Developing Evidence-Based Screening Recommendations, with Consideration for Rheumatology

Ned Calonge, MD, MPH[a,b,c,*]

KEYWORDS

- U.S. Preventive Services Task Force • Rheumatoid arthritis • Screening
- Evidence-based recommendations

KEY POINTS

- Screening for preclinical rheumatic disease may improve health by enabling treatment to start before clinical symptoms occur.
- Potential health harms associated with screening programs, such as the harms associated with false-positive tests and overdiagnosis, must be weighed against health benefits.
- The U.S. Preventive Services Task Force (USPSTF) uses an explicit process to create evidence-based screening recommendations that assess net benefit, or benefits minus harms.
- Screening tests recommended by the USPSTF are provided with first dollar coverage under the Affordable Care Act.

INTRODUCTION

In the clinical prevention world, screening for the early detection of disease is categorized as secondary prevention, involving interventions that are implemented after the asymptomatic onset of biologic disease, but before the progression to symptomatic disease that would be diagnosed through the usual health care approach. Conceptually, intervening early leads to better health outcomes than does waiting until the disease manifests clinically. Good examples of effective screening modalities exist in the chronic disease arena: screening for cervical cancer with cytology can almost eliminate deaths from this cancer,[1] and screening for and treating hypertension

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[a] The Colorado Trust, 1600 Sherman Street, Denver, CO 80111, USA; [b] Department of Family Medicine, University of Colorado School of Medicine, Mail Stop F-496, Academic Office 1, 12631 East 17th Avenue, Aurora, CO 80045, USA; [c] Department of Epidemiology, Colorado School of Public Health, Campus Box B119, 13001 E. 17th Place, Aurora, CO 80045, USA
* The Colorado Trust, 1600 Sherman Street, Denver, CO 80111.
E-mail address: ned@coloradotrust.org

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significantly reduces the occurrence of atherosclerotic disease in the coronary and cerebral arteries in nearly all adult age groups.[2] A broader definition of screening, brought to the forefront of medicine by the current interest in genetic testing, involves screening for the risk of disease and intervening even before the biologic onset of a condition. This new technology will continue to bring new challenges for decision making in screening programs.

Screening for asymptomatic or preclinical rheumatic conditions has the potential for providing improved disease outcomes, with the early treatment of disease using safe and effective therapeutics started before symptomatic tissue damage. However, even though screening is conceptually appealing, as it is in other conditions, it has downsides in terms of the potential for harm, which is associated with almost all medical interventions. Screening benefits must be weighed against harms when deciding to offer screening.

The benefits of screening are straightforward: early intervention leads to earlier treatment and better health outcomes. On the other hand, 4 or 5 categories of potential harms exist. A test can be falsely negative, creating false reassurance and the potential to delay the diagnosis of a treatable condition when patients ignore symptoms. The test may be falsely positive, arguably the most important negative outcome, leading to unnecessary and potentially harmful diagnostic tests, treatment, and labeling. The test could overdiagnose disease that does not require treatment. In this scenario, the test result is a true-positive, but detects disease that would not progress, meaning that any treatment is unnecessary. Overdiagnosis is a critical harm associated with screening for prostate cancer, in which most cancers are indolent and would never impact the patient's health,[3] and screening for breast cancer, in which most ductal carcinoma in situ does not benefit from treatment.[4] Finally, the test can be correct, but early detection may have no real benefit, and therefore screening consumes resources, increasing the cost of medical care without health benefit. In addition, harms may be associated with the test itself, such as additional radiation exposure with x-ray screening, which could, over a lifetime of screening, increase the risk of disease, or, in the case of a somewhat invasive test such as colonoscopy, the test may carry the risk of adverse outcomes, including hemorrhage and perforation.

The evidence bar tends to be set high for screening, more so than for other medical interventions, because the population targeted is asymptomatic. If clinicians are going to medically intervene with people who are otherwise well and clinically manifesting no illness, they should only do so based on strong evidence showing that the benefits well outweigh the harms.

FRAMEWORK FOR DISEASE SCREENING

In creating a framework for deciding whether to implement a disease screening program, Wilson and Jungner[5] created a list of critical criteria to assess. Paraphrasing this sentinel article, these criteria include the following queries:

- Is the disease an important health problem (in terms of severity and incidence)?
- Does the disease have a recognizable presymptomatic stage that lasts long enough to allow for screening, diagnosis, and treatment?
- Are acceptable and reliable screening tests available for the presymptomatic stage?
- Does treatment of the disease during the presymptomatic stage result in improved outcomes?
- Do sufficient resources exist for diagnosing and treating the population with positive screening results?