Health Maintenance for Postmenopausal Women

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Menopause is the permanent cessation of menstruation resulting from the loss of ovarian and follicular activity. It usually occurs when women reach their early 50s. Vasomotor symptoms and vaginal dryness are frequently reported during menopause. Estrogen is the most effective treatment for management of hot flashes and night sweats. Local estrogen is preferred for vulvovaginal symptoms because of its excellent therapeutic response. Bone mineral density screening should be performed in all women older than 65 years, and should begin sooner in women with additional risk factors for osteoporotic fractures. Adequate intake of calcium and vitamin D should be encouraged for all postmenopausal women to reduce bone loss. Coronary artery disease is the leading cause of death in women. Postmenopausal women should be counseled regarding lifestyle modification, including smoking cessation and regular physical activity. All women should receive periodic measurement of blood pressure and lipids. Appropriate pharmacotherapy should be initiated when indicated. Women should receive breast cancer screening every one to two years beginning at age 40, as well as colorectal cancer screening beginning at age 50. Women younger than 65 years who are sexually active and have a cervix should receive routine cervical cancer screening with Papanicolaou smear. Recommended immunizations for menopausal women include an annual influenza vaccine, a tetanus and diphtheria toxoid booster every 10 years, and a one-time pneumococcal vaccine after age 65 years. (*Am Fam Physician*. 2008;78(5):583-591, 593-594.

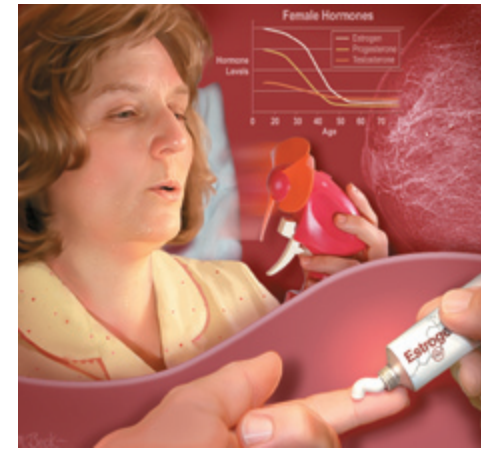

ILLUSTRATION BY JOAN BECK

▶ **Patient information:** A handout on menopause, written by the authors of this article, is provided on page 593.

Menopause is defined as the permanent cessation of menses. In the United States, the median age at which menopause occurs is 52 years, but it can vary between 40 and 58 years of age.[1] The World Health Organization (WHO) and the Stages of Reproductive Aging Workshop have defined menopausal transition as the time of an increase in follicle-stimulating hormone and either increased variability in menstrual cycle length, two skipped menstrual cycles with 60 days or more of amenorrhea, or both.[1] It concludes with the final menstrual period. Postmenopause begins at that time, although it is not recognized until after 12 months of amenorrhea.

With a life expectancy close to 80 years, the average woman is postmenopausal for one third of her life. The incidence of certain conditions (e.g., coronary artery disease, diabetes, breast cancer, colon cancer) increases after menopause. Family physicians have an opportunity to address preventive health care measures with postmenopausal women and encourage healthy lifestyle choices.

Symptom Management

Many women go through menopause with few or no symptoms. Vasomotor symptoms and vaginal dryness are consistently associated with menopausal transition.[1] According to a Cochrane review, oral hormone therapy is highly effective in relieving hot flashes and night sweats compared with placebo.[2] *Table 1*[3] lists various hormonal preparations available to treat vasomotor symptoms. When estrogen is contraindicated, nonestrogen drugs may be considered *(Table 2*[3]*)*. Postmenopausal vaginal symptoms

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	*Evidence rating*	*References*	*Comments*
Extended use of hormone therapy in women who are aware of the risks and benefits and are under medical supervision is acceptable for the following: those who feel that the benefits of menopausal symptom relief outweigh the risks; those who have moderate to severe menopausal symptoms and are at high risk of osteoporotic fractures; and those with reduced bone mass who want to prevent further bone loss when alternate therapies are inappropriate.	C	9	Evidence-based guidelines
All postmenopausal women should have adequate intake of calcium (1,000 to 1,500 mg elemental calcium per day) and vitamin D (800 to 1,000 IU per day) to maintain bone health.	C	16	Evidence-based guidelines
Chemoprophylaxis with aspirin is recommended in women with high risk of coronary heart disease.	A	14, 21	Evidence-based guidelines and USPSTF
Screen for breast cancer every one to two years, beginning at age 40 years.	B	28	USPSTF
Routinely screen for cervical cancer in women who are or have been sexually active and who have a cervix.	A	30	USPSTF
Screen for colorectal cancer beginning at age 50 years.	A	32, 33	Evidence-based guidelines and USPSTF

USPSTF = U.S. Preventive Services Task Force.

