Scientific-Based Natural Improvements in Hot Flushes and Night Sweats

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Hot flushes and night sweats (for short, vasomotor symptoms or VMS) are some of the most mysterious of miseries that humans experience. I say humans because men as well as women have hot flushes). Are VMS important? I think so, because VMS are associated with lower bone density and fracture,[1,2] and with cardiovascular changes.[3] Night sweats are associated with an increased risk for heart attacks.[4] In addition, VMS are related to decreased work performance, quality of life, and associated with increased socioeconomic risks.[5] Therefore, VMS are detrimental both physically and mentally.

VMS are traditionally treated with estrogen or estrogen-progestin, but these therapies can cause blood clots and strokes. [6,7] Oral micronized progesterone is also an effective treatment for menopausal hot flushes[8] and appears to be safe. However, women and men coming to see a naturopath are looking for non-medical and more natural approaches to treatment. Our purposes here are to discuss the ways in which VMS are unpredictable and what they are caused by. From this information we will create a scientific approach to hot flush and night sweat treatments.

Let's start with an example of a patient. *Mrs. V. is a 65 year old retired accountant, who is seeking help due to having severe hot flushes, tiredness and problems sleeping. She reports that she usually has good energy and formerly slept soundly for eight hours a night. "Until now I haven't had one night sweat for over 10 years!"*

Why is Mrs. V. having these symptoms? Why did the VMS she previously experienced in perimenopause and menopause start again?

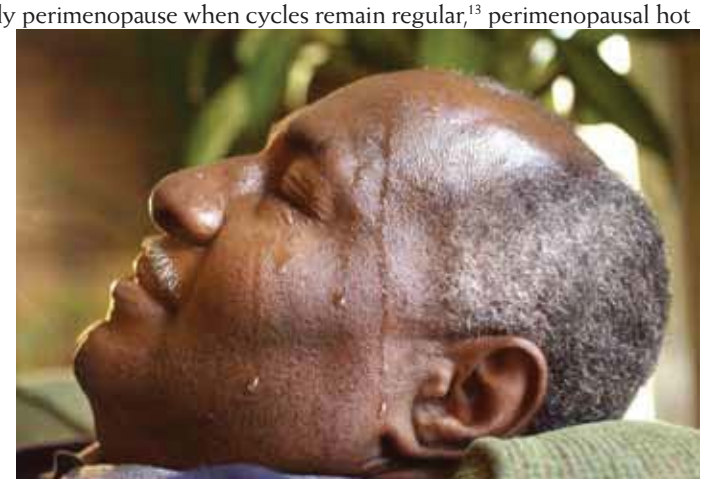
Epidemiological Relationships with Hot Flushes and Night Sweats

Now let's take a look at the facts. In North America, 65% of menopausal women (one year beyond the last flow) and 79% of perimenopausal women experience hot flushes and night sweats.[9] For 7% and 9%, respectively, they are frequent (more than 50 times a week) and severe (with moderate or major sweating).[9] About 50% of menopausal women in Europe experience hot flushes,[5] however, Japanese women report fewer hot flushes than do Caucasian women, even when adjusted for body size and socioeconomic variables.[10] VMS were once thought to start in early menopause and to last on average for about 2-3 years. Now we know, from studies over the last 13 years, that they last an average of 5.2 years (median 4 years).[11] We also now know that night sweats begin in very early perimenopause when women still have regular cycles[12] and tend to be more common on nights around menstruation[13]. Not only do they start for most women in perimenopause, but the earlier they begin, the longer they can last. In fact, some cases have been reported of lasting for more than 14 years![14]

What characteristics are associated with experiencing hot flushes? Although we originally assumed that it was the skinny, cigarette-smoking menopausal woman who would experience hot flushes,[15] in perimenopause, overweight women (whether smokers or not) are at an increased risk.[16] Women who are under stress, whether it's economic stress[17] or situational/emotional stress,[18] also have more frequent and severe hot flushes. Women who are not physically active are also more likely to experience emotional stress and thus increased hot flushes.[19]

What causes hot flushes and night sweats?

