



HYPERHIDROSIS

Excessive sweating beyond what is required for physiological temperature regulation defines hyperhidrosis. It can be a very embarrassing condition which can significantly affect patients' quality of life and ability to undertake everyday tasks. There is no definitive cure but there are many palliative treatments that can reduce the symptoms.

The majority of patients have primary (idiopathic or generalised) hyperhidrosis, the cause of which is unknown but excessive sympathetic activity leads to hyperfunction (rather than hypertrophy or hyperplasia) of the eccrine sweat glands in that region of innervation. It is estimated to affect at least 1% of the population but because half of the patients do not seek medical help the true prevalence could be greater.

Primary hyperhidrosis classically affects a small number of sites such as the hands, feet, axilla or face or combinations of these but multifocal hyperhidrosis affecting three or more sites is more common than previously thought. The distribution is symmetrical and bilateral and tends to onset in childhood or adolescence. Characteristically, and to differentiate from the secondary hyperhidrosis, it is not present during sleep. As many as half of the patients have a positive family history and an autosomal dominant mode of inheritance is demonstrated. Males and females are equally affected but females tend to experience more axillary sweating and males more craniofacial sweating. Patients have an increased rate of basal sweating at rest which is then further increased during stress, exercise or in hot environments. Most patients are affected throughout the year whatever the weather. It is a lifelong condition which for the majority of patients stays the same or gets worse with age.

Secondary hyperhidrosis can be generalised when associated with a systemic condition or disease (e.g. infection, hyperthyroidism, diabetes, menopause, malignancy, obesity) or it can be a side effect of many drugs and it can occur during sleep ("night sweats"). Or, it can be focal when it is usually secondary to trauma or surgery.

Gustatory sweating is a further form of hyperhidrosis of the head, neck and sometimes chest that occurs when some patients eat any type of food, smell food, or even think about food. It can be a manifestation of autonomic neuropathy in diabetes mellitus. Another form, Frey's syndrome, can occur after parotidectomy when the parasympathetic fibres of the auriculotemporal nerve normally responsible for salivation begin to innervate the eccrine sweat glands of the overlying skin.

The psychosocial impact of constant sweating is immense. Everyday activities and working with sweaty hands is problematic such as not being able to grip things, not wanting to shake or hold hands, difficulty using electronic devices and keyboards, working with metal and making paper wet on contact. Constantly wet feet can ruin shoes and with a bacteria-friendly environment cause smelly feet. Axillary and torso sweating leads to sweat marks and staining on clothes. The consequences of the incessant sweating on a patient's emotional wellbeing, interpersonal relationships, leisure, personal hygiene, and ability to work can sometimes lead to a withdrawal from society and major impacts on emotional, physical and mental health and on self-esteem.

Sweating from the eccrine glands is under sympathetic control and the secondary neurotransmitter responsible is acetylcholine via muscarinic receptors unlike the rest of the sympathetic nervous system which is under adrenergic control. It is useful to remember this neurophysiology when considering some of the treatment options.

Management of Hyperhidrosis

The Patient Journey

Managing patients with hyperhidrosis can be challenging and it is always important to remember you are doing just that, managing their symptoms. A pragmatic approach is to consider a hierarchical or step-wise selection of options. Sometimes it is necessary to combine modalities in order to achieve and maintain cessation of sweating. If you think of it like a journey and the patient visits each option in turn reaching their final destination when sweating is controlled.

1 Diagnosis

Obtain a thorough history and exclude possible causes of secondary hyperhidrosis. Especially if the history and presentation of sweating is slightly atypical, it is prudent to undertake some straightforward screening blood tests (FBC, U&Es, TFT, LFT, HbA1c) and further targeted investigations as indicated.

2 General Advice

- Avoid tight fitting clothing and man-made fabrics
- Wear white or black garments to reduce the show of dampness
- Wear leather shoes rather than those made with synthetic materials and ideally have a second pair to wear on alternate days
- Use emollient washes rather than soaps

3 Barriers and Absorbent Materials

- Disposable axillae pads which can be worn under clothing.
- Clothing with integrated underarm sweat protection to absorb sweat and prevent stains on clothing.
- Charcoal or bamboo insoles and copper or silver socks are antimicrobial so reduce odours and help wick away moisture from the skin

4 Antiperspirants

Strong antiperspirants containing aluminium chloride or aluminium chloride hexahydrate can be applied to all skin areas but the prescribed ones (Driclor, Anhydrol Forte, Odaban) are all a single strength (commonly 20%) and can irritate more sensitive skin areas. **SweatStop** is a range of antiperspirants with different strengths and presentations that can be selected according to which the part of the body the product is to be used on and the level of sweating. They contain aloe vera which can help soothe the skin.