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.xml.

can be treated with topical estrogen therapy.[4] *Table 3*[3] outlines selected vaginal estrogen preparations.

Use of hormone therapy by menopausal women has declined since the results of the Women's Health Initiative (WHI) studies were published.[5] The results found that women taking combined estrogen and progestin therapy have a higher risk of myocardial infarction (MI) and venous thromboembolism after one year, stroke after three years, and breast cancer after five years. However, there is a lower incidence of fractures and colon cancer in women who take combination hormone therapy continuously for five years. A recent updated analysis of the WHI findings concludes that estrogen alone does not increase the incidence of breast cancer in postmenopausal women with a previous hysterectomy.[6]

After carefully reviewing the data from the WHI study, the U.S. Food and Drug Administration (FDA) issued safety warnings on hormone therapy product labels.[7] Hormone therapy should be prescribed at the lowest effective dose for the shortest duration necessary to control menopausal symptoms. The U.S. Preventive Services Task Force (USPSTF) recommends against the routine use of combined estrogen and progestin for the prevention of chronic conditions in postmenopausal women, such as cardiovascular disease, osteoporosis, and dementia.[8]

Based on the recent North American Menopause Society's update, hormone therapy is acceptable under the following circumstances: for women who feel that the benefits of menopausal symptom relief outweigh the risks; for women who have moderate to severe menopausal symptoms and are at high risk of osteoporotic fractures; and for women with reduced bone mass who want to prevent further bone loss when alternate therapies are inappropriate.[9] All women on hormone therapy should be under clinical supervision and aware of the potential risks and benefits.

Preventive Care Recommendations

Lifestyle modifications, screenings, early identification, and appropriate intervention may prevent many chronic conditions that cause morbidity and mortality during postmenopausal years. The USPSTF,[10] the American Academy of Family Physicians,[11] and other major organizations have published evidence-based recommendations for postmenopausal women.[12-14] *Table 4*[8-11,13-34] summarizes these health maintenance recommendations.

OSTEOPOROSIS SCREENING

One half of all postmenopausal women will have an osteoporotic fracture during their lifetime.[35] Guidelines from the National Osteoporosis Foundation (NOF)[13] and the USPSTF[15] recommend routine bone mineral density screening to detect osteoporosis in women older than 65 years. The NOF also recommends screening younger postmenopausal women at increased risk of osteoporotic fractures. Recent NOF guidelines incorporate the WHO absolute fracture prediction algorithm (FRAX), a computer-based tool to estimate a patient's 10-year fracture risk. This tool takes into account bone mineral density score and other clinical risk factors for osteoporosis, including personal and family history

Table 1. Selected Estrogen and Progestin Preparations for the Treatment of Menopausal Vasomotor Symptoms

Preparation	*Drug*	*Dosages (mg per day)*
Estrogen*		
Oral	Conjugated estrogens (Premarin)	0.3, 0.45, 0.625, 0.9, 1.25
	17β-estradiol (Estrace)	0.5, 1.0, 2.0
Transdermal	17β-estradiol (Alora)	0.025, 0.05, 0.075, 0.1 (patch applied twice weekly)
	17β-estradiol (Climara)	0.025, 0.0375, 0.05, 0.075, 0.1 (patch applied weekly)
Vaginal	Estradiol acetate (Femring vaginal insert†)	0.05, 0.1 (inserted every 90 days)
Progestogen		
Oral	MPA (Provera)	2.5, 5.0, 10.0
	Micronized progesterone (Prometrium)	100, 200 (in peanut oil)
Vaginal	Progesterone (Prochieve 4%)	45
Combined preparation		
Oral sequential‡	Conjugated estrogens and MPA (Premphase)	0.625 conjugated estrogens plus 5.0 MPA
Oral continuous§	Conjugated estrogens and MPA (Prempro)	0.625 conjugated estrogens plus 2.5 or 5.0 MPA; *or* 0.45 conjugated estrogens plus 2.5 MPA; *or* 0.3 or 0.45 conjugated estrogens plus 1.5 MPA
Transdermal continuous§	17β-estradiol–norethindrone acetate (Activella)	1.0 estradiol plus 0.5 norethindrone
	17β-estradiol–levonorgestrel (Climara Pro)	0.045 estradiol plus 0.015 levonorgestrel (patch applied weekly)
	17β-estradiol–norethindrone acetate (Combipatch)	0.05 estradiol plus 0.14 or 0.25 norethindrone (patch applied twice weekly)

MPA = medroxyprogesterone acetate.