Most of us were taught that low estrogen levels cause hot flushes. However, all menopausal women have low estrogen levels—yet not all menopausal women get hot flushes. Also, since night sweats begin in early perimenopause when cycles remain regular,[13] perimenopausal hot flushes cannot be caused by low estrogen levels. Not only are regular cycles likely to have normal estrogen levels, but we now know that perimenopausal estrogen levels average higher and are less predictable than premenopausal ones.[12] Given that stopping estrogen therapy increases hot flushes,[20] could it be that decreasing rather than low estrogen levels cause VMS? The evidence says so. A good example is from a study of women being treated for VMS with long-lasting (6-month) estrogen injections. Women began to return to the doctor sooner than they should, at four or five months, for their next injection complaining of anxiety, hot flushes, and sleep problems (called by the authors "estrogen deficiency" symptoms!). When the doctors measured their estrogen levels, they were all higher than the usual midcycle estrogen peak.[21] Why were they getting hot flushes? Because their estrogen levels were dropping, from extremely high levels right after the estrogen injection to levels that still were high compared to average menstrual cycle levels. Therefore dropping estrogen levels cause hot flushes.



The idea of "estrogen withdrawal", or increased hot flush symptoms with dropping estrogen levels, led me to think about addiction. For someone to become addicted, their brain must have been exposed to something (let's call it "substance S") and also have gotten "used to" high levels of Substance S. Only when these characteristics are met will that person experience symptoms when Substance S levels drop or during Substance S withdrawal. Could VMS be estrogen addiction? I think so. Although there are several reasons, let's start with previous estrogen exposure.

We know that every perimenopausal-to-menopausal woman experiences a drop in estrogen levels. So why do some and not others get VMS? Part of the answer may be genetic, related to the levels of estrogen their brains previously saw. First, genetic studies tell us that people of East Asian descent are more likely than Caucasians to rapidly metabolize and excrete hormones, drugs, and toxins (22). That increased metabolism would cause the brain to be exposed to lower estrogen levels. Although we previously thought that Asians had fewer hot flushes because they ate more soy foods than Caucasians, that idea has now been disproven. Even within Caucasians, there are variations in genetics, and hence the effectiveness of liver enzymes (such as Cyp3A4) whose job is to metabolize estrogen. Therefore, if estrogen has been rapidly excreted, the brain has been exposed to less high estrogen levels, and withdrawal symptoms should be less. On the other hand, if estrogen metabolism is slower, VMS will be more frequent.

In addition to genetics, previous life history determines how much estrogen our brains have "seen." For example, a Caucasian young woman who has her first period at a normal age, has never been overweight, who has always been physically active, and who has never taken combined hormonal oral contraceptives (COC) will have been exposed to less estrogen than a woman who had menarche at 10, was a chubby teen, is always sedentary, and has taken COC for 15-20 years. Another variable in the "lifetime brain estrogen exposure" equation is who will experience the very high estrogen levels in perimenopause?[23,24] Currently we have no data about this. However, it appears that those who do (are also more likely to have heavy flow, sore breasts and weight gain) are at greater risk of VMS than those whose estrogen levels are only slightly higher in midlife. A very perplexing concern is whether the exposure of women to environmental contaminants that act as hormone disruptors or estrogen mimics might be related to hot flushes.

While we're talking about addictions and hot flushes, let's talk about cigarette smoking and alcohol. First, those who depend on these substances may have "addictive personalities" or be at an increased risk. In addition, cigarettes cause more rapid excretion of estrogen and thus a more dramatic drop in estrogen levels[25]. Also, alcohol can trigger higher estrogen premenopausal levels, (26) as well as higher levels in postmenopausal women taking estrogen treatment.[27]

I've often had patients complain to me that their VMS have been belittled by friends, family, or physicians as being "all in their head." I tell them "You're darn tootin' they are!" Hot flushes and night sweats begin and end in the brain. We already discussed brain exposure to higher levels of estrogen and reactions when estrogen levels drop, but what occurs when the brain sees dropping estrogen levels that leads to hot flushes?

The neuroendocrine-temperature connections with hot flushes

From animal studies we know that when estrogen levels drop, norepinephrine levels increase. Norepinephrine is one of the "fight or flight" hormones that we think of as a stress hormone. Not only does it make the heart beat faster and cause "butterflies" in the stomach, but when increased in the brain it also changes our core temperature. We already know that women with VMS complain that their "thermostat is broken." Now we know why! There is normally a range of temperatures, called the thermoneutral zone, in which we are comfortable. With high brain norepinephrine levels, this thermoneutral zone decreases to almost nothing, meaning we tend to sweat or shiver at almost every possible normal temperature!

