

POSITION STATEMENT

Estrogen and progestogen use in peri- and postmenopausal women: March 2007 position statement of The North American Menopause Society

ABSTRACT

Objective: To update the evidence-based position statement published by The North American Menopause Society (NAMS) in 2004 regarding recommendations for estrogen and progestogen use in peri- and postmenopausal women.

Design: NAMS followed the general principles established for evidence-based guidelines to create this updated document. An Advisory Panel of clinicians and researchers expert in the field of women's health was enlisted to review the 2004 NAMS position statement, compile supporting statements, and reach consensus on recommendations. The Panel's recommendations were reviewed and approved by the NAMS Board of Trustees. The position statements published by NAMS do not represent "practice standards" that would be codified and held up as standards by regulating bodies and insurance agencies. Rather, they are prevailing opinion pieces in a best effort attempt to incorporate current evidence into practical clinical recommendations.

Results: With the primary goal being to evaluate the risk-benefit ratio of peri- and postmenopausal estrogen therapy (ET) and estrogen-progestogen therapy (EPT) for both disease prevention and treatment of menopause-related symptoms, current evidence allowed for a clear distinction between areas of consensus and areas for which the Panel determined that there was inadequate evidence for any conclusion to be reached. The document lists all of these areas along with clear explanatory comments. A comprehensive list of key references is provided. The absence of evidence is also recognized in the list of needs for further research recommended by the Panel.

Conclusions: Current evidence supports the use of ET or EPT for menopause-related symptoms and disease prevention in appropriate populations of peri- and postmenopausal women.

Key Words: Menopause – Perimenopause – Estrogen – Progestogen – Hormone therapy – Vasomotor symptoms – Vaginal atrophy – Coronary heart disease – Venous thromboembolism – Stroke – Diabetes mellitus – Breast cancer – Osteoporosis – Depression – Dementia – Cognitive decline – Premature menopause – Bioidentical hormones – NAMS.

Received December 12, 2006.

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The North American Menopause Society (NAMS) published position statements on peri- and postmenopausal hormone therapy (HT) use in October 2002 (*Menopause* 2003;10:6-12), September 2003 (*Menopause* 2003; 10:497-506), and October 2004 (*Menopause* 2004; 11:589-600). The overall objective of these position statements was to make recommendations to both clinicians and the lay public about the appropriate role of HT for peri- and postmenopausal women. NAMS

has emphasized that these position statements do not represent “practice standards” that would be codified and held up as standards by regulating bodies and insurance agencies. Rather, they are prevailing opinion pieces in a best effort attempt to incorporate current evidence into practical clinical recommendations.

During 2006, the NAMS Board of Trustees convened a fourth Advisory Panel to update the position statement. As with the previous analyses, all relevant published evidence was considered. This position statement was approved by the 2006-2007 NAMS Board of Trustees.

METHODOLOGY

The primary goal was to evaluate the risk-benefit ratio of peri- and postmenopausal estrogen therapy (ET) and estrogen-progestogen therapy (EPT) for both disease prevention and treatment of menopause-related symptoms.

The Advisory Panel used the 2002-2004 position statements as a starting point. A comprehensive literature search was conducted using the database MEDLINE with search words that included estrogen, progestogen, hormone therapy, and hormone replacement therapy to identify all new papers published subsequent to the 2004 position statement. Panelists also submitted relevant papers. Considering all the evidence, panelists provided their current view of all items of consensus and nonconsensus from the 2004 statement. Panelists also identified new areas of interest or clinical relevance. Each panelist provided independent input, unaware of the responses of the other panelists. Consensus was defined as an affirmative vote by at least two thirds of the panelists. All responses were collated into two lists, those with consensus and those without, which then were distributed to the entire Panel. Panelists reviewed the nonconsensus responses by telephone conference call in an attempt to reach consensus. Further development of the position statement through multiple drafts was conducted through electronic communication. The clinical recommendations indicate items for which consensus was achieved as well as those for which opinions differed and therefore require further research to clarify the issues. The position statement was reviewed and approved by the NAMS 2006-2007 Board of Trustees.

This position statement focuses on the use of prescription ET/EPT products available in the United States and Canada, not selective estrogen-receptor modulators (SERMs) or hormones available without a prescription (including phytoestrogens). Testosterone

therapy has been addressed in another NAMS position statement (*Menopause* 2005;12:497-511).

Terminology used in this position statement is defined in the document. In particular, the following should be noted:

- “Early” is used to mean soon after the onset of postmenopause;
- “Early menopause” is synonymous with “premature menopause” (at age 40 or younger);
- “Timing of initiation” refers to timing of initiation of therapy relative to the proximity of menopause (final menstrual period).

