

CHAPTER 10—PREVENTION

INTRODUCTION

RECOMMENDED PREVENTIVE SERVICES

OTHER PREVENTIVE SERVICES TO CONSIDER

PREVENTIVE SERVICES NOT INDICATED IN OLDER ADULTS

DELIVERY OF PREVENTIVE SERVICES

ANNOTATED REFERENCES

INTRODUCTION

As the population ages and the average active life expectancy increases, issues of primary and secondary prevention become increasingly important. The prevalence of undetected, correctable conditions and comorbid diseases is high in older adults. Moreover, a growing number of older adults are enthusiastic and highly motivated about disease prevention and health promotion. The clinician provides the information and opportunity for preventive care that helps older patients to maintain functional independence for as long as possible.

Many findings from research on preventive care and the appropriate components of periodic health examinations are inconclusive. In addition, older persons are typically not included in clinical trials of preventive strategies, which has limited the ability of geriatricians to adjust guidelines for preventive practices for patients aged 65 and older on the basis of new scientific findings. Primary care physicians are consequently compelled to rely on clinical judgment in planning the preventive care of their older patients.

A number of factors, including age, functional status, comorbidity, patient preference, socioeconomic status, and the availability of care, affect health care decisions of the older adult. Unlike chronologic age, physiologic age may be determined by self-rated health and overall medical condition. Classifications that are based on life expectancy, physiologic age, and functional status may facilitate medical decision making with older patients. For example, the clinician might strongly recommend fecal occult blood testing (FOBT) to a healthy, functionally independent patient; discuss the potential pros and cons of FOBT and offer the test to a chronically ill, partially dependent patient; and actually recommend against FOBT for a severely frail, demented patient. It is important that the clinician consider all of the relevant issues in determining which conditions to screen for, the appropriate screening interval, and when (if ever) to discontinue screening in older patients.

Attention to the underlying principles of primary and secondary prevention is important for patients of any age. Screening measures should be systematically performed when the prevalence and morbidity or mortality of the condition outweigh both the economic cost and potential consequences of a falsely positive or negative test result. Some recommendations may be applicable only to high-risk individuals, not to the general population.

RECOMMENDED PREVENTIVE SERVICES

A number of preventive services have been shown to be effective in older persons and are widely endorsed. [Table 10.1](#) summarizes these preventive activities, which are discussed below.

Screening

Hypertension

The prevalence of hypertension increases with advancing age. Treatment of hypertension in older adults has been associated with a reduction in morbidity and mortality from left ventricular hypertrophy, congestive heart failure, myocardial infarction, and stroke. However, older adults are more susceptible to adverse effects of antihypertensive therapy, such as hyponatremia, hypokalemia, depression, confusion, or postural hypotension. (See [Hypertension](#).)

Breast Cancer

It is unclear at what age, if any, mammography screening should be stopped. The U.S. Preventive Services Task Force (USPSTF) and the Canadian Task Force recommend biennial screening until age 70, the American College of Physicians recommends biennial screening until age 74, and the American Geriatrics Society supports screening every 2 to 3 years until age 85. Mammography screening at any age is more defensible if the patient has an active life expectancy of at least 3 years. Medicare provides coverage for annual screening mammograms. There is no compelling evidence that breast self-examination reduces breast cancer morbidity and mortality. (See [Oncology](#), and [Hormone Replacement Therapy](#).)

Colorectal Cancer

The USPSTF recommends annual FOBT or sigmoidoscopy every 5 years beginning at age 50. For older patients, one-time colonoscopy may be more cost-effective and have a more significant impact on colorectal cancer mortality than other screening programs. Medicare provides coverage for annual FOBT and biennial flexible sigmoidoscopy for all beneficiaries. As of July 1, 2001, Medicare will pay for a screening colonoscopy every 10 years for all beneficiaries. A screening barium enema may be substituted for either a screening flexible sigmoidoscopy or a screening colonoscopy. "Virtual" colonoscopy, a new method using thin-section, helical computed tomography, is currently under investigation as a screening tool for colorectal cancer. Studies have refuted the concept that a low-fat, high-fiber diet plays a role in the prevention of colorectal cancer. Although epidemiologic data suggest that aspirin or nonsteroidal anti-inflammatory drugs may be protective against colorectal cancer, there is insufficient evidence to support the routine use of these medications for primary prevention. (See [Oncology](#).)

