

Preventing Skin Infections and Wound Care for Dancers

Our environment is full of pathogens, e.g. bacteria, viruses, fungi, parasites, etc., that can cause debilitating infection. Our skin is the first line of defense: acting as a barrier to protect us from pathogens infiltrating our bodies. However, an open wound can allow a pathogen to enter the body and cause infection, particularly in individuals with a compromised immune system, or experiencing other illness or stress. Thus, proper wound care is paramount!

Why are dancers at risk of skin infection?

Many genres of dance require high levels of physical contact among dancers, such as through pas de deux (partnering) or contact improvisation. Physical contact can allow direct transmission of pathogens from one dancer to another. Transmission can also occur through indirect means, such as dancer contact with studio surfaces, including floors and barres. In addition, communal arrangements such as sharing lockers and/or dormitory rooms at dance programs or summer intensives can increase the risk for pathogen transmission. Repeated assaults to the integrity of a dancer's skin, including abrasions from sliding across the floor or blisters from their pointe shoes can facilitate infection. Perspiration, especially in combination with unventilated footwear (e.g. rubber boots or vinyl shoes), can lead to skin maceration (moisture, softening, and break down), which can increase the likelihood of skin penetration by pathogens.

How does skin infection occur?

- 1) There must be present a potential pathogen, e.g. bacterium, virus, fungus, parasite, etc.
- 2) There must be a transmission mode between agent and host: through direct transmission, as in skin to skin contact; or indirect transmission, as by contact with a contaminated surface, inhalation, or mucus membrane absorption of infected airborne droplets.
- 3) The host must be adequately susceptible. Factors that impact susceptibility include the immune state of the individual at the time of exposure, virulence of the infectious pathogen, and quantity of the infectious agent. Having an open wound or blister means damage to the protective barrier of the skin which can increase susceptibility to an infectious agent. Some medications (e.g. corticosteroids) may also suppress the immune response, which can also increase susceptibility.

What are the signs of infection?

The mnemonic **POWDER** serves as a reminder for the signs of skin infection:

- P is for **Pain** (can be mild or severe; and/or itching)
- O is for **Odor** (usually foul odor, which is caused by the breakdown of tissue)
- W is for **Warmth** (localized tissue warmth, as well as systemic signs including fever)
- D is for **Drainage** (primarily yellow, brown, or sickly green pus)
- E is for **Edema** (swelling)
- R is for **Redness** (surrounding the wound or streaks)

[NOTE: monitor redness by using a pen to outline the border; if the redness later extends beyond this border, this can be a sign that the infection is spreading]

10 things you can do to prevent skin infection!

1) Practice proper hand hygiene

- Use soap and water if your hands are visibly dirty and after using the bathroom. Use alcohol-based hand sanitizer if hands are not visibly dirty.
- Spend at least 20 seconds (the approximate time it takes to sing Happy Birthday twice) lathering liquid soap and water on your hands. Do NOT forget the thumbs, the back of the hands and under the fingernails.
- Do NOT use hot water, as this dries out skin and increases the risk of skin splitting.
- Dry hands fully with single use, disposable paper towels.

2) Shower with liquid soap and water after dance class and rehearsals

- Do NOT forget to wash and dry in between your toes daily.

3) Do NOT go barefoot in shared showers and treatment rooms

- Wear water-resistant sandals or flip-flops.

4) Do NOT share personal items (towels/razors/clothing/ointments/water bottles)

- This protects you and prevents the spread of potential pathogens to fellow dancers.

5) Keep cuts, scrapes, and wounds clean and covered until fully healed

- Clean the area with soap and water and cover with a compressive dressing (e.g. Band-Aid, dry sterile gauze with Coban/Elastikon, or Tegaderm).
- Do NOT use alcohol, hydrogen peroxide, or iodine to clean your wound, as this can harm underlying healthy tissue and delay healing.
- Topical antibiotic ointment should be used only if risk of contamination is suspected (e.g. blister roof torn in a shoe, abrasion from sliding across the floor, etc.).
- Change dressings once daily and monitor for signs of infection.

6) Moisturize your hands and feet daily before bed with fragrance-free and pH-neutral lotions to prevent skin splitting

- Cover moisturized feet with clean socks for longer lasting effect.

7) Keep your feet dry

- Remove dance shoes and socks between classes and rehearsals and wear open toe or strapped sandals to air out feet.
- Have several pairs of dance shoes and alternate them. Give them 24 hours to dry in between use or, if needed sooner, blow dry dance shoes on low heat setting.
- Wear moisture-wicking tights/socks (e.g. acrylic, nylon, polyester, which wick away sweat better than cotton).
- Change tights/socks daily.