**—Estrogen should be opposed by a progestin in women with a uterus to help prevent endometrial hyperplasia and cancer. Estrogen should be avoided in women who have a history of or are at high risk of cardiovascular disease, breast cancer, uterine cancer, or venous thromboembolic events and in those with active liver disease. Hormone therapy can cause uterine bleeding, breast tenderness, and headache. Doses of estrogen that are approximately biologically equivalent include the following: 0.625 mg of oral conjugated estrogens, 1.0 mg of oral 17β-estradiol, 0.05 mg of transdermal 17β-estradiol, or 0.05 mg of vaginal estradiol acetate.*

†*—Unlike other vaginal preparations listed in Table 3, estradiol acetate delivers a higher systemic level of estrogen and should be opposed by a progestin in women with a uterus.*

‡*—The first 14 pills contain estrogen and the subsequent pills (15 through 28) contain estrogen with progestin.*

§*—Each pill or patch contains estrogen and progestin.*

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of fracture, age, weight, race, sex, steroid use, smoking, and excessive alcohol intake. Treatment is recommended for women with osteoporosis, and those with low bone mass and a 10-year hip fracture probability of 3 percent or more, or a 10-year major fracture risk of 20 percent or more based on the WHO absolute fracture risk model.

CALCIUM AND VITAMIN D

Evidence suggests that adequate calcium and vitamin D intake reduces bone loss in peri- and postmenopausal women.[16] Calcium also potentiates the effects of exercise on bone mineral density in postmenopausal women.

The National Institutes of Health (NIH) recommends 1,000 mg of calcium per day for postmenopausal women younger than 65 years who take estrogen, and 1,500 mg per day for those who do not take estrogen.[16] The NIH recommends that all women 65 years and older take 1,500 mg of calcium per day.[16] The NOF recommends at least 1,200 mg of calcium per day.[13] The average dietary calcium intake for postmenopausal women in the United States is approximately 600 mg per day. Therefore, most women need calcium supplementation to ensure adequate calcium intake. Although calcium carbonate products are typically less expensive than most other types of calcium supplements, they should be taken with a meal to ensure optimal absorption. Calcium citrate can be taken without food and is the preferred supplement for patients with achlorhydria or who are taking long-term histamine H_2 blockers or proton pump inhibitors.[36] Consumption of calcium in divided doses, typically 500 mg or less at one time, can maximize absorption.

Vitamin D plays a major role in calcium absorption and

Table 2. Evidence of the Effectiveness of Nonestrogen Prescription Drugs for the Treatment of Menopausal Hot Flashes

Treatment	*Oral dosage*	*Evidence of benefit*	*Outcome**
Nonestrogen hormones			
Progestins			
Medroxyprogesterone acetate (Provera)	20 mg daily	Yes	Improvement of 48 percent over placebo
Megestrol (Megace; brand available only as an oral suspension)	20 mg twice daily	Yes	Improvement of 47 percent over placebo in breast cancer survivors
Tibolone‡	1.25 to 5.0 mg	Yes	Improvement of 35 to 50 percent over placebo
Antidepressants			
SSRIs			
Citalopram (Celexa)	30 mg	No	No benefit over placebo
Fluoxetine (Prozac)	20 mg	Mixed	Improvement of 24 percent over placebo in breast cancer survivors
	30 mg	Mixed	No benefit among women without breast cancer
Paroxetine (Paxil)	10 to 20 mg	Yes	Improvement of 30 percent over placebo in breast cancer survivors
	12.5 to 25 mg, controlled release	Yes	Improvement of 25 percent over placebo in women without breast cancer
Sertraline (Zoloft)	25 to 100 mg	No	No benefit over placebo in breast cancer survivors
SNRIs			
Venlafaxine (Effexor)	75 or 150 mg	Mixed	Improvement of 34 percent over placebo in breast cancer survivors
	75 mg, extended release	Mixed	No benefit over placebo in women without breast cancer
Anticonvulsants			
Gabapentin (Neurontin)	300 mg three times daily	Yes	Improvement of 31 percent over placebo in breast cancer survivors and 23 percent over placebo in women without breast cancer
Alpha blockers			
Clonidine (Catapres)	0.1 mg transdermal	Mixed	Little to no benefit or improvement of 27 percent over placebo
Methyldopa (Aldomet; brand no longer available in the United States)	375 to 1,125 mg daily in divided dosages	No	No benefit over placebo

SNRI = serotonin norepinephrine reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor.

**—The hot-flash score was the main outcome in the majority of the clinical trials, measured as the number of hot flashes per day weighted by severity, reported as mild, moderate, or severe.*

†—Side effects were reported in clinical trials or on the Epocrates Rx Web site.

‡—This drug is currently not available in the United States.