Vasomotor symptoms and stress

We've already discussed the key role of the stress hormone, norepinephrine, in hot flush pathophysiology. What about other stress hormones and kinds of stresses? The first part of the answer is that during a hot flush every neurotransmitter and brain hormone we know is substantially increased—VMS are a huge brain discharge of stress hormones. It is no wonder that a woman with hot flushes seems stressed. But the other part of that equation is that things that are stressful also increase the risk of hot flushes. For example, low blood sugar increases VMS[28]; so does fear, pain, worrying, or depression.[19] The VMS-stress connection is even more complex because estrogen increases the level of stress hormones (cortisol, ACTH and norepinephrine) released in response to a situational stress.[29]

Before we go on to talk about natural approaches to hot flushes, let's go back to our 65 year old accountant whose hot flushes have returned. You would ask her: Have you lost weight? Are you anxious or worried? Have you started drinking more? Have you started smoking? It turns out that her husband of 40 years died about a month ago.

Non-pharmaceutical, Evidence-based Strategies to Improve VMS

Given the key role of the brain in hot flushes, major improvements are possible if women understand the origin of hot flushes, how long they may last, and know that they have a healthcare partner who cares about their well-being. For example, a woman who believes that she can manage her hot flushes will be less bothered, sleep better, and have less severe VMS than a woman who throws up her hands saying "I can't cope"[30]! One former patient of mine who had used recreational drugs said, "Why would I want to improve my [daytime] hot flushes - it is a

cheap 'high'!" You probably know the phrase "I don't have hot flushes, I have power surges!" This is a reframing of VMS so they can be seen as positive rather than devastating. There is now a Hot Flush Belief Scale that can be used to assess women's attitudes to their hot flushes, helping them to cope rather than having a catastrophic attitude.[31] Here's my science-based list of effective non-medical strategies to improve hot flushes:

1. Assure your patient that you will listen and work with her to improve her VMS. The confidence that you will work with her is a major benefit. What women want is a decrease in VMS by about 50%. Just believing that something will improve VMS, as in a placebo in a controlled trial,[8,32] is sufficient to decrease hot flushes by 25-50%. A similar decrease, especially of daytime VMS, can also be achieved with a combination of natural strategies as outlined below.
2. Teach your patient to record her hot flushes, learn about what triggers them and what makes them better. It is my experience that a patient who becomes an expert in her own experiences develops autonomy that leads to improvements. The Daily Menopause Diary© and the Daily Perimenopause Diary© allow a woman to gain this personal VMS knowledge. Both of these can be downloaded for free from the Centre for Menstrual Cycle and Ovulation Research website (www.cemcor.ubc.ca). You can facilitate learning by providing them with the first, appropriate diary, and asking them to bring their completed diary to their next visit. This is the same diary tool that CeMCOR has used in its progesterone for menopausal hot flush study.[8]
3. Suggest dressing in cottons and other light, breathable fabrics and in layers so that temperature adjustments are easily and non-embarrassingly made. This simple strategy makes a huge difference in comfort. Carrying and using a small fan is also helpful.
4. Help your patient learn relaxation, meditation or yoga breathing strategies. These have been shown in small randomized controlled trials to make important improvements with VMS[33]. Often perimenopausal women will have an aura telling them a daytime hot flush is about to start. If she can take some deep relaxing breathes, or run cool water on her wrists, the VMS may be less severe or be aborted.
5. If your patient is over- or underweight, assist her with appropriate nutrition and exercise to achieve a normal weight. Although it hasn't yet been proven, a diet that is high in fruits and vegetables and low in fats and additives will likely also improve hot flushes.
6. If your patient is a smoker, help her with a practical and effective program to quit. Usually the perimenopausal woman, who can trigger a hot flush by a single sip of alcohol, will voluntarily decrease her intake. Otherwise alcohol, unless it is frequent and intense enough to cause a hangover, will not be an important factor in VMS but it is always wise to recommend less than one drink a day.
7. Encourage patients to regularly walk or do some moderate, enjoyable exercise for at least 30 minutes a day. Although this is a general health recommendation, it is especially important if a woman is having hot flushes. It is possible that the exercise acts to decrease hot flushes through decreasing anxiety and depression. However, intense exercise can trigger hot flushes.
8. Consider acupuncture therapy for relief of hot flushes. A number of trials now show that there are benefits, proven by placebo-controlled trials, to acupuncture.[34,35]
9. Avoid herbs, phytoestrogens and other remedies, most of which increase estrogen-like action and have not been proven to improve hot flushes. Multiple trials show that soy supplements–foods are not importantly effective for VMS[36,37], even when given in usual combinations with herbs.[37] Also avoid estrogen therapy which causes a rebound increase in VMS upon stopping[20] and increases the stress response.[29]
10. If night sweats awaken your patient more than two nights a week, consider recommending bio-identical oral micronized progesterone treatment. Although progesterone cream has been used for hot flush treatment, only one of a number of trials has shown any benefit (38-40). However, progesterone during the luteal phase raises the temperature at which sweating starts,[41] and therefore corrects the narrowed thermoneutral zone that is the key problem in VMS. Progesterone by mouth (Prometrium®), in a dose that keeps the progesterone blood levels in the luteal phase range for 24 hours, (300 mg at bedtime) significantly improved menopausal hot flushes in a placebo-controlled trial[8]. Progesterone also improved frequent/severe hot flushes, and caused no rebound increase when stopped.[42] Furthermore, progesterone improves sleep, decreases sleep disruption, and causes no morning memory, alertness or coordination problems.[43,44] CeMCOR is currently performing a randomized, Canada-wide trial of Progesterone for Perimenopausal Hot Flushes for which your patient may be eligible and wish to participate http://www.cemcor.ubc.ca/hotflush-study_recruiting.