The most current published references regarding HT use are listed along with the level of evidence indicated for each study, based on a grading system that evaluates the scientific rigor of the study design, as developed by the US Preventive Services Task Force. A synopsis of the levels is presented at the end of the reference list.

INTRODUCTORY COMMENTS

Because of the absence of direct evidence in many circumstances, the Panel took into account all of the variables in attempting to reach a general consensus on the current evidence-based role of ET/EPT use through the menopausal transition and beyond. Areas of Panel consensus can serve as signposts by which to inform and guide practice. The ultimate purpose was to provide a direction for clinical practice by using the current best evidence. The recommendations that follow thus fall into two distinct categories, namely, those for which there was Panel consensus and those for which consensus could not be reached.

The Panel recognized that a significant contributor to the confusion regarding the appropriate use of hormones during peri- and postmenopause is the time of initiation of HT use in relation to menopause (final menstrual period). There is a real philosophical difference between initiation of HT for symptom relief during perimenopause and initiation of systemic HT use 5, 10, or more years beyond menopause for non-symptom-related indications. Moreover, the Panel noted a scarcity of randomized prospective study data on the consequences of long-term use of HT when it was prescribed for symptom management or long term for disease risk reduction outcomes.

The Panel was also faced, as so often happens in clinical practice, with the dilemma of defining and measuring the likely level of individual risk and its context in clinical decision making. The Panel recognized the confusion that can arise among caregivers,

researchers, and the media when they are discussing risk and interpreting terms such as relative risk, absolute risk, and number needed to treat. Key risk-related definitions are as follows:

- Rate: The number of events per number of individuals per time interval. Example: 44 per 10,000 per year
- Relative risk (RR): Incidence in exposed divided by incidence in unexposed. Example: (44 per 10,000 per year) divided by (22 per 10,000 per year) = 2.0
- Attributable risk (AR): Incidence in exposed minus incidence in unexposed. Example: (44 per 10,000 per year) minus (22 per 10,000 per year) = 22 per 10,000 per year
- Number needed to treat (NNT): Number of individuals who must be treated with an intervention for a specific period of time to prevent one bad outcome or result in one good outcome. Example: 1 divided by (incidence in exposed minus incidence in unexposed) = 1 divided by 0.0022 = 454

To many women and even to health professionals, these numbers are often difficult to place in practical perspective. In recognition of this problem, the World Health Organization convened a panel of experts to develop standardized nomenclature for the description of risk for adverse events. The Council for International Organizations of Medical Sciences (CIOMS) Task Force released its report in 1998, providing a strict form of risk categorization to assist healthcare professionals and the public when interpreting risk. In this context, risks are considered as follows:

- Less than or equal to 10 per 10,000 per year = rare
- Less than or equal to 1 per 10,000 per year = very rare

Many large randomized controlled trials (RCTs) and observational studies of postmenopausal women using HT have been published in recent years. The Panel recognized that no trial is perfect and that no single trial should be used to make public health recommendations. Evidence-based medicine implies that recommendations should be limited to the women for whom the studies are relevant. Although this goal is ideal in principle, it is impossible in practice, given that there will never be adequate RCTs covering all populations, eventualities, drugs, and regimens. The practice of medicine is ultimately

based on the interpretation at any one time of the entire body of evidence currently available.

AREAS OF CONSENSUS: RECOMMENDATIONS FOR CLINICAL PRACTICE

The Panel agreed on the following clinical recommendations for postmenopausal hormone therapy.

Terminology

A strong recommendation was made for uniform and consistent terminology for menopause-related therapies, as indicated below:

- ET. Estrogen therapy
- EPT. Combined estrogen-progestogen therapy
- HT. Hormone therapy (encompassing both ET and EPT)
- CC-EPT. Continuous-combined estrogen-progestogen therapy (daily administration of both estrogen and progestogen)
- CS-EPT. Continuous-sequential estrogen-progestogen therapy (estrogen daily, with progestogen added on a set sequence)
- Progestogen. Encompassing both progesterone and progestin

Pretreatment evaluation

Before consideration of any therapeutic regimen, including ET/EPT, all women should have a complete health evaluation, including a comprehensive history and physical examination. Mammography should be performed according to national guidelines and age, but preferably within the previous 12 months before initiation of therapy. Other specific examinations, such as bone densitometry, should be considered on a case-by-case basis.