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bone health.[13] Vitamin D is formed in the skin following direct exposure to sunlight. Usually 10 to 15 minutes of exposure of hands, arms, and face two to three times per week satisfies the body's vitamin D requirement. Other sources include vitamin D–fortified foods, such as milk, yogurt, cheese, bread, orange juice, and oily fish (e.g., sardines, salmon, tuna). The current recommendation for daily vitamin D_3 intake is 800 to 1,000 IU per day.[13] Serum 25(OH)D levels should be measured in women at high risk of vitamin D deficiency (e.g., older women, women with malabsorption [celiac disease], women who are homebound or institutionalized, women with dark skin). Vitamin D should be supplemented enough to maintain serum 25(OH)D levels of 30 ng per mL (75 nmol per L) or higher.[13]

EXERCISE

Regular weight-bearing exercise can reduce the risk of developing osteoporotic fractures in postmenopausal women. A recent randomized controlled trial (RCT)

Side effects†
Nausea, vomiting, constipation, somnolence, depression, breast tenderness, and uterine bleeding; concern about increased risk of venous thromboembolism, cardiovascular events, and breast cancer
Headache, weight gain, and uterine bleeding; unknown effects on venous thromboembolic events, cardiovascular disease, and breast and uterine cancers
Nausea, vomiting, diarrhea, insomnia, somnolence, anxiety, decreased libido, dry mouth, worsening depression, mania, suicidality, the serotonin syndrome, and the withdrawal syndrome; paroxetine and possibly other SSRIs decrease the activity of cytochrome P-450 enzymes, thereby decreasing the production of active metabolites of tamoxifen (Soltamox), which may interfere with the anti–breast cancer effects of tamoxifen
Same side effects as for SSRIs, but minimal effect on cytochrome P-450 enzymes (only slightly inhibits conversion of tamoxifen to active metabolites); possible hypertension
Nausea, vomiting, somnolence, dizziness, rash, ataxia, fatigue, and leukopenia
Drowsiness, dizziness, hypotension, and rebound hypertension

Table 3. Selected Estrogen Vaginal Preparations for the Treatment of Menopausal Vaginal Symptoms*

Preparation	*Drug*	*Dosage*
Vaginal cream	Conjugated estrogens (Premarin)	0.625 mg per 2 g cream: 2 g per day for two weeks, then 1 to 2 g two to three times per week
	17β-estradiol (Estrace)	0.1 mg per 2 g cream: 2 g per day for two weeks, then 1 to 2 g two to three times per week
Vaginal tablet	Estradiol hemihydrate (Vagifem)	0.025 mg per tablet: one tablet per day for two weeks, then one tablet two times per week
Vaginal ring	17β-estradiol (Estring)	0.0075 mcg per day (inserted every 90 days)

**—Most products listed in Table 2 for the treatment of menopausal hot flashes are also approved for the treatment of vaginal dryness. A vaginal moisturizer (Replens) has been found to be as effective for the treatment of vaginal symptoms as estrogen vaginal cream. Other vaginal moisturizers, such as Yes, K-Y Silk-E, and Astroglide Silken Secret, may also be effective, but have not been studied in randomized trials.*

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revealed that brisk walking combined with moderate resistance training improved muscle strength, balance, and walking performance in women who recently went through menopause.[37] Dividing the walking into two daily sessions was found to be more feasible than continuous walking,[38] and is easy to incorporate into everyday life.

SMOKING

Cigarette smoking has been associated with earlier onset of natural menopause. The annual risk of death for women who continue to smoke is more than double that of persons who have never smoked in every age group from 45 through 74 years.[39] Postmenopausal women who currently smoke have lower bone mineral density and an increased risk of hip fracture compared with women who do not smoke.[39] Smoking cessation reduces the risk of certain cancers, coronary artery disease, and premature death among women.[39] At each office visit, smokers should be encouraged to quit smoking. Physicians should offer appropriate support, pharmacologic therapy, and follow-up to achieve success with smoking cessation.

CORONARY HEART DISEASE PREVENTION

Coronary heart disease (CHD) is the most common cause of death in women. Approximately one in two women develops CHD, and one in three dies from it.[40] Early mortality following MI is higher and long-term prognosis is worse in women than in men.

The USPSTF strongly recommends routinely screening women 45 years and older for lipid disorders and treating abnormal lipid levels in persons who are at increased risk of CHD. Screening for diabetes with fasting plasma glucose is indicated for women with risk factors for CHD, such as hypertension and hyperlipidemia.[26] Data suggest that smoking cessation after an MI and treatment of hypertension and hyperlipidemia lower the risk for CHD events in women.[40]