In summary, we have shown that the majority of perimenopausal and menopausal women's hot flushes and night sweats will be importantly improved by natural, healthy and easy-to-achieve strategies. These approaches are proven, without harm and will help your patient to cope until her hot flushes and night sweats gradually improve and disappear on their own.

Jerilynn Prior is one of the keynote speakers at the OAND's 2013 Convention: Clinical Strategies for Lifelong Wellness, November 15-17 at the International Centre in Toronto.

* Annotations for this article found on www.oand.org

Reference List

1. Huang A, Grady D, Blackwell T, Bauer D 4/2007 Hot flushes, bone mineral density, and fractures in older postmenopausal women. Obstet Gynecol 109:841-847.

2. Pinto MM, Prior JC, Tomlinson G, Cheung AM 2007 Are night sweats related to bone change? A prospective population-based study in women 40-60 from the Canadian Multicentre Osteoporosis Study., P2-143 ed.

3. Hitchcock CL, Elliott TG, Norman EG, Stajic V, Teede H, Prior JC 11/2012 Hot flushes and night sweats differ in associations with cardiovascular markers in healthy early postmenopausal women. Menopause 19:1208-1214.

4. Gast GC, Pop VJ, Samsioe GN, Grobbee DE, Nilsson PM, Keyzer JJ, Wijnands-van Gent CJ, Van Der Schouw YT 2/2011 Vasomotor menopausal symptoms are associated with increased risk of coronary heart disease. Menopause 18:146-151.

5. Dibonaventura MD, Chandran A, Hsu MA, Bushmakin A 2013 Burden of vasomotor symptoms in France, Germany, Italy, Spain, and the United Kingdom. Int J Womens Health 5:261-269.

6. Writing Group for the Women's Health Initiative Investigators 2002 Risks and benefits of estrogen plus progestin in health postmenopausal women: prinicple results from the Women's Health Initiative Randomized Control trial. JAMA 288:321-333.

7. Anderson GL, Limacher M, Assaf AR, Bassford T, Beresford SA, Black H, Bonds D, Brunner R, Brzyski R, Caan B, Chlebowski R, Curb D, Gass M, Hays J, Heiss G, Hendrix S, Howard BV, Hsia J, Hubbell A, Jackson R, Johnson KC, Judd H, Kotchen JM, Kuller L, LaCroix AZ, Lane D, Langer RD, Lasser N, Lewis CE, Manson J, Margolis K, Ockene J, O'Sullivan MJ, Phillips L, Prentice RL, Ritenbaugh C, Robbins J, Rossouw JE, Sarto G, Stefanick ML, Van Horn L, Wactawski-Wende J, Wallace R, Wassertheil-Smoller S 4/14/2004 Effects of conjugated equine estrogen in postmenopausal women with hysterectomy: the Women's Health Initiative randomized controlled trial. JAMA 291:1701-1712.

8. Hitchcock CL, Prior JC 2012 Oral Micronized Progesterone for Vasomotor Symptoms in Healthy Postmenopausal Women—-a placebo-controlled randomized trial. Menopause 19:886-893.

