Hand-Foot Syndrome

What is Hand-Foot Syndrome (HFS)?

HFS is a skin reaction that appears on the palms of the hands and/or the soles of the feet as a result of certain chemotherapy agents. It may also be referred to as acral erythema, palmar plantar erythema (PPE), or Burgdorf reaction. Chemotherapy drugs known to cause HFS include: capecitabine (Xeloda®), fluorouracil (5-FU), liposomal doxorubicin (Doxil®), doxorubicin (Adriamycin®), cytarabine (Ara-c®), sunitinib (Sutent®) and sorafenib (Nexavar®).

HFS can start as a feeling of tingling or numbness in the palms and/or soles, which progresses to swelling, redness, peeling skin, and tenderness or pain. If there is no change in the treatment, the hands and/or feet can blister (which can then become infected), becoming very painful and interfering with daily activities. It is very important to notify your doctor at the first sign of HFS. Most patients that develop HFS do so within the first few weeks of therapy, but it can also happen after being on the medication for many months.

What causes HFS?

No one knows for sure, but there are a few theories. The most widely accepted theory is that the small blood vessels in the palms and/or soles break due to use, pressure, or increased temperature, causing an inflammatory reaction and possibly releasing the drug into the area. Many of the suggested prevention strategies or treatments for HFS are based on this theory.

How can I prevent HFS?

Unfortunately, there is nothing that is guaranteed to prevent HFS. The key is to catch it early and adjust the chemotherapy dose to prevent it from getting worse or happening again. It is important to understand that several studies have shown that reducing the dose of chemotherapy to relieve HFS does not reduce the effectiveness of the treatment. Some tips to help prevent HFS include:

- Avoid tight fitting clothing (socks, stockings) or tight shoes. Wear loose, comfy shoes when going out and slippers around the house. Do not go barefoot.
- Avoid activities that rub the skin or put pressure on the palms or soles for one week after treatment (or as often as possible if you are on a daily medication). Any activity that puts pressure on the palms or soles should be avoided, but some examples include: washing vigorously, running, jumping, aerobics, long periods of walking, working with garden or repair tools (i.e. shovel, screwdriver, hammer) or chopping food.
- Apply a moisturizer to your hands and feet liberally and often, but gently to avoid rubbing the skin too harshly. Try applying a generous amount of moisturizer at bedtime and wear a loose pair of cotton gloves or socks to bed to promote absorption of the lotion. Some recommended moisturizers are Bag Balm, Udderly Smooth Cream, Eucerin, and Aveeno. Avoid any lotions or creams that contain perfumes, alcohol or glycerin.
- Avoid hot water such as a hot tub, steam room, hot bath or shower, or when washing dishes. Use warm water to shower or bathe and keep showers/baths short. Use tepid water when washing dishes. Do not use rubber gloves to wash dishes as they can cause further irritation by holding heat against your palms.
- Avoid sun exposure as your skin is very sensitive to the sun while on treatment. Remember, you get sun exposure just sitting in a sunny window! Wear SPF 30 or higher daily or wear long sleeved shirts and pants.
- Applying ice packs to the palms of the hands and soles of the feet during the infusion of some chemotherapy medications may be helpful in preventing HFS. Ask your provider if this is appropriate for your treatment.
If I develop HFS, what can be done?

The first and most important step is to notify your doctor right away if you notice any numbness, tingling, redness, peeling, swelling, or pain. Your doctor may stop the chemotherapy for a short period to allow the skin to heal, but in many cases, reducing the dose is enough to allow the skin to heal. Dose reduction or a break from therapy is the only thing proven to heal HFS, but some other strategies can help you deal with the discomfort or help HFS to heal faster.

- Soaking the hands and/or feet in cold water or applying ice packs can relieve pain and tenderness. Use a bag of frozen peas or corn, as these can conform to your hand or foot. Do not keep the cold on for more than 15-20 minutes at a time, but you can alternate the ice on and off.
- Continue to use lotions or moisturizers often, but applied gently.
- Elevating the hands or feet may help decrease swelling.
- Some providers use vitamin B6 (50 to 150 milligrams per day) to help speed healing. Talk to your care team before taking any vitamins.
- An over the counter pain reliever, such as acetaminophen, may help with the discomfort. A topical pain reliever, in a cream or patch form, may also be used. Talk to your provider before taking any medications.
- If you develop blisters, do not break them as they can become infected.
- If you develop a fever (temperature above 100.4°F/38°C), call your care team right away.

Most importantly: Notify your care team as soon as you notice any symptoms of HFS! Do not "wait and see" if the symptoms will improve on their own.