Table 4. Health Maintenance for Postmenopausal Women

Recommendation	*AAFP*[11]	*USPSTF*[10]
Hormone therapy	Same as USPSTF	Recommends against hormone therapy in postmenopausal women for management of chronic diseases, such as cardiovascular disease, osteoporosis, and dementia[8]
Osteoporosis	Screen women older than 65 years or starting at 60 years in women at high risk of osteoporotic fractures	Screen women older than 65 years[15]
Nutrition and lifestyle		
Calcium and vitamin D	—	—
Obesity	Screen all adults for obesity; provide counseling and behavioral interventions more than once per month for at least three months	Screen and provide counseling and interventions to all adults to achieve sustained weight loss; BMI is a valid and reliable tool to identify persons at risk[17]
Physical activity	Physical activity is important; no recommendations for counseling	Evidence is insufficient to recommend for or against counseling for exercise[18]
Tobacco use	Same as USPSTF	Screen all adults for tobacco use and provide interventions for smoking cessation[20]
CHD and related medical conditions		
Aspirin	Discuss risks and benefits of aspirin chemoprophylaxis in persons at high risk of CHD	Address aspirin chemoprevention in adults with CHD risk factors, keeping in mind the risk of gastrointestinal bleeding, and hemorrhagic stroke[21]
Blood pressure	—	Blood pressure screening is recommended in adults 18 years and older[23]
Cholesterol	Screen women 45 years and older with a fasting lipid profile or nonfasting HDL and total cholesterol levels	Screen women 45 years and older who are at increased cardiovascular risk with HDL and total cholesterol levels; insufficient evidence for triglyceride measurement[24]
Diabetes	Screen adults with hypertension and hyperlipidemia	Screen adults with hypertension and hyperlipidemia[26]; insufficient evidence for routine screening in asymptomatic adults
Cancer prevention		
Breast cancer	Mammography every one to two years in women 40 years and older	Mammography, with or without clinical breast examination, every one to two years in women 40 years and older; screen women older than 70 years who have a reasonable life expectancy[28]
Cervical cancer	Pap smear at least every three years in women who have a cervix and who have ever had sexual intercourse	Pap smear at least every three years in women who have ever had sexual intercourse and have a cervix; discontinue after age 65 years if the patient has had regular normal Pap smears[30]
Colorectal cancer*	Screen adults 50 years and older	Screen adults 50 years and older; age of discontinuation is uncertain[32]
Immunizations		
Influenza vaccine	Recommends as per CDC	Recommends as per CDC
Pneumococcal (Pneumovax) vaccine	Recommends as per CDC	Recommends as per CDC
Td/Tdap vaccines	Recommends as per CDC	Recommends as per CDC

AAFP = American Academy of Family Physicians; ACS = American Cancer Society; ADA = American Diabetes Association; AGS = American Geriatrics Society; AHA = American Heart Association; BMI = body mass index; CDC = Centers for Disease Control and Prevention; CHD = coronary heart disease; HDL = high-density lipoprotein; LDL = low-density lipoprotein; NAMS = North American Menopause Society; NCEP–ATP III = National Cholesterol Education Program, Adult Treatment Panel III; NIH = National Institutes of Health; NOF = National Osteoporosis Foundation; Pap = Papanicolaou; Td = tetanus and diphtheria toxoid; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis; USPSTF = U.S. Preventive Services Task Force.

Information from references 8 through 11 and 13 through 34.

Other organizations
According to NAMS, extended use of estrogen or estrogen-progestogen therapy in women who are aware of the risks and benefits and are under medical supervision is acceptable for the following patients: those who feel that the benefits of symptom relief outweigh the risks; those who have moderate to severe symptoms and are at high risk of osteoporotic fractures; and those with reduced bone mass who want to prevent further bone loss when alternate therapies are inappropriate[9]
NOF recommends routine screening of bone mineral density at 65 years of age and sooner in postmenopausal women at high risk of osteoporotic fractures[13]
NOF recommends at least 1,200 mg of calcium and 800 to 1,000 IU of vitamin D per day for adult women[13]; NIH recommends 1,000 to 1,500 mg of calcium per day for postmenopausal women[16]
AHA recommends measurement of BMI and waist circumference as part of a periodic evaluation; encourage gradual and sustained weight loss in persons whose weight exceeds the ideal weight for their height[14]
AGS recommends counseling older adults about an exercise program that balances the modalities of endurance, mobility, flexibility, strength, and gait[19]
—
AHA recommends the use of low-dose aspirin in persons at high risk of coronary heart disease, especially those with a 10-year CHD risk of 20 percent or greater[14]
AHA recommends that all women receive periodic blood pressure screening[14]
NCEP–ATP III recommends a fasting lipoprotein profile (LDL, HDL, and total cholesterol levels; and triglycerides) every five years in women[25]
ADA recommends that all adults 45 years and older be screened every three years for diabetes with a fasting glucose test, particularly in those with a BMI ≥ 25 kg per m^2 Earlier or frequent screening is recommended for overweight patients (BMI > 25 kg per m^2) if diabetes risk factors are present[27]
ACS recommends yearly mammography and clinical breast examination in women 40 years and older[29]
ACS recommends annual Pap smear beginning within three years after first sexual intercourse; screen every two to three years in women older than 30 years who have had three consecutive normal results[31]; stop screening at age 70 years
ACS recommends screening adults beginning at age 50 years[33]
CDC recommends annual influenza vaccine for all persons 50 years and older[34]
CDC recommends immunizing all adults 65 years and older, and before age 65 years in persons with chronic medical problems[34]
Administer a booster dose every 10 years in adults who have completed a primary series; Tdap or Td vaccine may be used; Tdap should replace a single dose of Td for adults younger than 65 years who have not previously received a dose of Tdap[34]