Vasomotor symptoms

Treatment of moderate to severe vasomotor symptoms (ie, hot flashes and night sweats) remains the primary indication for systemic ET and EPT. With few exceptions, every systemic ET/EPT product is government approved for this indication.

Vaginal symptoms

Almost all systemic and vaginal ET/EPT products are government approved for treating moderate to severe symptoms of vulvar and vaginal atrophy, such as vaginal dryness, dyspareunia, and atrophic vaginitis. When HT is considered solely for this

indication, local (not systemic) vaginal ET is generally recommended.

Progestogen indication

The primary menopause-related indication for progestogen use is endometrial protection from unopposed ET. Unopposed ET in women with an intact uterus significantly increases the risk of endometrial cancer. For all women with an intact uterus who are using ET, clinicians are advised to also prescribe adequate progestogen, in either a CC-EPT or CS-EPT regimen. Postmenopausal women without a uterus should generally not be prescribed a progestogen with systemic estrogen. Progestogen is generally not indicated when low-dose estrogen is administered locally for vaginal atrophy.

Progestogen regimens

Some women with an intact uterus who choose EPT may experience undesirable side effects from the progestogen component. However, there is insufficient evidence regarding endometrial safety to recommend the off-label use of long-cycle progestogen (ie, progestogen every 3-6 mo for 12-14 d), vaginal administration of progesterone, the contraceptive levonorgestrel-releasing intrauterine system, or low-dose estrogen without progestogen as an alternative to standard EPT regimens. If any of these approaches is used, close surveillance of the endometrium is recommended, pending more definitive research. There are encouraging data on the efficacy of lower-dose therapies that offer reduced side effects.

Coronary heart disease

The majority of observational and preclinical studies support the potential benefits of systemic ET/EPT in reducing coronary heart disease (CHD) risk. Most RCTs have not. Emerging data suggest that these disparities in findings may be related to the timing of initiation of ET/EPT in relation to the proximity of menopause. Neither ET nor EPT reduced overall CHD incidence in the Women's Health Initiative (WHI) study. The role of ET/EPT in primary prevention of CHD remains unclear when considered for perimenopausal and early postmenopausal women if initiated early after reaching menopause and continued for a number of years thereafter. Thus, ET/EPT use for primary prevention needs further evaluation. Data do not currently support recommen-

dations for use of EPT regimens in secondary prevention of CHD. Pending additional data, the use of ET/EPT is not recommended as a single or primary indication for coronary protection in women of any age.

Analysis of the time trend in the EPT arm of the WHI showed a significant interaction between CHD risk and time since initiation of EPT, with an increased risk in the first year after initiation and decreased risk of CHD events in later years of EPT use. The attributable risk in the WHI under the CIOMS classification falls into the "rare" category. A similar pattern with EPT was observed in the secondary prevention Heart and Estrogen/progestin Replacement Study (HERS) in postmenopausal women with preexisting coronary CHD. No increased risk of CHD soon after initiation of therapy was observed in the ET arm of the WHI or in other ET-alone studies.

It is important to note that the women enrolled in WHI and HERS initiated EPT more than a decade after menopause on average, and the majority of events that produced this pattern occurred in older women. As is the case for the overall effects of EPT on CHD events, these studies included an insufficient number of younger, symptomatic, newly postmenopausal women to determine whether similar patterns of events apply to these women. As such, it remains unclear whether CHD risk is or is not increased soon after initiation of EPT in younger, newly postmenopausal women, and the results of the WHI EPT arm and HERS should be extrapolated to these women only with caution.

The data show a trend toward reduction of CHD events in women who initiated HT less than 10 years since menopause and a significantly greater risk of CHD after initiation of ET/EPT more than 10 years since menopause. There was a statistically significant reduction in the composite endpoint of myocardial infarction, coronary artery revascularization, and coronary death in women aged 50 to 59 years randomized to ET in the WHI.

Importantly, the absolute risk of CHD is considerably lower in younger, newly postmenopausal women compared with those studied in the WHI and HERS, and, thus, even if the patterns of relative risk are similar between these groups, the attributable risk of early CHD remains very low in the younger cohort.

Venous thromboembolism

Observational studies and RCTs have found a significant increase in the risk of venous thromboembolism (VTE) in postmenopausal women using systemic ET/EPT. The RCTs found an increased hazard ratio (HR) for VTE with both EPT and ET use. VTE risk appears during the first 1 to 2 years after initiation of therapy and decreases over time. In the WHI, excess VTE risk associated with EPT and ET use was low overall and even lower in women younger than 60 years when randomized to HT. In the WHI, excess VTE risk was 11 additional cases per 10,000 women per year of EPT and 2 additional cases per 10,000 women per year of ET in women aged 50 to 59 years. There are limited observational data but no RCT data regarding VTE risk differences between transdermal 17 β -estradiol and oral therapies. Lower doses of oral estrogens may be safer than higher doses.

