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Robert A. Smith and Kevin C. Oeffinger

The Importance of Cancer Screening **919**

Robert A. Smith and Kevin C. Oeffinger

The burden of cancer in the United States is substantial, providing important opportunity and obligation for primary care clinicians to promote cancer prevention and early detection. Without a system of organized screening to support reminders and follow-up of cancer screening, primary care clinicians face challenges in addressing risk assessment, informed/shared decision making, reminders for screening, and tracking adherence to screening recommendations. Tools exist for collecting information about family history, tracking screening adherence, and reminding patients when they are due for screening, and strategies exist for making cancer prevention and early detection an office policy and delegating roles and responsibilities to office staff.

The Evaluation of Cancer Screening: Concepts and Outcome Measures **939**

Stephen W. Duffy and Robert A. Smith

Cancer screening uses many investigative procedures, and different screening programs and methods have different objectives. For example, mammography aims to detect breast cancer at an earlier stage when successful treatment is more likely, whereas colonoscopy is aimed primarily at detecting adenomas in the colon and removing them, thus preventing them from progressing to cancer at all. Evaluation has different objectives, including proof of principle, checking that screening services are delivering the desired clinical outcome, technical quality control of the investigation procedures. All necessitate a range of tools for evaluation. We review these tools, with particular attention to appropriate outcome measures.

The Development of Cancer Screening Guidelines **955**

Robert A. Smith

Clinicians and the public have always depended on expert advice to guide clinical practice. However, since the 1970s, a growing emphasis on evidence-based medicine has led to clinical practice guidelines being less expert based and increasingly evidence based with judgments about the balance between the two. Because the existence of standards for guidelines development is no guarantee that a guideline will be trustworthy, tools and instruments have been developed to measure the

degree to which a guideline has been developed with rigorous adherence to methodology, and has not been influenced by conflicts of interest.

Increasing Cancer Screening Rates in Primary Care **971**

Richard Wender and Andrew M.D. Wolf

Screening for cancer has contributed to substantial reductions in death from several cancers and is one of the most cost-effective preventive interventions in all of health care. In the United States, primary care clinicians, their clinical teams, and the systems in which they work are primarily responsible for ensuring that screening occurs. In order to achieve the highest possible population-wide screening rates, primary care clinicians must embrace the responsibility to screen their entire enrolled patient population, institute several overarching general approaches to screening, and implement a combination of evidence-based interventions.

Cancer Screening in Older Adults: Individualized Decision-Making and Communication Strategies **989**

Ashwin A. Kotwal and Louise C. Walter

Cancer screening decisions in older adults can be complex due to the unclear cancer-specific mortality benefits of screening and several known harms including false positives, overdiagnosis, and procedural complications from downstream diagnostic interventions. In this review, we provide a framework for individualized cancer screening decisions among older adults, involving accounting for overall health and life expectancy, individual values, and the risks and benefits of specific cancer screening tests. We then discuss strategies for effective communication of recommendations during clinical visits that are considered more effective, easy to understand, and acceptable by older adults and clinicians.

Screening for Breast Cancer **1007**

Anand K. Narayan, Christoph I. Lee, and Constance D. Lehman

Among women, breast cancer is the most commonly diagnosed cancer and the leading cause of cancer-related death in the world. The purpose of this article is to review the evidence regarding breast cancer screening for average-risk women. The review primarily focuses on mammographic screening but also reviews clinical breast examinations, emerging screening technologies, and opportunities to build consensus. Wherever possible, the review relies on published systematic reviews, meta-analyses, and guidelines from three major societies (US Preventive Services Task Force, American College of Radiology, and the American Cancer Society) to reflect a range of evidence-based perspectives regarding mammographic screening.

Screening for Colorectal Cancer **1023**

Eric M. Montminy, Albert Jang, Michael Conner, and Jordan J. Karlitz

Colorectal cancer screening is essential to detect and remove premalignant lesions to prevent the development of colorectal cancer. Multiple screening modalities are available, including colonoscopy and stool-

based testing. Colonoscopy remains the gold standard for detection and removal of premalignant colorectal lesions. Screening guidelines by the American Cancer Society now recommend initiating screening for all average-risk adults at 45 years old. Family history of colorectal cancer, other cancers, and advanced colon polyps are strong risk factors that must be considered in order to implement earlier testing. Epidemiologic studies continue to show disparities in colorectal cancer incidence and mortality and wide variability in screening rates.

Screening for Lung Cancer **1037**

Thomas Houston

Lung cancer screening with low-dose computed tomography provides an opportunity to save lives by early detection of the deadliest cancer in the United States. Uptake of lung cancer screening has been quite low but may be improving. Clinician and patient education, integration of lung cancer screening protocols into electronic medical records, support for shared decision making and tobacco cessation, and improved communication between referral centers and clinicians are all important areas for improvement for lung cancer screening to reach its potential in improving morbidity and mortality from lung cancer.

Screening for Prostate Cancer **1051**

Sigrid V. Carlsson and Andrew J. Vickers

This article gives an overview of the current state of the evidence for prostate cancer early detection with prostate-specific antigen (PSA) and summarizes current recommendations from guideline groups. The article reviews the global public health burden and risk factors for prostate cancer with clinical implications as screening tools. Screening studies, novel biomarkers, and MRI are discussed. The article outlines 7 key practice points for primary care physicians and provides a simple schema for facilitating shared decision-making conversations.

Screening for Cervical Cancer **1063**

Terresa J. Eun and Rebecca B. Perkins

The most effective strategy for cervical cancer prevention involves vaccination against human papillomavirus (HPV) infection during adolescence followed by screening during adulthood. HPV vaccination before sexual debut can prevent HPV infections, precancers, and cancers. HPV vaccination of sexually active populations does not prevent cancer. Screening is critical to prevent cancer between the ages of 25 and 65. Screening with HPV testing or cotesting is more effective than Pap testing alone. Ensuring adequate screening at ages 45-65 may prevent cervical cancer among elderly women. Most cervical cancers at all ages occur among unscreened or underscreened women.