**—Screening options for colorectal cancer include annual fecal occult blood testing or fecal immunochemical test; flexible sigmoidoscopy every five years; annual stool blood test plus flexible sigmoidoscopy every five years; double-contrast barium enema every five years; or colonoscopy every 10 years. A digital rectal examination should not be used alone for screening. If any test result comes back abnormal, colonoscopy should be performed.*

The USPSTF[21] and the American Heart Association[14] recommend aspirin therapy in women at high risk of CHD. However, the use of aspirin for primary prevention in healthy women is controversial. A recent study followed 39,876 healthy women 45 years and older who were randomized to receive 100 mg of aspirin or placebo on alternate days.[22] The women were monitored for 10 years for a first major cardiovascular event. Aspirin lowered the risk of ischemic stroke by 24 percent, but no significant effect was noted on the risk of fatal or nonfatal MI. Another RCT that evaluated the risks and benefits of aspirin prevention for CHD in women found a beneficial effect only in women 65 years and older.[41] Aspirin use is associated with an increased risk of hemorrhagic stroke and major gastrointestinal hemorrhage, particularly in older women.[21] Its use should be individualized for each patient.

Cancer Screening

BREAST CANCER

Breast cancer is the most common non-skin malignancy diagnosed in women and the second leading cause of cancer-related death.[28] The risk of breast cancer increases with age. The USPSTF recommends screening for breast cancer every one to two years, with mammography alone or mammography and annual clinical breast examination, for women 40 years and older. The evidence that screening reduces mortality from breast cancer is strongest for women 50 to 69 years of age.[28] There is no evidence of benefit for women older than 75 years, but the task force recommends screening women older than 70 years who have a reasonable life expectancy.

CERVICAL CANCER

There is evidence that early detection through routine Papanicolaou (Pap) testing and treatment of precursor cervical intraepithelial neoplasia can lower mortality from cervical cancer.[42] The USPSTF recommends routine screening with Pap testing for all women who have a cervix and are or have been sexually active.[30] Screening can be discontinued after 65 years of age if the patient has had regular normal Pap smears. The American College

of Obstetricians and Gynecologists recommends two options for low-risk women 30 years and older: Perform three consecutive annual cervical cytology tests and, if they are negative, rescreen at intervals of two to three years, or perform cervical cytology testing in conjunction with an FDA–approved human papillomavirus (HPV) DNA test for high-risk HPV types.[12] Patients with negative results on both tests do not need to be rescreened for at least three years. Screening is not required for women who have had a total hysterectomy for benign indications.[30]

COLORECTAL CANCER

Early detection of colorectal cancer improves outcomes. The five-year survival rate is approximately 91 percent with localized disease, but drops to 6 percent among persons presenting with distant metastasis.[43] The USPSTF and the American Cancer Society recommend screening for colorectal cancer for all persons 50 years and older.[32,33] The screening options include the following: fecal occult blood testing every year, flexible sigmoidoscopy every five years, fecal occult blood testing every year plus flexible sigmoidoscopy every five years, double-contrast barium enema every five years, or colonoscopy every 10 years.[44]

Immunizations

Annual influenza vaccine should be administered to women 50 years and older.[34] A tetanus and diphtheria toxoid (Td) booster is recommended every 10 years after the primary series is completed. The 2007-2008 Advisory Committee on Immunization Practices (ACIP) guideline recommends that a tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) should replace a single dose of Td for adults younger than 65 years who have not previously received a dose of Tdap.[34] Women 65 years and older should also be immunized against pneumococcal disease. The current recommendation is that the vaccine be repeated for those 65 years and older who received their first dose when they were younger than 65 years, and if five or more years have passed since that dose. A single dose of zoster vaccine is recommended for adults 60 years and older, whether or not they report a previous episode of herpes zoster.