Stroke

Both ET and EPT appear to increase the risk of ischemic stroke in postmenopausal women, but RCT data have not been fully consistent in this regard. The WHI EPT and ET arms demonstrated an increased risk, whereas some other large trials have not. There were 8 additional strokes per 10,000 women per year in the WHI EPT arm and 12 additional strokes per 10,000 women per year in the WHI ET arm. The attributable increased risk of stroke based on WHI data falls above the rare category for ET and in the rare category for EPT. The absolute risk of stroke, however, is lower in women aged 50 to 59 years (1 additional stroke per 10,000 women per year of ET) or within 5 years of menopause (3 additional strokes per 10,000 women per year of EPT) than in older women more distant from menopause. Although ET/EPT may not significantly influence the risk of stroke among women with a history of CHD or ischemic cerebrovascular disease (secondary prevention), women with prevalent cardiovascular disease (CVD) have a high baseline risk of stroke. The Panel concluded that no HT regimen should be used for the primary or secondary prevention of stroke, and HT should be particularly avoided for women who have an elevated baseline risk of stroke.

Diabetes mellitus

Large RCTs suggest that HT reduces new onset of diabetes mellitus (DM). Women receiving active

treatment in the WHI EPT arm had an annualized incidence of DM requiring treatment of 0.61% versus 0.76% in placebo-treated women. This translated into a 21% reduction (HR, 0.79; 95% CI, 0.67-0.93) in incident-treated DM or 15 fewer cases per 10,000 women per year of therapy. A similar risk reduction was also noted in the HERS trial (HR, 0.65; 95% CI, 0.48-0.89). In the WHI ET arm, there was a 12% reduction (HR, 0.88; 95% CI, 0.77-1.01) in incident DM or 14 fewer cases per 10,000 women per year of ET. It is presently unclear whether the mechanism for this benefit is through lesser centripetal weight gain, reduced insulin resistance in women receiving combined EPT, or some other factor. There is inadequate evidence to recommend combined EPT for a sole indication of the prevention of DM in perimenopausal women. This is a promising area for future research.

Breast cancer

Breast cancer risk increases with EPT use beyond 5 years. In absolute terms, this increased risk was rare in the WHI, being 4 to 6 additional invasive cancers per 10,000 women per year who used EPT for 5 or more years. Studies have not clarified whether the risk differs between continuous or sequential use of progestogen. Women in the ET arm of the WHI demonstrated no increase in risk of breast cancer after an average of 7.1 years of use, with 8 fewer cases of invasive breast cancer per 10,000 women per year of ET use. Although available evidence suggests that estrogen alone for fewer than 5 years has little impact on breast cancer risk, there is inadequate evidence to support any indication for ET in reduction of breast cancer risk. Specific subgroups may be affected in different ways. There are limited observational data suggesting that ET for more than 15 years may increase the risk of breast cancer. There are minimal data reporting any change in breast cancer mortality with HT. EPT and, to a lesser extent, ET increase breast cell proliferation, breast pain, and mammographic density, and EPT may impede the diagnostic interpretation of mammograms.

Osteoporosis

There is strong evidence of the efficacy of ET/EPT in reducing the risk of postmenopausal osteoporotic fracture. Many ET/EPT products are government approved for prevention of postmenopausal osteoporosis through long-term treatment. For women

who require drug therapy for osteoporosis risk reduction (including women at high risk of fracture during the next 5-10 y), ET/EPT can be considered an option, weighing its risks and benefits as well as those of other government-approved products.

Depression

For women without a history of prior depression, several community-based longitudinal studies have observed an increased risk for the onset of major depression during perimenopause compared with premenopause. Some prospective studies, although not all, have demonstrated an increased risk of major and minor depression in early postmenopause compared with premenopause. Two small RCTs supported the antidepressant efficacy of short-term ET in depressed perimenopausal women, whereas one RCT failed to demonstrate an antidepressant efficacy of ET in depressed older postmenopausal women. Perimenopause could be associated with an increased risk of clinically significant depressive illness for a subgroup of women. Evidence is insufficient to support the use of ET/EPT for the treatment of depression in general.

