

What's the best diagnostic evaluation of night sweats?

Evidence-based answer

There is no single best evidence-based approach to the diagnostic evaluation of night sweats, given the limited number of studies on the subject. A detailed history, however, does appear to be the most important initial diagnostic tool (strength of recommendation [SOR]: **C**, based on usual practice and clinical opinion).

No clinical trials have directly studied symptomatic relief of night sweats alone.

Among menopausal women with hot flashes associated with night sweats, oral hormone therapy is highly effective in reducing their frequency (SOR: **A**, based on a Cochrane review with a clear recommendation). Antireflux therapy may also be effective (SOR: **B**, based on a cohort study). Therapy aimed at decreasing perspiration has also been suggested (SOR: **C**, based on clinical opinion.)

Clinical commentary

Night sweats are an increasingly common complaint

Complaints of night sweats among my menopausal patients have become very common with the declining use of hormone replacement therapy. Both women and their bed partners are affected, and sleep deprivation is a significant side effect, so the problem must be taken seriously.

Though venlafaxine can cause night sweats, it is also a reasonable treatment

strategy for menopause-related night sweats. Gabapentin may hold promise for hormonal symptoms if reflux is not the issue. Other sinister causes of night sweats are uncommon, but are always in the back of my mind when the issue is raised, so the history and review of systems help focus the work-up. The pretest probability of unusual diagnoses guides specific laboratory testing.

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FAST TRACK

If history and exam are unrevealing, a trial of antireflux medication is recommended

Evidence summary

Night sweats are a common complaint in the ambulatory primary care setting: Of 2267 patients in 1 cross-sectional study, 41% reported night sweats, defined as "sweating at night even when it isn't excessively hot in your bedroom" within the previous month.¹ Because the peak prevalence in both men and women occurred in the group ages 41 to 55 years, there was concern

that menopausal hot flashes were a confounding factor, at least for women. In a subsequent study of 795 patients older than 64 years, 10% still reported being bothered by night sweats.²

The more common causes are not widely studied

Few studies look at the causes of night sweats. Although they have been associated with tuberculosis, lymphoma, and

TABLE 1

Medications that may cause sweating or flushing

ANTIDEPRESSANTS	HYPOGLYCEMIC AGENTS
Bupropion (Wellbutrin)	Insulin
SSRIs	Sulfonylureas
Tricyclic antidepressants	
Venlafaxine (Effexor)	
ANTIMIGRAINE DRUGS	SYMPATHOMIMETIC AGENTS
Naratriptan (Amerge)	Beta-agonists
Rizatriptan (Maxalt)	Phenylephrine (Sudafed)
Sumatriptan (Imitrex)	
Zolmitriptan (Zomig)	
ANTIPYRETICS	OTHER AGENTS
Acetaminophen	Alcohol
Aspirin	Beta-blockers
Nonsteroidal anti-inflammatory drugs (NSAIDs)	Bromocriptine (Parodel)
	Calcium channel blockers
	Clozapine (Clozaril)
	Cyclosporine
	Hydralazine (Hydra-Zide)
	Niacin
	Nitroglycerin
	Omeprazole (Prilosec)
	Opioids
	Sildenafil (Viagra)
	Tamoxifen (Nolvadex)
	Theophylline
	Tramadol (Ultram, Ultracet)
CHOLINERGIC AGONISTS	
Bethanechol (Urecholine)	
Pilocarpine	
GNRH AGONISTS	
Gonadorelin	
Goserelin (Zoladex)	
Histrelin (Vantas)	
Leuprolide (Lupron)	
Nafarelin (Synarel)	
Source: UpToDate. ⁴	

FAST TRACK

For menopausal women, oral hormone therapy effectively reduces night sweats

HIV infection, these are not common causes of night sweats in outpatient care.

In the only study that specifically addressed the causes of night sweats in an ambulatory population, Reynolds³ interviewed 200 consecutive patients, 70% from a primary care practice and 30% from a gastroenterology practice. Of the 81 patients who reported having an episode of night sweats at least once a week, esophageal reflux and menopause were the most frequent causes.

Several authors agree that certain medications are frequently associated with night sweats, although the exact incidence is unknown due to a lack of published epidemiologic data.⁴⁻⁶ Antidepressants and antipyretics are among the more commonly cited offenders (TABLE 1).⁴

Finding the right diagnosis requires thorough history & exam

With such a long differential diagnosis (TABLE 2),⁴⁻⁶ night sweats should initially be evaluated with a thorough history and physical examination (according to a consensus opinion of various authors). If these don't elicit possible causes, the appropriate next step in the work-up can vary. Some authors recommend multiple laboratory and imaging studies, while others advise against any routine tests. None of these approaches is evidence-based.