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REFERENCES

1. National Institutes of Health. National Institutes of Health State-of-the-Science Conference statement: management of menopause-related symptoms. *Ann Intern Med*. 2005;142(12 pt 1):1003-1013.
2. Maclennan AH, Broadbent JL, Lester S, Moore V. Oral oestrogen and combined oestrogen/progestogen therapy versus placebo for hot flushes. *Cochrane Database Syst Rev*. 2004;(4):CD002978.
3. Grady D. Clinical practice. Management of menopausal symptoms. *N Engl J Med*. 2006;355(22):2338-2347.
4. Suckling J, Lethaby A, Kennedy R. Local oestrogen for vaginal atrophy in postmenopausal women. *Cochrane Database Syst Rev*. 2003;(4):CD001500.
5. Rossouw JE, Anderson GL, Prentice RL, et al., for the Writing Group for the Women's Health Initiative Investigators. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results from the Women's Health Initiative randomized controlled trial. *JAMA*. 2002;288(3):321-333.
6. Stefanick ML, Anderson GL, Margolis KL, et al., for the Women's Health Initiative Investigators. Effects of conjugated equine estrogens on breast cancer and mammography screening in postmenopausal women with hysterectomy. *JAMA*. 2006;295(14):1647-1657.
7. U.S. Food and Drug Administration, Center for Drug Evaluation and Research. Estrogen and estrogen with progestin therapies for postmenopausal women. Washington, DC: U.S. Dept. of Health and Human Services. http://www.fda.gov/cder/drug/infopage/estrogens_progestins/default.htm. Accessed May 19, 2008.
8. U.S. Preventive Services Task Force. Hormone therapy for the prevention of chronic conditions in postmenopausal women: recommendations from the U.S. Preventive Services Task Force. *Ann Intern Med*. 2005;142(10):855-860.
9. North American Menopause Society. Estrogen and progestogen use in peri- and postmenopausal women: March 2007 position statement of the North American Menopause Society. *Menopause*. 2007;14(2):168-182.
10. U.S. Preventive Services Task Force. Guide to clinical preventive services. Bethesda, Md.: Agency for Healthcare Research and Quality. http://www.ahrq.gov/clinic/cps3dix.htm. Accessed May 19, 2008.
11. American Academy of Family Physicians. AAFP clinical recommendations. Leawood, Kan.: American Academy of Family Physicians. http://www.aafp.org/online/en/home/clinical/clinicalrecs.html. Accessed May 19, 2008.
12. American College of Obstetricians and Gynecologists. ACOG practice bulletin. Cervical cytology screening. Number 45, August 2003. *Int J Gynaecol Obstet*. 2003;83(2):237-247.
13. National Osteoporosis Foundation. Clinician's guide to prevention and treatment of osteoporosis. http://www.nof.org/professionals/NOF_Clinicians_Guide.pdf. Accessed July 15, 2008.