9. Williams RE, Kalilani L, DiBenedetti DB, Zhou X, Granger AL, Fehnel SE, Levine KB, Jordan J, Clark RV 2/2008 Frequency and severity of vasomotor symptoms among peri- and postmenopausal women in the United States. Climacteric 11:32-43.

10. Sievert LL, Morrison L, Brown DE, Reza AM 3/2007 Vasomotor symptoms among Japanese-American and European-American women living in Hilo, Hawaii. Menopause 14:261-269.

11. Col NF, Guthrie JR, Politi M, Dennerstein L 5/2009 Duration of vasomotor symptoms in middle-aged women: a longitudinal study. Menopause 16:453-457.

12. Prior JC, Seifert-Klauss VR, Hale G 2013 The Endocrinology of Perimenopause - New Definitions and Understandings of Hormonal and Bone Changes. In: Dvornyk V (ed.) Current topics in menopause. Benthan Science Publishers, Hong Kong, pp. 54-83.

13. Hale GE, Hitchcock CL, Williams LA, Vigna YM, Prior JC 6/2003 Cyclicity of breast tenderness and night-time vasomotor symptoms in mid-life women: information collected using the Daily Perimenopause Diary. Climacteric 6:128-139.

14. Freeman EW, Sammel MD, Lin H, Liu Z, Gracia CR 5/2011 Duration of menopausal hot flushes and associated risk factors. Obstet Gynecol 117:1095-1104.

15. Schwingl PJ, Hulka BS, Harlow SD 7/1994 Risk factors for menopausal hot flashes. Obstet Gynecol 84:29-34.

16. den Tonkelaar I, Seidell JC, van Noord PA 1996 Obesity and fat distribution in relation to hot flashes in Dutch women from the DOM-project. Maturitas 23:301-305.

17. Gold EB, Sternfeld B, Kelsey JL, Brown C, Mouton C, Reame N, Salamone L, Stellato R 2000 Relation of demographic and lifestyle factors to symptoms in a multi-racial/ethnic population of women 40-55 years of age. Am J Epidemiol 152:463-473.

18. Hunter MS, Gentry-Maharaj A, Ryan A, Burnell M, Lanceley A, Fraser L, Jacobs I, Menon U 1/2012 Prevalence, frequency and problem rating of hot flushes persist in older postmenopausal women: impact of age, body mass index, hysterectomy, hormone therapy use, lifestyle and mood in a cross-sectional cohort study of 10,418 British women aged 54-65. BJOG 119:40-50.

19. Nelson DB, Sammel MD, Freeman EW, Lin H, Gracia CR, Schmitz KH 1/2008 Effect of physical activity on menopausal symptoms among urban women. Med Sci Sports Exerc 40:50-58.

20. Grady D, Ettinger B, Tosteson AN, Pressman A, Macer JL 12/2003 Predictors of difficulty when discontinuing postmenopausal hormone therapy. Obstet Gynecol 102:1233-1239.

21. Gangar KF, Cust MP, Whitehead MI 1993 Symptoms of oestrogen deficiency associated with supraphysiological plasma estradiol concentrations in women with oestradiol implants. Br Med J 299:601-602.

22. Lin Y, Anderson GD, Kantor E, Ojemann LM, Wilensky AJ 6/1999 Differences in the urinary excretion of 6-beta-hydroxycortisol/cortisol between Asian and Caucasian women. J Clin Pharmacol 39:578-582.

23. Prior JC 1998 Perimenopause: The complex endocrinology of the menopausal transition. Endocr Rev 19:397-428.

24. Prior JC 2005 Estrogen's Storm Season- Stories of Perimenopause, reprinted 2007 ed. CeMCOR, Vancouver, BC.

25. MacMahon B, Trichopoulos D, Cole P, Brown J 1982 Cigarette smoking and urinary estrogens. N Engl J Med 307:1062-1065.

26. Reichman ME, Judd JT, Longcope C, Schatzkin A, Clevidence BA, Nair PP, Campbell WS, Taylor PR 5/5/1993 Effects of alcohol consumption on plasma and urinary hormone concentrations in premenopausal women. J Natl Cancer Inst 85:722-727.

27. Ginsburg ES, Mello NK, Mendelson JH, Barbieri RL, Teoh SK, Rothman M, Gao X, Sholar JW 12/4/1996 Effects of alcohol ingestion on estrogens in postmenopausal women. JAMA 276:1747-1751.