Dementia and cognitive decline

Initiating EPT after 65 years should not be recommended for primary prevention of dementia or cognitive decline as it may increase the risk of dementia during the ensuing 5 years in this population. The evidence is insufficient to either support or refute the efficacy or harm of ET/EPT for primary prevention of dementia when therapy is initiated during the menopause transition or early postmenopause. ET does not appear to convey a direct benefit or harm for treatment of dementia due to Alzheimer's disease.

Premature menopause and premature ovarian failure

Premature menopause and premature ovarian failure are conditions associated with a lower risk of breast cancer and earlier onset of osteoporosis and CHD, but there are no clear data as to whether ET or EPT will affect morbidity or mortality from these conditions. The risk-benefit ratio for younger women who initiate therapy at an early age may be more favorable but is currently unknown.

Risk-benefit ratio

Use of ET or EPT should be consistent with treatment goals, benefits, and risks for the individual woman, taking into account cause of menopause, time since menopause, symptoms, and domains (eg, sexuality and sleep) that may have an impact on quality of life (QOL) and the underlying risk of CVD, stroke, VTE, DM, and other conditions.

Lower doses

Lower-than-standard doses of ET and EPT should be considered (ie, daily doses of 0.3 mg oral conjugated estrogens, 0.25-0.5 mg oral micronized 17 β -estradiol, 0.025 mg transdermal 17 β -estradiol patch, or the equivalent). Many studies have demonstrated nearly equivalent vasomotor and vulvovaginal symptom relief and preservation of bone mineral density. However, some women may require additional local therapy for persistent vaginal symptoms. Lower ET and EPT doses are better tolerated and may have a better risk-benefit ratio than standard doses. However, lower doses have not been tested in long-term trials. A very low-dose 14 μ g/day transdermal 17 β -estradiol patch for prevention of osteoporosis is available in the United States, but the long-term impact on bone fracture incidence is unknown.

Nonoral therapy

Nonoral routes of administration of ET/EPT may offer advantages and disadvantages, but the long-term risk-benefit ratio has not been demonstrated. Differences would be related to the role of the first-pass hepatic effect, the hormone concentrations in the blood achieved by a given route, and the biologic activity of active component ingredients. There is some evidence that transdermal 17 β -estradiol may be associated with lower risk of deep venous thrombosis than oral estrogen. A large observational study has shown similar increased risks for breast cancer with both oral and transdermal estrogens.

Long-term therapy in symptomatic women

The effects of ET/EPT on risk of breast cancer, CHD, stroke, total CVD, and osteoporotic fracture in perimenopausal women with moderate to severe menopause symptoms have not been established in RCTs. The findings from trials in different populations should, therefore, be extrapolated with caution. For example, data from large studies such as the WHI

and HERS should not be extrapolated to symptomatic postmenopausal women younger than 50 years of age who initiate HT at that time as these women were not studied in those trials. The WHI and HERS involved predominantly asymptomatic postmenopausal women aged 50 years and older (with mean ages of 63 and 67 y, respectively), the majority of whom were 10 years or more beyond menopause, and HERS was conducted solely among women with known coronary artery disease. The data should not be extrapolated to women experiencing premature menopause (≤ 40 y) and initiating HT at that time.

Indications for extended use

Extended use of the lowest effective dose for treatment goals of ET or EPT is acceptable under the following circumstances, provided that the woman is well aware of the potential risks and benefits and that there is clinical supervision:

- For the woman for whom, in her own opinion, the benefits of menopause symptom relief outweigh risks, notably after failing an attempt to stop HT.
- For women who are at high risk of osteoporotic fracture and also have moderate to severe menopause symptoms.
- For further prevention of bone loss in the woman with established reduction in bone mass when alternate therapies are not appropriate for that woman or cause side effects or when the outcomes of the extended use of alternate therapies are unknown.

Symptom recurrence

Symptoms have an approximate 50% chance of recurring when therapy is discontinued, independent of age and duration of ET/EPT use. The decision to continue HT should be individualized on the basis of severity of symptoms and current risk-benefit ratio considerations, provided the woman in consultation with her healthcare provider believes that continuation of therapy is warranted.

Quality of life

An improvement in health-related QOL (HQOL) can result with HT through decreased menopausal symptoms and possible elevation of mood that leads to a feeling of well-being. There is a lack of consensus on the impact of HT on overall QOL and HQOL in

asymptomatic women. This is due in part to a lack of agreement on how best to obtain an appropriate evaluation of QOL in women after menopause, including the domains to be incorporated into any survey instruments. There is consensus that validated instruments for determining the impact of HT, or indeed that of any menopause-related therapy, on both overall QOL and HQOL should be incorporated into future studies.