- 8) Cut toenails short and straight across to decrease the risk of ingrown toenails**
- 9) Do NOT use tobacco products, as this has been shown to make skin more fragile, interfere with proper oxygenation of tissues, and impede wound healing**
- 10) Ensure proper nutrition and adequate sleep, both of which are important for maintaining maximum health and efficiency of the bodies' immune system**

What to do about blisters?

The best way to treat a blister is to PREVENT it!

- Keep your feet clean and dry.
- Check the fit of your shoes: it is best to fit shoes near the end of the day when ordinary swelling is greatest and the feet are at their largest in volume.
- Do NOT use: antiperspirants, drying powders, talcum powder, and lubricating agents, like mineral oil or petroleum jelly, in your dance shoes.
- Do NOT go barefoot in your dance shoes. Wearing socks/tights in your dance shoes helps to reduce moisture content and friction levels.

If a blister is NOT filled with fluid, it is best to leave the loose skin covering in place!

- Skin acts as a barrier against infection and encourages a healing environment.
 - Use a donut-shaped pad (e.g. Moleskin, Blister Block) over the blister to help reduce pain, pressure and/or friction.

If your blister IS filled with fluid or blood, you may choose to drain it in order to relieve pressure, but remember: draining increases the risk of infection!

- Steps for draining a blister:
 - Clean hands and blister area with soap and water.
 - Sterilize a needle with an alcohol swab and let it completely air dry (about 5-10 seconds).
 - Puncture the blister in multiple locations around the edges, making sure to keep the roof of the blister intact. (If the blister roof seals and again accumulates with fluid, repeat the procedure every six to eight hours during the first 24 hours.)
 - Apply a compressive dressing (e.g. dry sterile gauze with Coban/Elastikon, Band-Aid or Tegaderm) immediately after each draining to keep blister roof intact. Change the dressing at least daily and monitor for signs of infection.
 - If you are returning immediately to dance, apply hydrocolloid (e.g. 2nd Skin, DuoDERM) and adhere with athletic tape. Replace after 1-2 hours. Do NOT leave hydrocolloid covering the blister overnight.
 - Use a donut-shaped pad (e.g. Moleskin, Blister Block) over the blister to help reduce pain, pressure and/or friction.
 - Do NOT remove the blister roof—this can increase pain and risk of infection.
 - If the blister roof is already torn, clean the area with soap and water, and cut off the loose skin with small scissors (sterilize scissors with an alcohol swab first). Apply hydrocolloid as described above.
 - Topical antibiotic ointments are unnecessary in non-infected wounds. However, if wound contamination is suspected (e.g. blister roof torn in a shoe, abrasion from sliding across the floor, etc.) then apply a small amount of topical antibiotic ointment (e.g. Neosporin) before applying a compressive dressing. Do NOT apply ointment directly from tube to wound, as this increases the risk of contaminating the ointment; use a Q-tip or apply directly to the sterile dressing.
- Monitor for signs of infection and seek medical attention if infection is suspected!

References:

- Bolon MK. Hand hygiene: an update. *Infect Dis Clin N Am.* 2016 Sep;30(3):591-607
- Brennan, FH. Managing blisters in competitive athletes. *Curr Sports Med Rep.* 2002 Dec;1(6):319-22.
- Huang C, Ma W, Stack S. The hygienic efficacy of different hand-drying methods: a review of the evidence. *Mayo Clin Proc.* 2012 Aug;87(8):791-8.
- Larson E, Girard R, Pessoa-Silva CL, et al. Skin reactions related to hand hygiene and selection of hand hygiene products. *Am J Infect Control.* 2006 Dec; 34(10):627-35.
- Michailidis L, Kerry M, Wraight, P. Blister management guidelines: collecting the evidence. *J Aust Wound Manag.* 2013 Mar;21(1)16-22.
- Richie D. How to manage friction blisters. *Pod Today.* 2010 Jun;23(6):42-48.
- Unsworth DA, Russell JA, Martiny AC. Presence of *Staphylococcus aureus* on university dance studio floors and barres: a preliminary investigation. *J Dance Med Sci.* 2014;18(3)115-20.
- Worster B, Zamora MQ, Hsieh C. Common questions about wound care. *Am Fam Physician.* 2015;91(2):86-92.
- Zinder SM, Basler RSW, Foley J, et al. National athletic trainers' association position statement: skin diseases. *J Athl Train.* 2010;45(4):411-28.

Disclaimer: The information on wound care contained in this paper is intended to help guide and inform the dancer. It is not meant to take the place of the advice of a medical professional. This information is provided by Dance/USA Task Force on Dancer Health.

Written by: Desiree A. Unsworth, PT, DPT (2020)