For best results, aluminium containing antiperspirants should be applied to clean dry skin at night-time.

There is now an aluminium free antiperspirant, IXAL, from the makers of SweatStop which is only suitable for those with the heavy sweating of hyperhidrosis of the axilla.

5 Tap Water Iontophoresis

Using a low-voltage electric current passing through water to the skin can be one of the most effective, safe and non-invasive methods to reduce sweating of the hands, feet and axilla. The exact mechanism of action is not completely understood but it is known that the ions in the tap water are important hence the reason why it works best in areas where the tap water is hard. A range of devices is available for clinic and home use capable of providing direct current, pulsed current or both. Direct current is usually recommended and tolerated for treatment of the hands and feet while pulsed current is recommended for treatment of the axilla, those with sensitive skin and children. An intensive course of seven sessions of treatment over four weeks is required initially to reduce sweating which is then followed by maintenance treatments as soon as clamminess returns.



3 Disposable, self-adhesive axillae pads



4 Strong antiperspirants



5 Tap water iontophoresis treatment

6 Botulinum Toxin A

Botulinum toxin is frequently referred to as Botox® which is the proprietary name and original form of the drug produced by the company Allergan. There are now other companies who make the drug. Botulinum toxin is a protein that is produced by the bacteria *Clostridium botulinum* which causes botulism which fortunately is now rare. Botulinum toxin blocks the release of acetylcholine from the nerve endings thereby stopping the stimulation of the eccrine sweat glands. It is licensed for the treatment of hyperhidrosis of the axilla only although some doctors do use it to treat other areas. Treatments are largely done privately with only a few NHS clinics funded to provide it. The effects are short-lived and the treatment requires repeating every three to six months; for this reason, this modality is not suitable for all patients.

7 Medical Management

When topical antiperspirants have been unsuccessful or other treatments are either not appropriate nor possible, or for compensatory sweating after ETS surgery anticholinergic drugs can be prescribed. Largely used for the management of urinary frequency or gastrointestinal smooth muscle disorders it should be noted that some of these drugs are not licensed for systemic use in generalised hyperhidrosis. Since they block acetylcholine at the muscarinic receptors (which are largely parasympathetic) the side-effects of dry mouth, loss of pupillary accommodation, constipation and urinary retention can often limit their extended use. Propantheline bromide (Pro-Banthine) is licensed for hyperhidrosis and gustatory sweating in diabetic neuropathy. Glycopyrronium bromide is licensed for addition to tap water for iontophoresis. Occasionally, beta-blockers are prescribed for patients with anxiety-induced sweating. For prescribing details, you are advised to consult the latest British National Formulary (BNF) or the Summary of Product Characteristics (SmPC).



7 Medical management

8 Microwave Thermolysis

A single device called miraDry is available for the treatment of axillary hyperhidrosis in a limited number of clinics. It uses carefully calculated microwave penetrance which peaks below the epidermal layer to cause lysis of the eccrine sweat glands and other subdermal skin appendages with simultaneous cooling of the skin surface. Published results report favourable outcomes with relatively mild after treatment effects and possibly permanent cessation of sweating.



8 Microwave thermolysis treatment

9 Local Surgery

There are several localised procedures that are done by some surgeons and dermatologists to treat axillary sweating. The procedures are often developed by individual clinicians and can use various techniques including surgical curettage, ablation or excision, or laser ablation and sometimes combinations of these methods.

10 Regional Surgery – Endoscopic Thoracic Sympathectomy (ETS)

Considered as a last resort treatment for sweating when other management strategies have failed, the procedure undertaken with general anaesthesia involves deflation of each lung in turn whilst the sympathetic nerve is identified laparoscopically and rendered inactive, either by means of clamping or electrocautery (sympathotomy) or by excision of part of the nerve (sympathectomy). The procedure itself is effective in reducing the sweating of the areas intended but a large drawback is that patients who have had ETS surgery are likely to develop sweating of another part of the body (compensatory sweating) often on the chest, back, thighs and/or groin. The level of compensatory sweating can be worse than that which originally occurred in the ETS treated areas. There are certain patients, however, for whom working with their hands is critical and not possible due to the excessive sweating, providing they are cognisant of the potential risks, including compensatory sweating, the procedure can still be life-changing.

You can find much more information for medical professionals and patients on the Hyperhidrosis UK Information site www.hyperhidrosisuk.org and the International Hyperhidrosis Society website www.sweathelp.org.

We also have information on hyperhidrosis available in printed form to give to patients and details of clinical papers and evidence, please contact us on info@hyperhidrosisuk.org.

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