28. Dormire SL, Reame NK 9/2003 Menopausal hot flash frequency changes in response to experimental manipulation of blood glucose. Nurs Res 52:338-343.

29. Kirschbaum C, Schommer N, Federenko I, Gaab J, Neumann O, Oellers M, Rohleder N, Untiedt A, Hanker J 1996 Short-term estradiol treatment enhances pituitary-adrenal axis and sympathetic responses to psyhosocial stress in healthy young men. J Clin Endocrinol Metab 81:3639-3643.

30. Nedstrand E, Wijma K, Lindgren M, Hammar M 11/30/1998 The relationship between stress-coping and vasomotor symptoms in postmenopausal women. Maturitas 31:29-34.

31. Rendall MJ, Simonds LM, Hunter MS 6/20/2008 The Hot Flush Beliefs Scale: a tool for assessing thoughts and beliefs associated with the experience of menopausal hot flushes and night sweats. Maturitas 60:158-169.

32. MacLennan AH, Broadbent JL, Lester S, Moore V 2004 Oral oestrogen and combined oestrogen/progestogen therapy versus placebo for hot flushes. Cochrane Database Syst Rev:CD002978.

33. Freedman RR, Woodward S 1991 Behavioral treatment of menopausal hot flushes: evaluation by ambulatory monitoring. Am J Obstet Gynecol 167:436-439.

34. Borud EK, Alraek T, White A, Fonnebo V, Eggen AE, Hammar M, Astrand LL, Theodorsson E, Grimsgaard S 5/2009 The Acupuncture on Hot Flushes Among Menopausal Women (ACUFLASH) study, a randomized controlled trial. Menopause 16:484-493.

35. Zhou J, Qu F, Sang X, Wang X, Nan R 2/2/2009 Acupuncture and Auricular Acupressure in Relieving Menopausal Hot Flashes of Bilaterally Ovariectomized Chinese Women: A Randomized Controlled Trial. Evid Based Complement Alternat Med.

36. Van Patten CL, Olivotto IA, Chambers GK, Gelman KA, Hislop TG, Templeton E, Wattie A, Prior JC 2002 Effect of soy phytoestrogens on hot flashes in postmenopausal women with breast cancer: a randomized, controlled clinical trial. J Clin Oncol 20:1449-1455.

37. Newton KM, Reed SD, LaCroix AZ, Grothaus LC, Ehrlich K, Guiltinan J 12/19/2006 Treatment of vasomotor symptoms of menopause with black cohosh, multibotanicals, soy, hormone therapy, or placebo: a randomized trial. Ann Intern Med 145:869-879.

38. Benster B, Carey A, Wadsworth F, Vashisht A, Domoney C, Studd J 6/2009 A double-blind placebo-controlled study to evaluate the effect of progestelle progesterone cream on postmenopausal women. Menopause Int 15:63-69.

39. Wren BG, Champion SM, Willetts K, Manga RZ, Eden JA 1/2003 Transdermal progesterone and its effect on vasomotor symptoms, blood lipid levels, bone metabolic markers, moods, and quality of life for postmenopausal women. Menopause 10:13-18.

40. Leonetti HB, Longo S, Anasti JN 1999 Transdermal progesterone cream for vasomotor symptoms and postmenopausal bone loss. Obstet Gynecol 94:225-228.

41. Freedman RR, Subramanian M 3/2005 Effects of symptomatic status and the menstrual cycle on hot flash-related thermoregulatory parameters. Menopause 12:156-159.

42. Prior JC, Hitchcock CL 10/2012 Progesterone for hot flush and night sweat treatment - effectiveness for severe vasomotor symptoms and lack of withdrawal rebound. Gynecol Endocrinol 28 Suppl 2:7-11.

43. Schussler P, Kluge M, Yassouridis A, Dresler M, Held K, Zihl J, Steiger A 9/2008 Progesterone reduces wakefulness in sleep EEG and has no effect on cognition in healthy postmenopausal women. Psychoneuroendocr 33:1124-1131.

44. Caufriez A, Leproult R, L'hermite-Baleriaux M, Kerkhofs M, Copinschi G 4/2011 Progesterone prevents sleep disturbances and modulates GH, TSH, and melatonin secretion in postmenopausal women. J Clin Endocrinol Metab 96:E614-E623.