14. Mosca L, Appel LJ, Benjamin EJ, et al., for the American Heart Association. Evidence-based guidelines for cardiovascular disease prevention in women. American Heart Association scientific statement. *Arterioscler Thromb Vasc Biol*. 2004;24(3):e29-e50.
15. U.S. Preventive Services Task Force. Screening for osteoporosis in postmenopausal women: recommendations and rationale. *Ann Intern Med*. 2002;137(6):526-528.
16. North American Menopause Society. The role of calcium in peri- and postmenopausal women: 2006 position statement of the North American Menopause Society. *Menopause*. 2006;13(6):862-877.
17. U.S. Preventive Services Task Force. Screening for obesity in adults: recommendations and rationale. *Ann Intern Med*. 2003;139(11):930-932.
18. U.S. Preventive Services Task Force. Behavioral counseling in primary care to promote physical activity: recommendation and rationale. *Ann Intern Med*. 2002;137(3):205-207.
19. Bloom H, Edelberg HK. Prevention. In: *Geriatric Review Syllabus*. 5th ed. http://www.americangeriatrics.org/directory/ABIM/GRS/Prev5_m.htm. Accessed May 19, 2008.
20. U.S. Preventive Services Task Force. Counseling to prevent tobacco use and tobacco-caused disease: recommendations statement. Rockville, Md.: Agency for Healthcare Research and Quality; 2003. http://www.ahrq.gov/clinic/3rduspstf/tobacccoun/tobcounrs.htm. Accessed May 19, 2008.
21. U.S. Preventive Services Task Force. Aspirin for the primary prevention of cardiovascular events: recommendation and rationale. *Ann Intern Med*. 2002;136(2):157-160.
22. Ridker PM, Cook NR, Lee IM, et al. A randomized trial of low-dose aspirin in the primary prevention of cardiovascular disease in women. *N Engl J Med*. 2005;352(13):1293-1304.
23. U.S. Preventive Services Task Force. Screening for high blood pressure. Rockville, Md.: Agency for Healthcare Research and Quality; 2003. http://www.ahrq.gov/clinic/3rduspstf/highbloodsc/hibloodrr.htm. Accessed May 19, 2008.
24. U.S. Preventive Services Task Force. Screening for lipid disorders: recommendations and rationale. *Am J Prev Med*. 2001;20(3 suppl):73-76.
25. National Cholesterol Education Program. Third report of the National Cholesterol Education Program (NCEP) Expert Panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III). Bethesda, Md.: National Cholesterol Education Program; National Heart, Lung, and Blood Institute; National Institutes of Health; 2002. NIH Publication No. 02-5215. http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf. Accessed May 19, 2008.
26. U.S. Preventive Services Task Force. Screening for type 2 diabetes mellitus in adults: recommendations and rationale. *Ann Intern Med*. 2003;138(3):212-214.
27. American Diabetes Association. Standards of medical care in diabetes–2006 [published correction appears in *Diabetes Care*. 2006; 29(5):1192]. *Diabetes Care*. 2006;(29 suppl 1):S4-S42.
28. U.S. Preventive Services Task Force. Screening for breast cancer: recommendations and rationale. *Ann Intern Med*. 2002;137(5 part 1):344-346.
29. Smith RA, Saslow D, Sawyer KA, et al., for the American Cancer Society High-Risk Work Group; American Cancer Society Screening Older Women Work Group; American Cancer Society Mammography Work Group; American Cancer Society Physical Examination Work Group; American Cancer Society New Technologies Work Group; American Cancer Society Breast Cancer Advisory Group. American Cancer Society guidelines for breast cancer screening: update 2003. *CA Cancer J Clin*. 2003;53(3):141-169.
30. U.S. Preventive Services Task Force. Screening for cervical cancer: recommendations and rationale. *Am Fam Physician*. 2003;67(8):1759-1766.
31. Saslow D, Runowicz CD, Solomon D, et al. American Cancer Society guideline for the early detection of cervical neoplasia and cancer. *J Low Genit Tract Dis*. 2003;7(2):67-86.
32. U.S. Preventive Services Task Force. Screening for colorectal cancer: recommendation and rationale. *Ann Intern Med*. 2002;137(2):129-131.
33. Smith RA, Cokkinides V, Eyre HJ. American Cancer Society guidelines for the early detection of cancer, 2003. *CA Cancer J Clin*. 2003; 53(1):27-43.
34. Advisory Committee on Immunization Practices. Recommended adult immunization schedule: United States, October 2007–September 2008. *Ann Intern Med*. 2007;147(10):725-729.
35. Berg AO. Screening for osteoporosis in postmenopausal women: recommendations and rationale. *Am J Nurs*. 2003;103(1):73-80.
36. Straub DA. Calcium supplementation in clinical practice: a review of forms, doses, and indications. *Nutr Clin Pract*. 2007;22(3):286-296.
37. Asikainen TM, Suni JH, Pasanen ME, et al. Effect of brisk walking in 1 or 2 daily bouts and moderate resistance training on lower-extremity muscle strength, balance, and walking performance in women who recently went through menopause: a randomized, controlled trial. *Phys Ther*. 2006;86(7):912-923.
38. Asikainen TM, Kukkonen-Harjula K, Miilunpalo S. Exercise for health for early postmenopausal women: a systematic review of randomised controlled trials. *Sports Med*. 2004;34(11):753-778.
39. National Library of Medicine. Health consequences of tobacco use among women. In: AHCPR Archived Reports, Put Prevention into Practice and Minnesota Health Technology Advisory Committee. *Reports of the Surgeon General. Women and Smoking*. http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat5.section.7251. Accessed May 19, 2008.
40. Agency for Healthcare Research and Quality. Diagnosis and treatment of coronary heart disease in women: systematic reviews of evidence on selected topics. Rockville, Md.: Agency for Healthcare Research and Quality; 2003. http://www.ahcpr.gov/clinic/tp/chdwtoptp.htm. Accessed May 19, 2008.
41. Ridker PM, Cook NR, Lee IM, et al. A randomized trial of low-dose aspirin in the primary prevention of cardiovascular disease in women. *N Engl J Med*. 2005;352(13):1293-1304.
42. American Cancer Society. *Cancer Facts & Figures 2007*. Atlanta, Ga.: American Cancer Society; 2007. http://www.cancer.org/downloads/STT/CAFF2007PWSecured.pdf. Accessed May 19, 2008.
43. Colon cancer screening (USPSTF recommendation). U.S. Preventive Services Task Force. *J Am Geriatr Soc*. 2000;48(3):333-335.
44. Winawer S, Fletcher R, Rex D, et al., for the Gastrointestinal Consortium Panel. Colorectal cancer screening and surveillance: clinical guidelines and rationale-Update based on new evidence. *Gastroenterology*. 2003;124(2):544-560.