Cervical Cancer

Approximately 40% of new cases of invasive cervical cancer and deaths from cervical cancer occur in women aged 65 years and over. The Papanicolaou smear is most cost-effective in older patients who have previously had incomplete screening. Between 4% and 8% of cervical cancers are found in the cervical stump in women who have undergone incomplete hysterectomy. Regular Pap smears every 1 to 3 years are recommended for all women who are or have been sexually active and who have a cervix. Medicare has covered triennial screening without age limit since 1990. The appropriate cut-off age for screening remains controversial, although most experts recommend cessation of screening after age 65 if the patient has had a history of regularly normal smears. In older women never previously screened, screening can cease after two normal Pap smears are obtained 1 year apart.

Obesity or Malnutrition

Routine measurement of height and weight can be used to calculate body mass index (BMI). Obesity has been defined in men as a BMI ≥ 27.8 kg/m² and in women as a BMI ≥ 27.3 kg/m². An unintentional weight loss of 10 pounds in 6 months can indicate malnutrition or a serious occult illness. (See [Malnutrition](#).)

Alcoholism

All older adults should be screened for alcohol abuse at least once and whenever a drinking problem is suspected. Screening questionnaires such as the CAGE (see [Table 36.1](#)) can be useful in detecting alcohol problems. (See ["Substance Abuse."](#))

Dyslipidemia

There is good evidence that correcting lipid abnormalities (ie, levels of low-density lipoprotein ≥ 130 mg/dL, of high-density lipoprotein ≤ 35 mg/dL, of triglycerides ≥ 200 mg/dL) lowers the risk of recurrent cardiac events in elderly persons with prior myocardial infarction or angina. These persons should be screened for lipid abnormalities; treatment goals for those found to have dyslipidemia should be low-density lipoprotein levels of < 100 mg/dL, high-density lipoprotein levels of > 40 mg/dL, and triglycerides levels of < 200 mg/dL. There is no evidence that screening older adults who are clinically free of coronary artery disease (CAD) or who have few cardiac risk factors for primary prevention of CAD is effective. (See [Cardiovascular Diseases and Disorders](#).)

Vision and Hearing Deficits

Uncorrected refractive errors, glaucoma, cataracts, and macular degeneration account for most undetected visual disorders. Routine screening with a Snellen chart is recommended by the USPSTF. Undetected hearing loss can lead to social isolation and may indicate other underlying disorders. The USPSTF

recommends periodically questioning older adults about their hearing and counseling them about the availability of hearing aid devices. The evidence for routine audiometry as a screening tool is unproven. (See [Visual Impairment](#), and [Hearing Impairment](#).)

Counseling

Dietary Counseling

The importance of a well-balanced diet should be addressed routinely with older adults. An appropriate diet is high in fruits and vegetables and low in fat and salt, and has adequate calcium content. (See [Malnutrition](#).)

Physical Activity

Physical activity has been associated with greater mobility and lower rates of CAD and osteoporosis. Older adults should be counseled about an exercise program that balances modalities of flexibility (eg, stretching), endurance (eg, walking or cycling), strength (weight training), and balance (eg, Tai Chi or dance therapy). (See [Physical Activity](#).)

Injury Prevention

The USPSTF recommends counseling older persons on measures to reduce the risk of falling (see [Falls](#), and [Gait Disturbances](#), for details about preventing falls), safety-related skills and behaviors, and environmental hazard reduction. Safety-related behaviors include the regular use of seat and lap belts in automobiles, regular driving tests, and avoidance of alcohol use while driving or operating machinery. Environmental hazard reduction might include lowering hot-water temperature to prevent serious burns, installing smoke detectors, and, in homes of demented persons, installing alarms and automatic shut-off features on appliances and removing or safely storing firearms. A home safety checklist or formal environmental assessment by a physical or occupational therapist can facilitate injury prevention. (See the [Appendix](#), for a checklist.)

Smoking Cessation

Smoking cessation at any age reduces rates of chronic obstructive pulmonary disease, many cancers, and CAD. All older adult smokers should be encouraged to and helped with smoking cessation at each office visit. (See [Substance Abuse](#), and [Respiratory Diseases and Disorders](#).)