Class versus specific product effect

The Panel acknowledged that estrogen and progesterone agonists share some common features and effects as well as potentially different properties and that the only way to establish definitively the net clinical outcome for any given agent (alone or in combination) is through RCTs. The Panel was of the opinion that it is not possible to extrapolate conclusions from the study of one compound, dose, and route of administration directly to another. However, in the absence of clinical trial data for each estrogen and progesterone, the clinical trial results for one agent may be generalized to all agents within the same family, taking into account dose equivalencies especially with regard to adverse effects. Where data suggest differences, this fact is reported in the position statement.

“Bioidentical” hormones

The Panel addressed the area of confusion in clinical practice of so-called “bioidentical” hormone preparations that are compounded for an individual according to a healthcare provider’s prescription. As a result of concerns about safety issues with use of commercially available HT products, there is escalating use of alternatives to pharmaceutical dose forms of estrogens and/or progestogens, such as hormonal substances prepared in unique individualized dose forms, including gels, suppositories, sublingual tablets, and oral tablets, that are not commercially available. The scientific evidence for these preparations was also reviewed, and it was concluded that in the absence of safety and efficacy data for any specific preparation, the generalized risk-benefit ratio data of commercially available ET/EPT products apply equally to this group of compounded therapies. Moreover, the Panel recommended caution in use of these products in the absence of regulatory oversight of quality, purity, and batch-to-batch consistency of ingredients.

AREAS WHERE INSUFFICIENT OR CONFLICTING EVIDENCE PRECLUDES CONSENSUS

The Panel could not reach consensus on the following issues:

Is there a best way to discontinue HT? When a decision is made to discontinue therapy, panelists were divided in their recommendations for abrupt therapy cessation versus tapering the dose. There seems to be little difference in terms of return of menopause symptoms. A past history of severe symptoms may favor tapering, but no specific protocols could be recommended. Some providers gradually decrease the dose, whereas others lengthen the time between doses. Current data are inadequate to suggest that one method is better than the other. Matrix transdermal HT patches can be trimmed to provide smaller doses.

Does a CC-EPT regimen have an effect different from that of continuous estrogen with CS-EPT? There are some indications that continuous progestogen in the doses administered in studies such as the WHI and HERS may be related to the adverse breast cancer and cardiovascular outcomes of these trials, but conflicting data preclude a consensus.

DISCUSSION

In developing these recommendations, the Panel recognized that a woman's willingness to accept certain risks of ET/EPT will vary, depending on her individual situation, such as the use of therapy to treat existing symptoms compared with long-term use to prevent osteoporotic fractures that may or may not occur. Moreover, recognition had to be given to the fact that incidence of disease outcomes is also dependent on age and time since menopause. That is, ET/EPT is more likely to be acceptable for symptom reduction when therapy is planned to be short term in a younger population with lower prevalence of risk outcomes. In contrast, the absolute risks in older women or with long-term therapy may make ET/EPT less acceptable. Moreover, premature hypoestrogenism from any cause may be associated with an increased risk of osteoporosis and CVD based on epidemiologic observational studies. Therefore, it cannot be assumed that risks and benefits apply to all age ranges and durations of therapy.

Specific ET/EPT compounds, doses, and routes of administration may have different health outcomes. Nonetheless, in the absence of clinical trial data for

each specific product, the clinical trial results for one agent should be generalized to all agents within the same family.

The same proviso also needs to be recognized with regard to dose, when a different dose of the same compound is reported in previous RCTs. In the WHI, for example, the dose of conjugated equine estrogens (CEE) was 0.625 mg/day, and lower doses are currently being prescribed in clinical practice, particularly for women just starting treatment. Similarly, this proviso applies to the same drug administered by different routes of administration.

The Panel acknowledged that the potential absolute risks published thus far for use of ET/EPT are small, particularly for the ET arm of the WHI, which provided evidence of considerable safety for 0.625 mg CEE/day. The risks and benefits in the EPT arm were small and by CIOMS criteria rare, except for stroke, which was above the rare category. For women younger than 50 years or those at low risk of CHD, stroke, osteoporosis, breast cancer, or colon cancer, the absolute risk or benefit from ET or EPT is likely to be even smaller than that demonstrated in the WHI, although the relative risk at different ages may be similar. An individual risk profile is essential for every woman contemplating any regimen of EPT or ET. Women should be informed of known risks.

