

BOTOX® for Hyperhidrosis

A little sweat is a good thing. In fact, brain-imaging studies in humans and neurochemical studies in animals have shown evidence that sweat inducing exercise actually makes a stronger brain. However, in a society that demands that you "never let them see you sweat," excessive perspiration, known medically as hyperhidrosis, can have physiological consequences such as cold and clammy hands, smelly feet and underarms, dehydration, and skin infections secondary to maceration. Excessive sweating increases anxiety and stress in both occupational and social situations. There are even some "fiscal" consequences as well, including ruined clothing and shoes.

The most common form of hyperhidrosis is focal (i.e. restricted to the palms of the hands, soles of the feet, the underarms, or the face). It is estimated that 8 million Americans have problems related to focal hyperhidrosis, which usually begins in childhood or adolescence. It is not a psychological disease but rather a pathophysiological, possibly hereditary condition in which the nervous system stimulates excess sweat production in response to normal everyday levels of stress and anxiety.



Pedal hyperhidrosis or excessive foot sweating is usually accompanied by increased hand sweating. This could be a part of a general excessive perspiration syndrome consisting of a combination of hand, feet, face or armpit sweating.

Foot sweating can be treated with a variety of anticholinergics medications such as glycopyrolate, propentheline, bromide (probanthine), and oxybutynin (ditropan), all of which may also be used orally. Another medication, propranolol, is a beta-blocker that has generalized anti-sympathetic activity. It has been used to treat stress-induced hyperhidrosis, however it has some potentially disabling side effects including generalized fatigue, slow heart rate and lowered blood pressure. Topical antiperspirants including Drysol, a prescription only medication of 20 percent aluminum chloride in anhydrous ethyl alcohol, are moderately effective in treating palmar and axillary hyperhidrosis. However, they may cause severe skin irritation (Xertac AC is another medical antiperspirant used in treating hyperhidrosis, but it is not as effective as Drysol).

Tap water iontophoresis is another recognized method of reducing sweat in various parts

of the body. It works by inducing electrical changes in the sweat glands that disrupt sweat production. Its effect is not permanent and maintenance therapy must be continued to inhibit sweating. While relatively rare, solitary pedal hyperhidrosis, when present in combination with palmar hyperhidrosis, responds well to sympathectomy (an excision of a portion of a sympathetic nerve). Of course, surgery of any sort always carries more risks, longer recovery time and annoying side effects such as infection and in the case of sympathectomy, compensatory hyperhidrosis in other parts of the body.

Botulinum toxin type A (BTX-A) is a medication that is injected subdermally to treat hyperhidrosis. BOTOX® acts by temporarily blocking neurotransmitters that stimulate sweat production. Because sympathetic nerves that use acetylcholine as a neurotransmitter innervate the eccrine (sweat producing) glands, BOTOX® is effective in temporarily reducing or abolishing sweat production in treated areas. BOTOX® works well for axillary hyperhidrosis. It is injected at 15-20 sites in the underarm and 25-30 sites in the sole of the foot. A decrease in sweating is noted after the injections. However repeat treatments are needed every 12-15 months.

In a study presented at the American Academy of Dermatology's annual meeting in 2004, 87 percent of patients with hyperhidrosis treated with BOTOX® reported significantly decreased amounts of sweating. By comparison, the same claim was made by only 33 percent of the patients who were treated with a placebo.

BOTOX® injections are painful but if the pain can be tolerated this therapy may be beneficial in patients with axillary hyperhidrosis. Cost is another issue since botox injections are expensive and since the treatments have to be repeated every 12-15 months (the average is about a year) the expense may be substantial.

- **How is BOTOX® administered?** BOTOX® is injected via a very small needle into the skin in the bottom of the foot after administration of a peripheral nerve block. Normal activity can be immediately resumed, but heavy exercise should be avoided for several hours.
- **When will BOTOX® take effect?** Underarm sweating will be decreased by 90 percent within 48 to 96 hours and full effect will be seen within one week. There may be simultaneous disappearance of odor associated with decreased sweating.
- **How long does BOTOX® last?** Most patients will obtain the benefit of dryness with one treatment of Botox for about a year.
- **What are the risks and complications?** Complications from injection into the axillary skin include tiny bruises, which fade in a few days, and small persistent areas of sweating that may need a second treatment. There is no risk of numbness or permanent change in the axillary skin, and the risk of temporary muscle weakness is very remote. Most complications are incidental.
- **Are there any contraindications?** Patients with myasthenia gravis, ALS,

pregnant and/or lactating women and anyone taking aminoglycoside antibiotics should not receive BOTOX®.

- **How Much Does BOTOX® Cost?** The typical charge is about \$2000 for both feet.