One reasonable algorithm recommends an initial work-up including a complete blood count, thyroid-stimulating hormone (TSH) and erythrocyte sedimentation rate (ESR) level, a purified protein derivative (PPD) and HIV test, and a chest x-ray.⁵ If the results are un-

revealing, a trial of antireflux medication is recommended. If the patient does not improve, consider a diary of nocturnal temperatures to help discern the presence or absence of febrile pulses and further evaluate for suspected endocarditis or lymphoma.

Evidence is scant for symptom relief

Very few clinical trials have directly studied symptomatic relief of night sweats. A large Cochrane meta-analysis found that oral hormone therapy—estrogens alone or estrogens with progesterone—reduced the frequency of night sweats associated with hot flashes among menopausal women by 75% when compared with placebo alone.⁷ Neither primrose oil nor foot reflexology proved effective.⁸

A cohort study found that 80% of the patients with frequent night sweats responded to antireflux therapy.³ One author suggests using therapies aimed at relieving hyperhidrosis.⁶ These include local treatment with aluminum chloride hexahydrate (Drysol), antiperspirants, scopolamine, or phenoxybenzamine hydrochloride (Dibenzyline).

Recommendations from others

A thorough literature search through Cochrane Database Systematic Reviews, AHRQ, National Guideline Clearinghouse, and Medline did not yield any guidelines or consensus statements from other organizations or specialty groups on the evaluation or treatment of night sweats. ■

References

1. Mold JW, Mathew MK, Belgore S, Dehaven M. Prevalence of night sweats in primary care patients: an OKPRN and TAFP-Net collaborative study. *J Fam Pract* 2002; 51:452–456.

TABLE 2

Differential diagnosis for night sweats

ENDOCRINE	NEUROLOGIC DISORDERS
Carcinoid syndrome	Autonomic dysreflexia
Diabetes insipidus	Autonomic neuropathy
Hyperthyroidism	Stroke
Hypoglycemia	SUBSTANCE WITHDRAWAL
Pheochromocytoma	Alcohol
Post-orchietomy	Cocaine
INFECTIONS	Opioids
Coccidioidomycosis	MISCELLANEOUS
Endocarditis	Chronic fatigue syndrome
Histoplasmosis	Gastroesophageal reflux disease
Human immunodeficiency virus	Menopause
Infectious mononucleosis	Obstructive sleep disorder
Lung abscess	Panic disorder
Mycobacterium avium complex	Pregnancy
Osteomyelitis	Prinzmetal's angina
Tuberculosis	Takayasu's arteritis
MALIGNANCY	Temporal arteritis
Leukemia	
Lymphoma	
Prostate cancer	
Renal cell carcinoma	
Other neoplasms	

Source: UpToDate;⁴ Viera et al, *Am Fam Physician* 2003;⁵ Chambliss, *Arch Fam Med* 1999.⁶

2. Mold JW, Roberts M, Aboshady HM. Prevalence and predictors of night sweats, day sweats, and hot flashes in older primary care patients: an OK-PRN study. *Ann Fam Med* 2004; 2:391–397.
3. Reynolds WA. Are night sweats a sign of esophageal reflux? *J Clin Gastroenterol* 1989; 11:590–591.
4. Smetana GW. Approach to the patient with night sweats. UpToDate [database online]. Updated October 3, 2006. Available at: www.uptodate.com.
5. Viera AJ, Bond MM, Yates SW. Diagnosing night sweats. *Am Fam Physician* 2003; 67:1019–1024.
6. Chambliss ML. What is the appropriate diagnostic approach for patients who complain of night sweats? *Arch Fam Med* 1999; 8:168–169.
7. MacLennan AH, Broadbent JL, Lester S, Moore V. Oral oestrogen and combined oestrogen/progesterone therapy versus placebo for hot flushes. *Cochrane Datab Syst Rev* 2004; CD002978.
8. Williamson J, White A, Hart A, Ernst E. Randomised controlled trial of reflexology for menopausal symptoms. *BJOG* 2002; 109:1050–1055.

FAST TRACK

Local treatments—such as anti-perspirants and scopolamine—have limited evidence