Dental Care

Many common problems can be detected and effectively treated by regular dental visits, including malnutrition, xerostomia, and oral cancers. (See [Oral Diseases and Disorders](#).)

Immunizations

Medicare covers the costs of influenza, pneumococcal, and tetanus immunizations.

Influenza Vaccine

The current influenza vaccine is a killed virus that is moderately immunogenic, with estimated efficacy rates of 70% for illness and 90% for mortality. Multiple evaluations of the vaccine's efficacy reveal that, although it incompletely protects against disease, it clearly reduces rates of respiratory illness, hospitalization, and mortality in the elderly age group. Annual vaccine administration must be provided because of antigenic drift and the short-lived (4 to 5 months) protection provided by the vaccine. Current recommendations are that all patients aged 65 or over or those under age 65 with underlying medical illnesses be immunized annually between October and mid-November, but any time from September to the end of influenza season is appropriate. Medical personnel and caregivers for high-risk patients should also be immunized. Potential adverse effects include fever, chills, myalgias, and malaise, but these are usually rare. Contraindications include anaphylactic egg hypersensitivity or allergic reactions following occupational exposure to egg protein. Live, attenuated influenza vaccines have been developed, appear to be more effective, and are likely to be approved for widespread use in the near future.

In outbreak situations, chemoprophylaxis can protect against influenza during the 2 weeks immediately after immunization until the antibody response is mounted, or in persons who cannot receive the vaccine.

Amantadine, rimantadine, zanamivir, and oseltamivir are all effective for influenza A, but they differ greatly with regard to cost, side effects, mechanism of action, and mode of delivery. Only the neuraminidase inhibitors zanamivir and oseltamivir have activity against influenza B. Zanamivir is administered via a disk-inhaler system; the others are taken orally.

Treatment of influenza is also possible with any of the four drugs and reduces the duration of illness by about 1 to 1.5 days, if started within 24 hours of symptom onset. Again, only the neuraminidase inhibitors can be used for treatment of influenza B. Resistance to amantadine and rimantadine can develop rapidly in many persons during the course of treatment; resistance to the neuraminidase inhibitors is less well characterized at this time.

Pneumococcal Vaccination

Pneumococcal vaccination is indicated for all persons aged 65 years or older and many persons under age 65 with comorbid conditions. If ≥ 5 years has elapsed since the first dose and the patient was vaccinated prior to the age of 65, repeat vaccination is indicated. Studies show that adverse events following revaccination are rare and mild. Thus, an unknown vaccination history should prompt administration of the pneumococcal vaccine. (*When in doubt, vaccinate!*) The vaccine does not prevent mucosal disease such as sinusitis and has unclear efficacy for preventing pneumonia. However, there is strong evidence that suggests that the vaccine reduces the risk of invasive disease (ie, bacteremia) and that it is cost-effective for older, immune, competent adults.

Although the protective efficacy of the pneumococcal vaccine is estimated to be only 60% to 70% and studies have revealed mixed results regarding benefits in high-risk older adults, all patients aged 65 years and older should receive one dose of 0.5 mg IM. Studies suggest that high-risk individuals may benefit from revaccination every 7 to 10 years. Other than local soreness, adverse effects are usually minimal.

Tetanus Vaccination

More than 60% of tetanus infections occur in persons aged 60 years of age and older. There is evidence that the absorbed tetanus and diphtheria toxoids provide long-term protection 35 years after the primary series or booster. Older adults who have never been vaccinated should receive two doses, 0.5 mg IM 1 to 2 months apart, followed by an additional dose 6 to 12 months later. The optimal interval for booster doses is not established; the USPSTF and Canadian Task Force recommend booster vaccinations every 10 years. Local pain and swelling or, rarely, hypersensitivity may accompany vaccination. A neurologic or hypersensitivity reaction to a previous dose is an absolute contraindication.

Chemoprophylaxis: Hormone Replacement Therapy

The potential risks and benefits of hormone replacement therapy should be discussed with all women who are perimenopausal and at least once after the age of 65. (See [Hormone Replacement Therapy](#).)