Finally, the Panel concluded that there is always a need to recognize that even in the absence of HT use, there is a risk of development of all the diseases under consideration. In RCTs, that background inherent risk is represented by the rate of occurrence of the disease in the placebo group. Differences in relative risk between use of active drug and placebo can result from increased or decreased incidence of the event in either study group.

NEED FOR FUTURE RESEARCH

On the basis of this review, the Panel identified the following areas requiring further research:

- Timing of initiation of HT relative to menopause with regard to cardiovascular, cognitive, and other health outcomes.
- Comparison of different formulations, regimens, and doses of both estrogens and progestogens.
- Determination of whether the dose of HT should be based on manipulating hormone levels to premenopausal physiologic concentrations or to a much lower, yet effective, level as suggested in studies measuring endogenous estradiol, rather than traditional single dosing for all women.

- Effects of endogenous levels of estradiol and/or estrone on clinical outcomes of risk and/or benefit.
- Determination of whether the combination of ET/EPT and statin therapy could result in amelioration of potential CHD risks while preserving and possibly enhancing the benefits of HT.
- Cause of the increase in stroke with ET/EPT and of increased CHD and breast cancer with EPT to better understand the pathophysiology of these events, to identify potential new treatments and ways to prevent their occurrence, and to identify a subgroup for whom HT would be less toxic.
- Mechanism for the possible early harm from EPT, including pharmacogenomics, polymorphisms, and prothrombosis.
- Long-term risks and benefits of ET and EPT, including different preparations, lower than standard doses, and different regimens and routes of administration other than oral CEE and oral medroxyprogesterone acetate.
- Health outcomes for HT over the long term (>10 y).
- Factoring of other health outcomes, including QOL issues, into the composite risk-benefit ratio for ET/EPT.
- Risk-benefit ratio of CS-EPT compared with that of CC-EPT or other HT regimens.
- Endometrial effects from alternatives to standard progestogen regimens, such as a progestin-releasing intrauterine system or long-cycle progestogen regimens.
- Long-term effects of ET/EPT on risk of Alzheimer's disease and other forms of dementia, particularly when therapy is initiated before 65 years.
- Short- and long-term effects of ET/EPT on neuropsychiatric disorders, such as Parkinson's disease, sleep apnea, depression, schizophrenia, and sleep in general.
- Effects of estrogen on mood and interactions of estrogens with mood-altering drugs.
- Long-term effects of ET/EPT on primary and secondary prevention and progression of hearing loss and ophthalmologic disorders, such as cataract, age-related macular degeneration.
- Health outcomes with ET/EPT for women experiencing premature menopause.
- Health outcomes with osteoporosis drugs over the long term (>10 y).
- Role of progestogens (eg, type and regimen) in breast cancer and cardiovascular risk.
- Efficacy of nonpharmacologic methods of managing vasomotor symptoms.
- Risk-benefit ratio associated with an abrupt versus a tapering discontinuation of HT regimens, including the impact on bone density in the first 2 or 3 years after termination.
- Effects of HT discontinuation on health outcomes influenced by HT.
- Role of estrogen and progestogen in postmenopausal women with underlying disease, such as DM and hypertension, and evaluation of the effects of HT on the adverse events associated with the disease itself.
- Determination of how women at risk of deep vein thrombosis and pulmonary embolism can best be identified as well as how hypercoagulability responsiveness to estrogens in general can be measured.
- Identification of subgroups of women for whom ET or EPT might be beneficial with regard to cardiovascular, cognitive, and overall health outcomes.
- Identification of the outcomes with differing schedules of withdrawal from ET/EPT (ie, abrupt vs gradual) and predictors of adverse effects of ET/EPT discontinuation.
- Effect of simultaneous use of some SERMs with ET to modulate the long-term safety profile of ET.
- Development of better methods for evaluating the impact of vasomotor symptoms, including both severity and functional impairment, and use of these measures in appropriately designed trials to evaluate novel treatments.
- Determination of the course (duration of symptoms and associated disability) and predictors in women who do and do not develop clinically significant depression during perimenopause.
- Incidence and course of CHD, breast cancer, dementia, and other health outcomes in women experiencing premature menopause.
- Stricter evaluation of domains of QOL through the menopause transition.
- Determination of any relationship between the menopause transition, hormone therapy, and various forms of arthritis.

