little or no pain—so people often do not notice until the wound is deep or infected. Healing requires four things working together: keep all weight off the wound (offloading), cut away dead tissue so healthy tissue can grow, kill the infection with antibiotics (and sometimes surgery), and restore blood flow (sometimes with a procedure to open narrowed arteries). Every day the wound stays open, the risk of losing part of the foot or leg goes up. That is why doctors check your feet at every visit, teach you to check them at home, and move fast when an ulcer appears.

What you might feel

- Open sore on the foot that won't heal
- Loss of feeling in the feet (numbness or can't feel light touch)
- Skin around the ulcer looks red, swollen, or feels warm
- Foul-smelling drainage or pus coming from the sore
- Foot feels cold or has weak pulses
- Blackened or dead-looking tissue at the edges of the wound

- Probe-to-bone test is positive (a sterile metal probe touches bone at the bottom of the ulcer)
- Ankle-brachial index (ABI) is low (less than 0.9)

Call the doctor right away if...

- Fever, chills, or feeling very sick all over (suggests the infection is spreading into the bloodstream)
- Red streaks running up the leg from the wound (sign that infection is traveling through the lymph vessels)
- Black or gray dead tissue, or a foul smell (means gangrene or deep infection that can lead to losing part of the foot)
- Sudden severe pain in a foot that used to feel numb (can mean a blood clot just blocked an artery or infection hit a nerve)

What the care team will do

- Assess the wound for size, depth, drainage color and smell, and presence of black or gray tissue, then check pulses in both feet and compare skin temperature.
- Obtain vital signs including temperature, and inspect the leg for red streaks or swelling tracking upward from the wound.
- Ensure complete offloading of the ulcer by verifying the patient is using a total contact cast, cast walker boot, or staying entirely non-weight-bearing with crutches or a wheelchair.
- Check the most recent hemoglobin A1C and current blood glucose, and coordinate with the provider to tighten glucose control to a target below 180 mg/dL.
- Prepare for or assist with sharp debridement by gathering sterile instruments, and after debridement apply the prescribed moisture-balancing dressing such as foam, alginate, or hydrogel.
- Administer prescribed oral antibiotics on time if the wound shows signs of infection, and teach the patient to complete the full course even if the wound looks better.
- Teach the patient to inspect both feet every single day using a mirror for the bottom, looking for any new red areas, blisters, cuts, or warm spots.
- Coordinate vascular studies including ankle-brachial index (ABI) and toe pressures if pulses are diminished, the wound is not improving after two weeks, or the skin looks pale or dusky.

Medicines you may be given — and why

Doxycycline

Doxycycline stops bacteria from making the proteins they need to grow and multiply. Without these proteins, the bacteria cannot survive or spread in the wound. We use this for mild, shallow (superficial) infections in diabetic foot ulcers when the infection has not reached the bone or deep tissue.

Trimethoprim-sulfamethoxazole (TMP-SMX, Bactrim)

TMP-SMX is two medicines working together to stop bacteria from making DNA, which is the instruction manual every cell needs to live. Without DNA, bacteria cannot grow or make copies of themselves. We use this for mild, shallow diabetic foot infections when the bacteria are common skin germs like staph or strep.

Vancomycin (IV)

Vancomycin destroys the cell wall that holds bacteria together. Without a strong wall, the bacteria burst open and die. We use IV vancomycin for deep, severe diabetic foot infections that reach muscle or bone, especially when MRSA (a resistant staph bacteria) is suspected or proven.

Piperacillin-tazobactam (Zosyn, IV)

Piperacillin breaks the cell wall that holds bacteria together, causing them to burst and die. Tazobactam protects piperacillin from bacterial enzymes that would destroy it. Together, they kill a wide range of bacteria—including gram-negative bacteria like *Pseudomonas* and mixed infections common in deep diabetic foot ulcers.

Metronidazole (Flagyl)

Metronidazole enters bacterial cells and damages their DNA so they cannot make copies of themselves or repair damage. It is especially good at killing anaerobic bacteria (bacteria that live without oxygen), which are common in deep, foul-smelling diabetic foot infections. Often used with other antibiotics to cover a broad range of bacteria.

Ertapenem (Invanz, IV)

Ertapenem destroys the bacterial cell wall, causing bacteria to burst and die. It works against a very wide range of bacteria, including many resistant strains. We use it for severe diabetic foot infections when multiple types of bacteria are present or when simpler antibiotics have failed.

Ceftriaxone (Rocephin, IV)

Ceftriaxone breaks the bacterial cell wall, causing bacteria to burst and die. It works against many common bacteria that infect diabetic foot ulcers, including some that are resistant to older antibiotics. Often used as a once-daily IV treatment for moderate to severe infections.

Linezolid (Zyvox)

Linezolid stops bacteria from making the proteins they need to survive. It works by blocking the very first step of protein assembly inside the bacterial cell. We use it for MRSA infections in diabetic foot ulcers, especially when vancomycin cannot be used or has failed. It can be given by mouth or IV.

Where this information comes from

- American Diabetes Association (ADA) Standards of Care
- Infectious Diseases Society of America (IDSA) Diabetic Foot Infection Guideline
- Society for Vascular Surgery Wound Care Guideline
- International Working Group on the Diabetic Foot (IWGDF)

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