OTHER PREVENTIVE SERVICES TO CONSIDER

A number of other preventive activities are recommended by assorted specialty organizations even though the evidence for effectiveness is lacking. Some of these preventive measures are listed in [Table 10.2](#). In the face of unproven effectiveness for each of these procedures, physicians must weigh the potential benefits of the preventive procedure against the potential risks of unnecessary treatment. Procedures that are particularly pertinent and controversial in the older adult population are discussed below.

Screening

Diabetes Mellitus

The increased prevalence of diabetes mellitus with age and the consequent morbidity burden warrants consideration for prevention. Routine screening of asymptomatic adults for diabetes is not recommended by the USPSTF; however, measurement of fasting glucose may be appropriate for high-risk older persons. (See [Endocrine and Metabolic Disorders](#).)

Thyroid Disease

The prevalence of subclinical and clinical hyperthyroidism and hypothyroidism increase with advancing age. The USPSTF does not recommend routine screening but acknowledges that screening may be

performed on the basis of the high prevalence of the disease and the likelihood that its symptoms will be overlooked in older adults. The preferred test is the immunometric assay that is sensitive to thyrotropin. (See [Endocrine and Metabolic Disorders](#).)

Dementia

See [Dementia](#).

Depression

Older patients with a positive personal or family history of depression, chronic underlying illness, recent loss, or sleep disorder are at high risk for the development of depression. The USPSTF recommends maintaining a high index of suspicion for depressive symptoms in high-risk persons. There are several reliable and valid depression screening instruments, including the Geriatric Depression Scale (see the [Appendix; Depression and Other Mood Disorders](#)).

Osteoporosis

Although certain organizations recommend screening bone density measurements in all older women, the evidence to support routine bone mineral densitometry for the general population is lacking. The USPSTF does recommend that all older women be counseled about hormone replacement therapy, adequate calcium intake, smoking cessation, exercise, and avoidance of falls and injuries in order to prevent osteoporosis and fall-related fractures. (See [Osteoporosis and Osteomalacia](#).)

Prostate Cancer

Randomized, controlled trials of screening by prostate-specific antigen or digital rectal examination, currently in progress, should provide valuable information on the efficacy of these modalities. Until the results of those trials are known, however, patients should be counseled about the implications of an elevated prostate-specific antigen level or a mass detected by digital rectal examination and the potential adverse effects (surgery, incontinence, impotence) of treating false or even true positives. The American College of Physicians supports selected testing in 50- to 69-year-old men, provided that optimistic assumptions are used and the risks, benefits, and uncertainties are understood. With evidence currently available, it is difficult to justify screening in men aged of 70 and over. Medicare covers the cost of prostate cancer screening. (See [Prostate Disease](#).)

Skin Cancer

The USPSTF recommends neither for nor against annual skin examination to detect early skin cancers because of a lack of research-proven effectiveness. However, the relatively low cost associated with annual skin examinations and the low costs and morbidity associated with treatment (eg, excision, cryotherapy) of false positives makes the decision to screen for skin cancer considerably less weighty than for prostate cancer. The USPSTF does recommend counseling high-risk patients (those who are light-skinned or with a past history of skin cancer) to avoid excess sun exposure and to use protective clothing when outdoors. (See [Dermatologic Diseases and Disorders](#).)

Chemoprophylaxis: Aspirin Therapy

Aspirin therapy up to 500 mg per day has not been consistently shown to reduce myocardial infarction or cardiovascular mortality. The adverse bleeding effects of aspirin increase with age, although the absolute serious side effect rate of dosages ≤ 325 mg per day is low. Older adults with risk factors for myocardial infarction or stroke may be more appropriate for prophylaxis with aspirin. (See [Cardiovascular Diseases and Disorders](#).)

PREVENTIVE SERVICES NOT INDICATED IN OLDER ADULTS

[Table 10.3](#) lists services that have been shown not to be effective in preventing certain conditions or their adverse outcomes. There is mounting evidence that the general screening modality of the annual complete history and physical examination is not any more effective for improving outcomes than a more targeted approach of individual screening, counseling, immunoprophylaxis, and chemoprophylaxis. Current evidence does not support specific screening for lung, ovarian, pancreatic, bladder, or hematologic malignancies for the general population. However, promising new screening modalities, such as helical

low-density computed tomography of the chest for lung cancer and homocystinemia for heart disease, are actively being developed and investigated.