Acknowledgments: NAMS appreciates the contributions of the following members of the Advisory Panel: *Wulf H. Utian, MD, PhD (Chair)*, Arthur H. Bill Professor Emeritus of Reproductive Biology, Case Western Reserve University School of Medicine, Consultant in Obstetrics and Gynecology, The Cleveland Clinic Foundation, Executive Director, The

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Disclosure: For the Advisory Panel, Dr. Archer reports: Consultant—Agile, Berlex, Johnson & Johnson, Novo Nordisk, Organon, Ortho McNeil, Pfizer, Solvay TAP, Wyeth; Research support—Barr/Duramed, Berlex, Organon, Solvay, Warner Chilcott, Wyeth; Speaker—Novo Nordisk, Organon, Wyeth. Dr. Bachmann reports: Research support—Berlex, Duramed, Johnson & Johnson, Pfizer, Roche, Wyeth; Speaker—Johnson & Johnson, Wyeth. Dr. Gallagher reports: Consultant, Research support—Organon, Pfizer, Wyeth. Dr. Grodstein reports: No significant financial relationships. Dr. Heiman reports: Research support—Bayer, Pfizer; Expert panel—Eli Lilly. Dr. Henderson reports: Consultant—Council on Hormone Education, Wyeth. Dr. Hodis reports: No significant financial relationships. Dr. Karas reports: Consultant—Wyeth. Dr. Lobo reports: No significant financial relationships. Dr. Manson reports: No significant financial relationships. Dr. Reid reports: Advisory board—Paladin Labs Canada, Wyeth Canada; Speaker—Berlex Canada, Wyeth Canada. Dr. Schmidt reports: Research support—Novogen, Watson. Dr. Stuenkel reports: No significant financial relationships. Dr. Utian reports: Advisory board, Consultant—Barr/Duramed, Berlex, Depomed, Endoceutics, GlaxoSmithKline, Johnson & Johnson, Merck, Novartis, Organon, Pfizer, Roche/GlaxoSmithKline; Research support—Amylin, Barr, Berlex, Bristol Myers Squibb, Duramed, Eli Lilly, Forest, Galen, GlaxoSmithKline, Johnson & Johnson, Neurocrine, Novartis, Novo Nordisk, Organon, Pfizer, Pharmacia, Procter & Gamble, Roche, Sepracor, Solvay, 3M, Wyeth, Yamanouchi.

For the NAMS Board of Trustees who are not serving on the Advisory Panel, Dr. Clarkson reports: Member—Council on Hormone Education; Speaker—Wyeth. Dr. Freedman reports: Consultant—Alexza, Duramed, GlaxoSmithKline, Novartis, Organon, Pfizer, Vela, Wyeth; Research support—GlaxoSmithKline, National Institutes of Health, Organon.

Dr. Goldstein reports: Advisory board—Eli Lilly, GlaxoSmithKline, Merck, Pfizer, Procter & Gamble. Dr. Gorodeski reports: Director, Medical Advisory Board—CytoCore. Dr. Kagan reports: Advisory board—Merck; Consultant—Merck, Roche/GlaxoSmithKline; Research support—Amgen, Aventis, Eli Lilly, Novartis, Procter & Gamble, Roche/GlaxoSmithKline, Wyeth; Speaker—Merck, Roche/GlaxoSmithKline. Dr. Pinkerton reports: Consultant—Boehringer Ingelheim, Duramed, Merck; Executive committee, Unrestricted Wyeth funding—Council on Hormone Education; Member—National Women's Health Resource Center; Research support—Solvay, Wyeth Ayerst; Speaker—Merck. Dr. Reame reports: Consultant—Cypress Bioscience, Procter & Gamble; Research support—Novo Nordisk, Procter & Gamble. Dr. Rothert reports: No significant financial relationships. Dr. Schiff reports: Advisory Board—*Pause*, the consumer magazine of the American College of Obstetricians and Gynecologists; Editor-in-chief—*Menopause*, the official journal of The North American Menopause Society. Dr. Speroff reports: Consultant—Warner-Chilcott; Research support—Barr, Berlex, Organon, Wyeth.

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Description of the levels of evidence*

Level I: Properly randomized controlled trial.

Level II-1: Well-designed controlled trial but without randomization.

Level II-2: Well-designed cohort or case-control analytic study, preferably from more than one center or research group.

Level II-3: Multiple time series with or without the intervention (eg, cross-sectional and uncontrolled investigational studies); uncontrolled experiments with dramatic results could also be regarded as this type of evidence.

Level III: Opinions of respected authorities that are based on clinical experience; descriptive studies and case reports; reports from expert committees; meta-analyses.

*US Preventive Services Task Force. *Guide to Clinician Preventive Services: Report of the U.S. Preventive Services Task Force*. 2nd ed. Baltimore, MD: Lippincott Williams & Wilkins, 1996.