Cancer likely will remain a major health challenge this century. Some cancers are very aggressive and result in death within months of detection; others are indolent and may never surface. Scientists continue to work at the basic and clinical levels, with some successes but overall slow progress. For instance, testicular cancer now is curable with chemotherapy, and the majority of patients survive. However, basic and clinical research have had little impact on mortality for other cancers, such as pancreatic cancer.

Prevention and early detection have a much greater potential to lower morbidity and mortality than treatments such as chemotherapy, surgery, and radiation. Unfortunately, not enough research has been directed at prevention and early detection. Historically, behavioral research in prevention and early detection of cancer has not been funded at the levels necessary for true progress nor is a cadre of scientists prepared to conduct behavioral research. Reimbursement for primary and secondary prevention in the clinical setting generally is lacking. Patients often have an easier time obtaining insurance coverage for late-stage disease treatments than for cancer prevention activities. This article will focus on an important area in the fight against cancer—the use of early-detection methods.

Cancer Prevention and Screening

Screening is a method of secondary prevention, which is defined as the early detection and treatment of disease before signs or symptoms are apparent. In contrast, primary prevention is the prevention of disease through activities such as immunization, smoking cessation, use of sunscreen, diet, and exercise. Tertiary prevention is the management of disease to prevent progression, recurrence, or other complications. Although desirable, good screening tests are not available for every type of cancer. Several conditions must be met before cancer screening makes sense in asymptomatic populations.

First, diseases must have certain characteristics that make screening feasible. Specifically, diseases must have natural histories and biologies that can be predicted, and preclinical phases must have high prevalence and incidence (see Table 1). Prevalence is defined as the number of cancers that exist in a defined population at any given point in time, and incidence is the number of cancers that develop in a population during a defined period of time. If such a preclinical phase exists, healthcare professionals have an opportunity to alter the disease course. This opportunity, though, must be accompanied by effective treatment for early-stage diseases after they are discovered. Detecting early-stage cancer but not being able to stop its progress does little good. Perfect screening...