DELIVERY OF PREVENTIVE SERVICES

A well-organized systems-based approach, using various personnel, sites, and communication modalities, may narrow the gap between the knowledge of age-appropriate practice recommendations and the implementation of preventive measures. Lack of time and inadequate reimbursement are only two of the barriers faced by physicians. Overcoming these barriers commonly involves the assistance of paramedical personnel and the use of technology. A nurse or trained office assistant may be able to adequately explain a screening procedure such as FOBT and its implications in terms of follow-up diagnostic testing. Reminders may prompt clinicians to offer selected screening tests and improve adherence to recommendations. Mailed or computer-generated reminders may be used to enhance screening rates for procedures such as mammography, colorectal cancer screening, and influenza vaccination. Automated telephone technology may be useful to assess troublesome behaviors and even deliver behavioral interventions for improving medication adherence, dietary modification, and physical activity among sedentary persons. Primary and secondary preventive services may be provided at a variety of sites, including ambulatory clinics, assisted-living and long-term-care facilities, mobile vans, and supermarket-based pharmacies.

The implementation and evaluation of novel approaches for preventive practice are clearly warranted if progress is to be made in this increasingly important field. The more the primary care physician is able to rely upon others to explain and perform preventive maneuvers, the greater the likelihood that the patient adherence will improve as well.

ANNOTATED REFERENCES

- Christmas C, Andersen RA. Exercise and older patients: guidelines for the clinician. *J Am Geriatr Soc.* 2000; 48(3):318–324.
This innovative article urges health care professionals to recognize and address the benefits of exercise in the geriatric population. Recommendations are based on clinical evidence from literature reviews; the benefits of exercise for older adults discussed range from weight control and body composition to longevity. A systematic approach to creating an exercise prescription for a sedentary older patient is outlined. A flow sheet demonstrates a way to obtain a patient's exercise history. Writing exercise prescriptions on a prescription pad is recommended because it increases the effectiveness of the endorsement; documentation of routine follow-ups helps to ensure long-term adherence.
- Edelberg HK, Wei JY. Primary-care guidelines for community-living older persons. *Clin Geriatrics.* 1999;7:42–55.
Primary care guidelines do not sufficiently address the needs of community-dwelling older persons. This review presents and explains the updated preventive guidelines for the care of older persons in a primary care setting. Recommendations are based on a review of the clinical literature, including those of the U.S. Preventive Service Task Force, the Canadian Task Force, and several other medical organizations. Attention is given to Medicare coverage and clinical relevance.
- Goldberg TH, Chavin SI. Preventive medicine and screening in older adults. *J Am Geriatr Soc.* 1997;45(3):344–354.
This paper is a comprehensive review of the concepts, studies, recommendations, and controversies of geriatric preventive medicine. Included is a discussion of the nature and goals of prevention in older adults, which calls for the early start of preventive measures and designates the age of 85 as the approximate cut-off point after which conventional screening tests may no longer be effective. The major preventive strategies for common conditions in older adults are then evaluated, with particular attention to the U.S. and Canadian task force class ratings. The strategies are clearly organized, and specific supporting evidence from the clinical literature is cited when appropriate.
- Rowe JW. Geriatrics, prevention and the remodeling of Medicare. *N Engl J Med.* 1999;340(9):720–721.

This editorial details the significance of preventive geriatrics. Health promotion in older adults has been neglected but remains an important means to promote positive life-style changes. Health promotion and disease prevention are also placed in the context of the Medicare system in order to examine the importance of Medicare to preventive service delivery. Suggestions are given as to what role in prevention Medicare may play in the future.

- US Preventive Services Task Force. *Guide to Clinical Preventive Services*. 2nd ed. Baltimore, MD: Williams and Wilkins; 1996.

The second report of the U.S. Preventive Services Task Force is an indispensable guide to the effectiveness of a wide variety of preventive services. The report incorporates extensive literature searches and critical reviews of the evidence for each service considered.

Recommendations of other organizations are described. This edition treats issues of aging far more thoroughly than the first edition did; however, material devoted to those aged 75 or over remains limited.

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